AIDPH
AMERICAN INSTITUTE OF DENTAL PUBLIC HEALTH

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# THE STATE OF VETERAN ORAL HEALTH IN IOWA

## Understanding Outcomes and Opportunities for Improving Oral Health and Well-Being for Iowa Veterans

Prepared by the American Institute of Dental Public Health in support of the Delta Dental of Iowa Foundation

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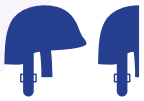
# EXECUTIVE SUMMARY

## National Access

There are 20 million veterans in the U.S. Of those, nine million receive healthcare from the Veteran Health Administration (VHA). Only 1.5 million are eligible for dental care from the VHA, with just 512,000 receiving dental care. This means most veterans who are receiving medical care through the Veteran's Administration (VA) system are not eligible or able to receive dental care through the VA. Most veterans, including those living in Iowa, get their dental care in the private sector resulting in access and affordability concerns.

= 1 Million Veterans

20 Million United States Veterans



1.5 Million Veterans Eligible for VHA Dental Care

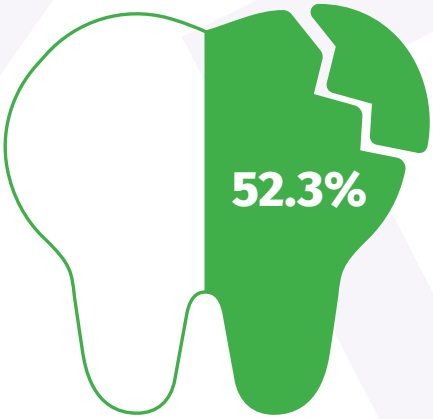
512,000 Veterans Receive VHA Dental Care

## Iowa Access

Approximately 7% of Iowans are veterans. As of 2020, Iowa had 193,861 veterans living in its 99 counties, with 76% having served during a period of war and approximately 184,000 enrolled in the Iowa VA healthcare system. Iowa veterans are experiencing poverty and housing insecurity at higher rates than nonveterans in Iowa. Geographically, Iowa veterans are highly concentrated in rural areas, with a large proportion of those veterans considered to be among the aging community. Veterans are also more likely to live in a Health Professional Shortage Area (HPSA).

**76%**

**of Iowa Veterans served in a war.**




of Iowan Veterans Are at Risk of Experiencing Tooth Loss

## Oral Health of Iowa Veterans

Most oral health indicators show that Iowa veterans have poorer oral health outcomes than nonveterans. Approximately half of Iowan veterans (52.3%) are at risk of experiencing tooth loss, compared with 37.1% of nonveterans. Nearly one in ten Iowa veterans (9.5%) are completely edentulous, compared with 4.4% of the Iowan adult population. Indicators such as income, education, and age exacerbate those disparities; however, rurality is the largest driver of poor oral health among veterans.

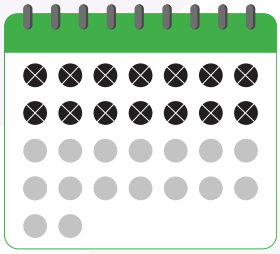
**Nearly one in ten Iowa veterans (9.5%) are completely edentulous.**

# EXECUTIVE SUMMARY

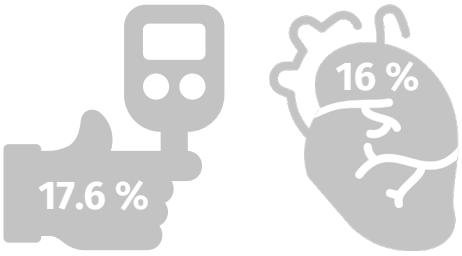
## Chronic Disease Conditions in Iowa Veterans

Iowa veterans are more likely to report multiple days a month with poor physical health: more than one in ten Iowa veterans experienced 14+ days per month of poor physical health. Veterans in rural Iowa experience a diabetes prevalence rate of 17.6%. Heart disease prevalence among veterans in Iowa is also a major cause for concern. In Iowa, heart disease impacts 16% of all veterans — almost three times the national average.

There are significant economic implications for untreated oral disease in the management of chronic medical conditions, including diabetes and heart disease. Approximately $55 million can be saved annually in medical costs by providing dental care to Iowa veterans with diabetes. When evaluating the 16.1% of Iowa veterans with heart disease, approximately $66 million can be saved annually in medical costs by providing dental care.



**More Than One in Ten Iowa Veterans Experienced 14+ Days Per Month of Poor Physical Health.**




**17.6% of Iowa Veterans Experience Diabetes and 16% of Iowa Veterans Experience Heart Disease.**

**Approximately**

**$55M**

**Can Be Saved Annually In Medical Costs By Providing Dental Care to Iowa Veterans With Diabetes.**

## Strategic Recommendations

Stakeholders in Iowa can improve the oral health and wellbeing of veterans by investing in strategic opportunities to improve access and quality of care.

1. **Strengthening and expanding the Iowa Veteran Trust Fund allows for necessary financial support in addressing unmet need while reducing high out-of-pocket costs for veterans.**
2. **The I-Smile program has successfully navigated patients into care using Trust Fund support, creating a successful collaborative among these two opportunities.**
3. **Increasing Medicaid rates and expanding eligibility for veterans in Iowa can incentivize providers in the care delivery process with the potential to reduce high emergency department visits and medical costs.**
4. **Lastly, the paucity of both veteran- and oral health-specific data creates a gap in the knowledge base which impedes the ability to make further evidence-based recommendations. Improving the data collection and monitoring systems will allow stakeholders to define and implement state-based strategies that improve the oral health and wellbeing of Iowa veterans.**

# BACKGROUND AND PURPOSE

The United States has approximately 16.5 million veterans with varying dental care access and benefit coverage. Veterans are more likely to have poor oral health than members of the general population. This disparity is caused by a fragmented and often inequitable system of care, a challenge that many Iowans encounter. While data are limited, they are clear in underscoring oral health disparities:

- Veterans are more likely to have dental caries, gum disease, and tooth loss than members of the general population.
- Veterans are less likely to have access to dental care, and they are more likely to delay or forgo dental care due to cost.
- Veterans with disabilities are more likely to have poor oral health than veterans without disabilities.
- Veterans who are homeless or live in rural areas are more likely to have poor oral health.
- Veterans who have experienced combat or other traumatic events are more likely to have poor oral health.

## This report was designed to answer four critical questions:

1. **How do oral health outcomes for veterans living in Iowa differ from nonveterans?**
2. **What factors contribute to poor oral health among veterans in Iowa?**
3. **What opportunities exist for improving oral health outcomes for veterans in Iowa?**
4. **What steps should be taken to improve oral health outcomes for veterans in Iowa?**

**Oral health is critical to overall health and well-being. Marginalized, historically excluded, and underserved communities often disproportionately suffer from poor oral health as a result of social and political determinants of health.**

Iowa has a population of over three million people, of whom about 193,800 are veterans. Compared to the general population, Iowa veterans are more likely to be rural, have lower incomes, and have disabilities. These factors can all exacerbate the already significant poor oral health outcomes experienced by Iowa veterans.

Oral health is critical to overall health and well-being. Unfortunately, marginalized, historically excluded, and underserved communities frequently bear a disproportionate burden of poor oral health due to social and political determinants of health. Veterans, in particular, face an increased risk of disease and disability, impacting not only their oral health but also their overall well-being. Identifying solutions to address veteran oral health disparities is particularly challenging given the lack of available comprehensive and holistic data for this population.

The lack of data makes it difficult to identify factors that contribute to poor oral health among veterans and develop effective interventions to improve oral health outcomes. This report was developed to serve as a resource for key target audiences including clinicians, advocates, health administrators, nonprofit organizations, researchers, and policy makers to design and implement solutions.

# BACKGROUND AND PURPOSE

The purpose of this report is to assess the oral health status of veterans living in Iowa, using quantitative and qualitative data, noting gaps in available information and resources.

This report explores the following topics:

- Oral health outcomes, including prevalence of dental caries, gum disease, and tooth loss
- Access to dental care, including insurance coverage and cost of care
- Associated chronic disease conditions, such as heart disease, diabetes, and cancer
- Cost of care, potential cost savings, areas of opportunity, and outstanding gaps
- Intersectional inequities experienced by specific populations of veterans

Importantly, this report seeks to fill gaps in knowledge and provide information to stakeholders who are working to improve the oral health of veterans in Iowa. By identifying the factors that contribute to poor oral health and making recommendations for improvements, this resource will ultimately help improve the oral health of veterans and reduce the burden of oral diseases. Iowa veterans deserve the opportunity to achieve and maintain good oral health, which is essential for their overall health and well-being.

# SECTION OVERVIEW

**Section 1** provides an overview of the Veterans' Health Administration (VHA) infrastructure, details on healthcare eligibility offered through the Department of Veterans' Affairs (VA), and descriptions of veteran and active-duty service member healthcare benefits. Additionally, this section provides a comprehensive overview of the Iowa veteran population, including information on access and healthcare delivery systems and federal health insurance programs.

**Section 2** offers an extensive analysis of veteran oral health at the national, state, and county levels. Moreover, this section provides key insights for dental health professional shortage areas in Iowa, as well as dental visits, edentulism (tooth loss), and dental emergency room visits observed in Iowa.

**Section 3** delivers a comprehensive overview of the impact of chronic inflammatory diseases on the Iowa veteran population. Additionally, it underscores the financial burden these diseases place on State and VA expenditures, as well as out-of-pocket expenses for veterans.

**Section 4** highlights trends that emerged from interviews conducted with key Iowa stakeholders regarding the access to, use of, and potential barriers to oral healthcare faced by Iowa veterans. This section reports a compilation of interviewee responses, supported by direct quotes. Cost, transportation, and oral health literacy were recurrent barriers reported by stakeholders, particularly aging veterans living in rural communities. The interviews also provided valuable insight into effective policy solutions, calling for increased funding of the Iowa Trust Fund and Medicaid expansion.

**Section 5** summarizes conclusions of results generated from this report in plain language for each major area of analysis, including cost, overall health, and oral health.

**Section 6** provides a detailed list of actionable, evidence-based strategic recommendations for key stakeholders to use to ignite systemic change for Iowa veterans.

# REPORT TARGET AUDIENCES

This report was designed with an array of intended target audiences in mind, with use cases for each described below.

**Veterans**

- *Veterans and Their Families:* This group may find value in a report that directly relates to their quality of life and advocates for policy changes that benefit them.

**Policy makers and Government Agencies**

- *Federal and State Legislators:* Given the restrictive policies that limit VA dental benefits, legislators have a direct role in expanding access to dental care for veterans.
- *State Health Departments:* The insights from this report could guide public health initiatives, program development, and health education campaigns tailored to veterans.
- *Veterans Affairs:* As the primary agency serving veterans, the VA could benefit from data that helps them improve service delivery and outreach while considering opportunities specific to Iowa.

**Healthcare Providers**

- *Dental Practitioners:* This report can guide dentists and oral health specialists in understanding the unique challenges veteran populations face, possibly influencing more targeted care, pro bono services, or personalized care planning for veterans.
- *Medical Health Providers:* As a connection exists between oral health and other chronic conditions such as diabetes and heart disease, general physicians and specialists can find these data useful for integrated care approaches.
- *Community Health Centers:* Organizations providing local healthcare services can use these data to tailor their offerings and outreach to better serve veterans in their communities.

**Nonprofit Organizations, Associations, and Advocacy Groups**

- *Veteran Service Organizations (VSOs):* Groups that work directly with veterans will find the data valuable for advocacy work that informs policy asks and other health campaign activities.
- *Oral Health Advocacy Groups:* Organizations focused on expanding access to dental care can use the data to broaden their campaigns to include the specific needs of veterans.

**Researchers and Data Scientists**

- *Public Health Researchers:* This report fills a significant gap in the literature, offering specific recommendations for implementing research activities based on conclusions.
- *Academic Institutions:* Universities with public health and medical programs may integrate findings into curricula or further research and clinical care training for future health and oral health professionals.

**Insurance Companies**

- *Health Insurance Providers:* These companies can gain insights into coverage gaps and potentially develop new offerings for veterans that decrease cost of care.
- *Dental Insurance Providers:* As collaborators and funders, insurers may consider results to inform business strategy and corporate social responsibility initiatives.

**Media and Journalists**

- *Health Journalists and Community Reporters:* This report offers an essential source for their articles, raising awareness about the often-overlooked issue of veteran oral health.

# REPORT DEVELOPMENT OVERVIEW

This report was developed by the American Institute of Dental Public Health (AIDPH) after defining aims, areas of exploration, and intended target audiences for the state of Iowa. The process involved thoroughly sourcing all publicly available data, examining additional secondary data sources, and hearing directly from Iowa stakeholders to determine the critical needs and outcomes of Iowa veterans.

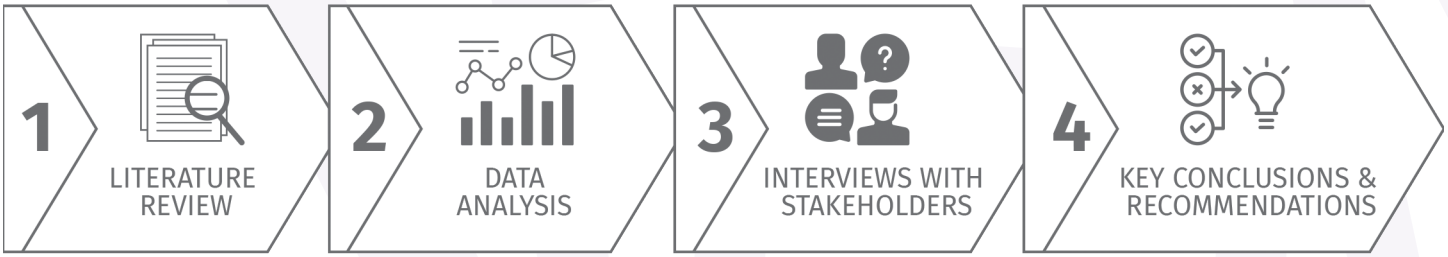
The first phase of report development involved a literature review to understand both national and Iowa-level healthcare for veterans. Topics including medical and dental infrastructure, insurance benefits, and barriers to care were investigated. An environmental scan of available data sources, indicators for analysis, and potential gaps in the data was created. Data that were not publicly available but could be requested or otherwise sourced were identified. AIDPH connected with Iowa-based stakeholders and requested feedback on which types of data would be most important to evaluate for this report.

Next, a comprehensive analysis of national oral health data and state-level oral health data was conducted. Demographic data were examined for Iowa residents and the state's veteran population. Primary data sources for this information included the U.S. Department of Veterans Affairs (VA), United States Census Bureau, and the Behavioral Risk Factor Surveillance System (BRFSS). Outcomes including dental service use, oral disease indicators, emergency room visits for dental care, and chronic disease conditions were examined. To investigate these areas, data were analyzed from sources including the National Health and Nutrition Examination Survey (NHANES), Behavioral Risk Factor Surveillance System (BRFSS), State Emergency Department Database (SEDD), and internal surveys disseminated by AIDPH.

The final phase of data collection involved semi-structured interviews with Iowa stakeholders. Participants from an array of professional groups with diverse lived experiences and perspectives were interviewed on a range of topics related to veteran oral health outcomes and access. These interviews were qualitatively analyzed for trends and insights.

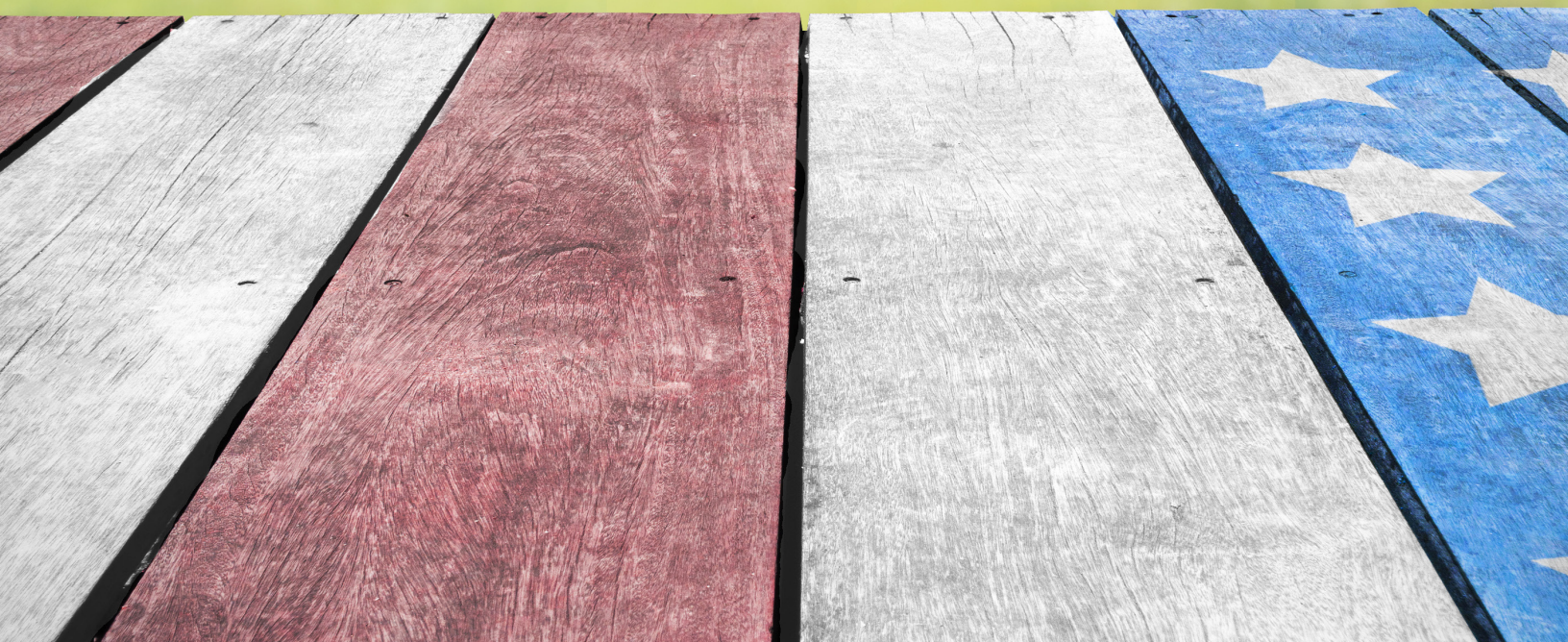
Finally, these data were compiled to develop key conclusions and strategic recommendations. For more technical information on the datasets and data tables, refer to Appendices 2-4.

**Process for Report Development**



# SECTION ONE:
# THE DENTAL CARE INFRASTRUCTURE FOR IOWA VETERANS

Provides an overview of the Veterans' Health Administration (VHA) infrastructure, details on healthcare eligibility offered through the Department of Veterans' Affairs (VA), and descriptions of veteran and active-duty service member healthcare benefits. Additionally, this section provides a comprehensive overview of the Iowa veteran population, including information on access and healthcare delivery systems and federal health insurance programs.

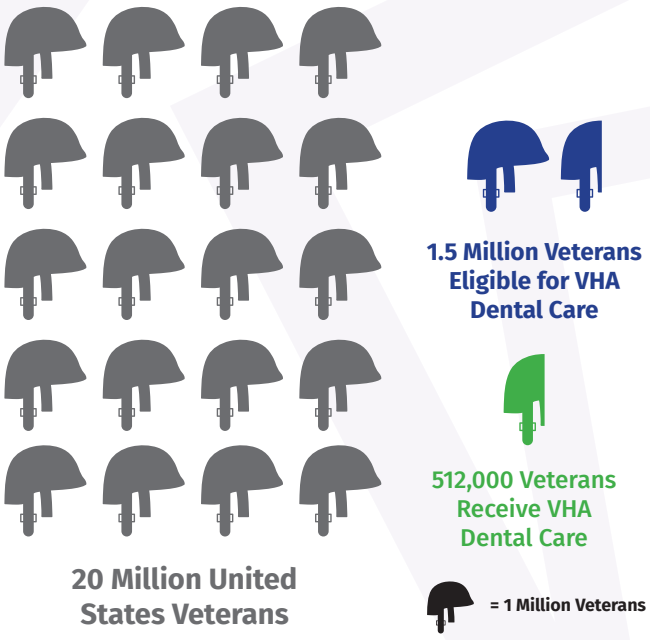


## Understanding Federal Access and Infrastructure for Veterans

### How Does the Department of Veterans Affairs Provide Healthcare Services to Veterans?

Approximately 16.5 million veterans live in the United States, making up nearly 5% of the total population.[1] The Veterans Health Administration (VHA) is the largest healthcare system in the U.S., providing a variety of healthcare services to nearly 55% (nine million) of veterans nationwide.[2] Many veterans access primary care through the VHA (administered by the Department of Veterans Affairs or VA); active duty members of the military receive care through the Military Health System (MHS), administered by the Department of Defense.

The VA currently provides medical care to more than nine million veterans, including those with service-connected disabilities.[3] Almost 10 million active duty service members, veterans, and veteran family members access healthcare coverage and services through the TRICARE program at a cost of roughly $50 billion.[4]




### *Benefit Design*

Healthcare options for both delivery and coverage vary greatly based on service member status. Most coverage options become complicated after a service member leaves the military, with eligibility for MHS or VHA care based on disability status, type of separation, and care location or region. The VHA typically provides medical care coverage to a veteran, and rarely to their families. The level of VHA care and coverage is determined by priority group status, which is generally assigned based on separation status, disability status, and level of income.[5] Oral healthcare benefits are not included in the VA standard medical benefit package. Strict eligibility criteria limit the majority of veterans from qualifying for VA dental care. These criteria include:

- Service-connected disabilities rated at 100%
- Service-connected compensable oral conditions
- Oral conditions complicating a medical condition in an individual receiving VA medical care
- Service-connected oral conditions that exacerbated a service-connected disability former Prisoners of War (POW) status
- Participation in vocational rehabilitation programs.

Veterans who do not meet these criteria are not eligible for dental care coverage and must seek dental care outside of the VA. These eligibility criteria are set in the federal code (Title 38 section 17) and have not been revised or expanded in more than 70 years. Of the nine million veterans who are eligible for primary care through the VA, only 15% of veterans are eligible for dental care — and only one third of those eligible routinely use their dental benefit.

According to the 2010 National Survey of Veterans, 56% visited a dentist in the past year.[6] Of those 56%, only 2.9% used the VA as a source of payment, with almost 70% combining out-of-pocket costs and other payment sources to fund dental care. These

results suggest that the majority of dental care occurs outside of the VA health system and is almost solely financed by the veteran through private insurers on a fee-for-service basis.

### *VA Health Clinics*

The VA operates 1,243 healthcare facilities, including 170 VA Medical Centers and 1,063 outpatient sites of varying complexity.[2] Of these VA healthcare facilities, only 200 locations, or 16%, provide dental care to veterans. Dental clinics are often difficult to locate, even in states with large military populations. In 2022, the US Department of Veterans Affairs reported providing dental care services for over 600,000 veterans — less than 4% of the veteran population (va.gov/dental/).

## What Oral Health Coverage Options are Available to Veterans?

### *Service-Connected Disabilities and Narrow Criteria*

Despite the VHA and MHS coordinating primary care for nearly 20 million beneficiaries, dental care remains almost solely outside the scope of coverage for non–active-duty service members. The VHA reports that 85% of veterans enrolled in the VA healthcare system do not have dental care coverage, leaving many service members without dental care or paying out of pocket for treatment.[7]

The 15% of veterans who access care through the VA do so through an eligible service-connected disability. The VA defines a service-connected disability as a "physical or mental injury or condition" that was "incurred or aggravated" in the line of military duty and that results in a disability. A service-connected disability does not need to be connected to combat or service during a period of war.[8] The level of compensation and process for allocation are recommended by the VA and subject to congressional approval through amending the federal code.

Service-connected disabilities are categorized into 15 body systems, including dental/oral. When separated (leaving the service before retirement, such as by being discharged), service members undergo a medical evaluation to determine disability status in each body system and its underlying components (e.g., "respiratory" includes asthma, which will receive an individual and total rating).

Each body system's underlying cause receives a rating between 0% and 100%. However, these underlying causes are assigned different weighted considerations, and are calculated differently than the overall disability rating as a result. This ranking system is complicated and can be difficult to understand. Disability rating can be changed at any time after separation, meaning eligibility can change throughout the trajectory of the service member's interaction with the VA or MHS, but members are not necessarily informed of changes in their healthcare eligibility after a change in rating.[9]

In fiscal year 2022, 171,351 beneficiaries received compensation from the VA for dental-related service-connected disabilities, an 11% increase since 2018. Dental disabilities comprise 0.5% of all disabilities, with a common rating of 10% disability status.[10] Essentially, dental disability ratings were awarded to fewer than 1% of recipients, and accounted for about 10% of the total disability rating. Most dental disability ratings (83%) are associated with "limited motion of the jaw." Many VHA beneficiaries are only able to receive care through VA clinics to treat their specific service-connected disabilities. Therefore prevention and other dental needs do not necessarily fall within the scope of coverage.

### *Federal Health Insurance Exchanges*

The VA Dental Insurance Program (VA DIP) was initiated as a pilot in 2013, and after enrolling a total of 115,000 veterans, was extended in 2017.[11] Veterans enrolled in the VA health system and their families are eligible to enroll in the VA DIP along

with members of the Civilian Health and Medical Program of the VA (CHAMPVA). The VA DIP functions similarly to a private payer benefit in that enrollees are expected to pay a premium and copay for care. The VA reports that these out-of-pocket costs are discounted compared to most dental insurers; however, eligibility is limited to those who already receive VA healthcare and choose the VA DIP as an added private benefit. Cost of care depends on location, number of beneficiaries, and desired level of coverage, with premiums ranging from $18 to $120 per month.[12]

Veterans may also be eligible for the Federal Dental and Vision Insurance Program (FEDVIP). The FEDVIP functions similarly to an employer-sponsored dental benefit plan and is offered to all federal employees and most military retirees.[13] Eligible veterans can choose a FEDVIP insurance carrier based on their location and choose optional coverage within a range of fees. Cost of care depends on location, the number of beneficiaries, and the desired level of coverage. Premiums can range from $20 to $140 per month.

### Key Takeaways

Understanding federal access and infrastructure for veterans

1. The VA has strict eligibility requirements for veterans to receive dental coverage and care. Very few veterans are eligible for dental care through the VA, and those who are eligible underuse their benefit.
2. Most dental care for veterans occurs outside the VA in the private sector.
3. Discounted private-sector options are available, but underused — and can create a financial barrier to accessing dental care.

## Understanding Iowa Access and Infrastructure for Veterans

### An Overview of Iowa Demographics

This section provides a general overview of Iowa demographics in order to compare national, state, and regional populations of veterans. Data for this section were sourced from several publicly available national sources including the Behavioral Risk Factor Surveillance System (BRFSS), the VA, US Census Data, and the Health Resources and Services Administration. Given the variation among data analysis, weighting, and collection methodology, inconsistencies may exist between data reported or analyzed; however, the most accurate available data for each indicator were chosen and used consistently in analysis.

#### *Iowa State Population Demographics*

According to the US Census Bureau Statistics, Iowa has an estimated population of 3,156,145, of which 49.5% are male and 50.5% are female.[14] The median age for Iowa's population is 38.1 years. Of Iowa's total population, it is estimated that 6.3% are under five years of age, 23.3% are under 18 years of age, and 16.7% are 65 years or older.

The median household income in Iowa is $58,570, with the majority of Iowans identifying as white (91.1%) (USCB, 2018), while members of the African American, American Indian and Alaska Native, and Asian races have been estimated to make up 3.8%, 0.5%, and 2.6% of Iowa's population respectively (USCB, 2018). Of those 25 years or older, 91.8% are high school graduates or higher, and 27.7% possess a bachelor's degree or higher (USCB, 2018).

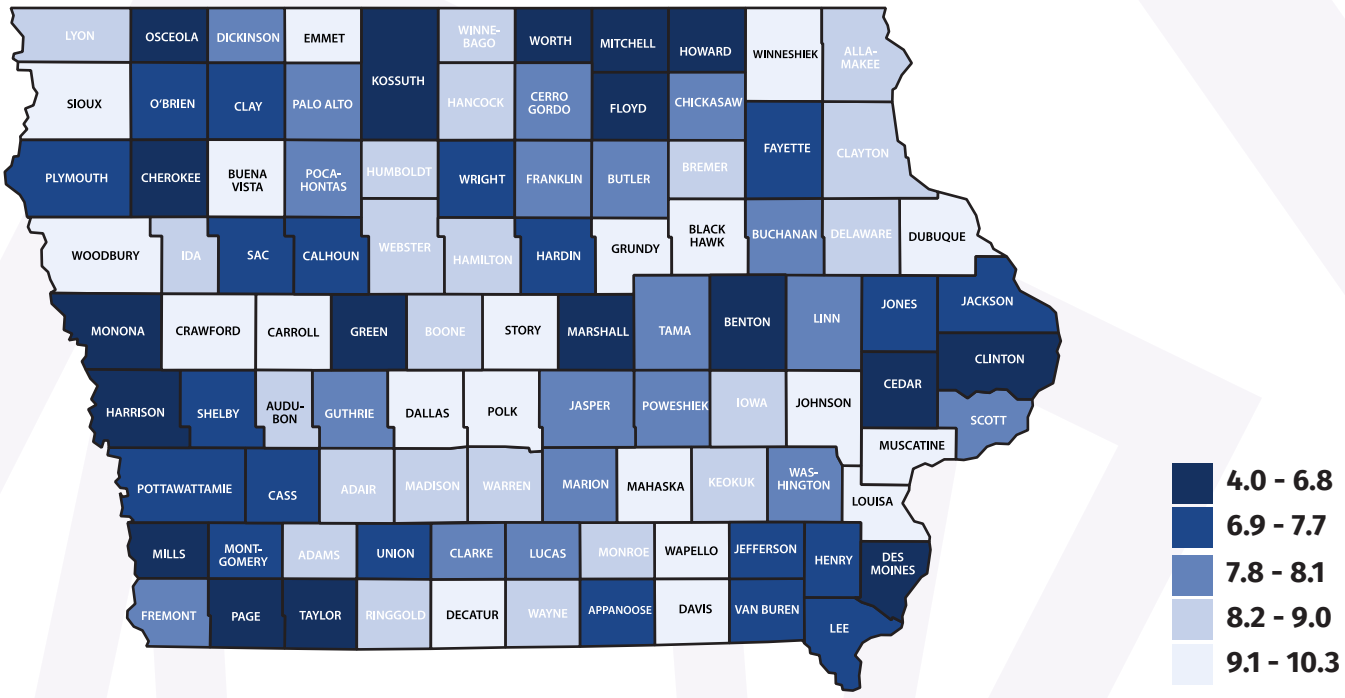
It is estimated that about 10.7% of Iowans are living in poverty, a slightly lower percentage than the national poverty level (12.3%) (USCB, 2018). According to the 2019 county health ranking, an

estimated 36% of Iowans live in rural areas and 64% live in urban areas (*County Health Rankings & Roadmaps, 2019*). All except two counties (Dickinson and Winnebego) are either partially or fully designated as primary care health professional shortage areas. Approximately 81% of counties in Iowa have an entire county designated as a dental health professional shortage area.

## *Iowa Veteran Population Demographics*

Approximately 7% of Iowans are veterans.[14] As of 2020, Iowa had 193,861 veterans living in its 99 counties, with 76% having served during a period of war. Veterans are largely concentrated in Des Moines, Worth, and Mills Counties See Figure 1. Most wartime veterans from Iowa served in the Gulf War (65,926) or the Vietnam War (64,900), indicating an older and combat-experienced veteran population. Iowa veterans are largely male (91.3%) and white (95.1%). Half of veterans (50.6%) in Iowa are working-age adults, with the largest age group belonging to veterans between 70 to 74 years of age (28,801).

**Figure 1: Percentage of Veterans in the Adult Population by County**



## *Iowa Veteran Social Determinants Overview*

In 2021, 3.5% of veterans in Iowa were unemployed, compared to 2.9% of the general state population.[14] Almost 6% of veterans in Iowa were living in poverty, underscored by a lower median household income ($60,789) than that of the broader Iowa population ($64,105). The most recent data from the Behavioral Risk Factor Surveillance System indicate that roughly 66% of veterans have a household income under $75,000, with an annual household income that is slightly lower than nonveterans in Iowa. See Table 1.

**Table 1: Age Range, Education & Income Levels of Iowan Non-Veteran & Veteran Adult Populations**

| Age | Nonveterans % | Veterans % |
|---|---|---|
| 18-24 | 14.41 | 3.48 |
| 25-34 | 16.51 | 10.48 |
| 35-44 | 16.47 | 9.38 |
| 45-54 | 14.93 | 13.25 |
| 55-64 | 16.86 | 15.17 |
| 65+ | 20.82 | 48.25 |
| **Education** | | |
| Never attended school | 0.19 | 0.00 |
| Grades 1-8 | 2.71 | 1.83 |
| Grades 9-11 | 5.71 | 4.46 |
| Grade 12 or GED | 30.23 | 33.27 |
| College 1-3 years | 34.63 | 37.35 |
| College 4+ years | 26.53 | 23.10 |
| Income | | |
| < $10k | 3.62 | 1.09 |
| $10k to $14,999 | 3.57 | 2.50 |
| $15k to $19,999 | 5.27 | 3.52 |
| $20k to $24,999 | 7.34 | 7.26 |
| $25k to $34,999 | 8.80 | 10.13 |
| $35k to $49,999 | 14.69 | 20.33 |
| $50k to $74,999 | 18.10 | 21.50 |
| $75k + | 38.62 | 33.68 |

Nearly a quarter (22.3%) of Iowa veterans have a service-connected disability rating (38,893 veterans). According to the Housing Assistance Council, approximately 22,052 Iowa veterans live in homes with "one or more major problems of quality, crowding, or cost." Roughly 19.1% of Iowa veterans pay too much for their housing, indicating that housing insecurity may be a systemic issue among this population.

Veterans are largely concentrated in Worth, Mills, and Des Moines Counties; both Worth and Des Moines are considered rural. Worth County is ranked 98 of the 99 counties for the number of dentists located per 10,000 people." The oldest combat-experienced veterans, those from World War II and the Korean War, are disproportionately and highly concentrated in rural areas throughout Iowa.

Veterans living with 70% or higher disability ratings are largely concentrated in rural areas. Marion, Clinton, and Wright counties, all designated as rural, have significant portions of their veteran population with a 70% or higher disability rating. See Table 2.

**Table 2: Iowa Counties with the Highest Concentration of Veterans with Service-Connected Disability Ratings of 70% or Over, 2021**

| Location | Urban or Rural | Veterans with Service Disability of 70% or Over, 2021 |
|---|---|---|
| Marion County | Rural | 15.2% |
| Clinton County | Rural | 14.2% |
| Wright County | Rural | 14.2% |
| Adair County | Rural | 11.9% |
| Montgomery County | Rural | 11.4% |
| Howard County | Rural | 11.1% |
| Des Moines County | Rural | 10.6% |
| Cerro Gordo County | Rural | 10.6% |
| Lucas County | Rural | 10.4% |
| Mills County | Urban | 9.9% |
| Fremont County | Rural | 9.9% |
| Story County | Urban | 9.8% |
| Louisa County | Rural | 9.4% |

## Key Takeaways

Understanding infrastructure and access for Iowa Veterans

1. Veterans in Iowa are disproportionately white, male, and residents of rural areas.
2. Iowa veterans are experiencing poverty and housing insecurity at higher rates than nonveterans in Iowa.
3. Geographically, Iowa veterans are highly concentrated in rural areas, with a large proportion of those veterans considered to be among the aging community. Veterans are also more likely to live in a Health Professional Shortage Area (HPSA).

## An Overview of Iowa Healthcare Access and Care Delivery

Access to dental care for veterans is fragmented among the disparate health systems, payer types, and benefit options. Available coverage, specific care delivery availability, and affordability vary greatly within these different systems. Limited information is available and can be difficult to understand or navigate even for the most health-literate patients.

This section outlines the options veterans may have when accessing healthcare services (medical, dental, and nonmedical) throughout the state of Iowa. This information is not all-encompassing, as individual clinics or sites, particularly those that donate services or are run by charitable organizations, are challenging to track. This section focuses on access points within the VA, FQHCs, dental education system, hospital systems, and charitable dental services; these include two large VA healthcare systems, three Vet Centers, fourteen community health centers, regional health departments, and a hospital-university-based clinic. In addition to these health resources, Iowa has a number of additional dental services for qualifying veterans.

### *Iowa Veteran Affairs Healthcare System*

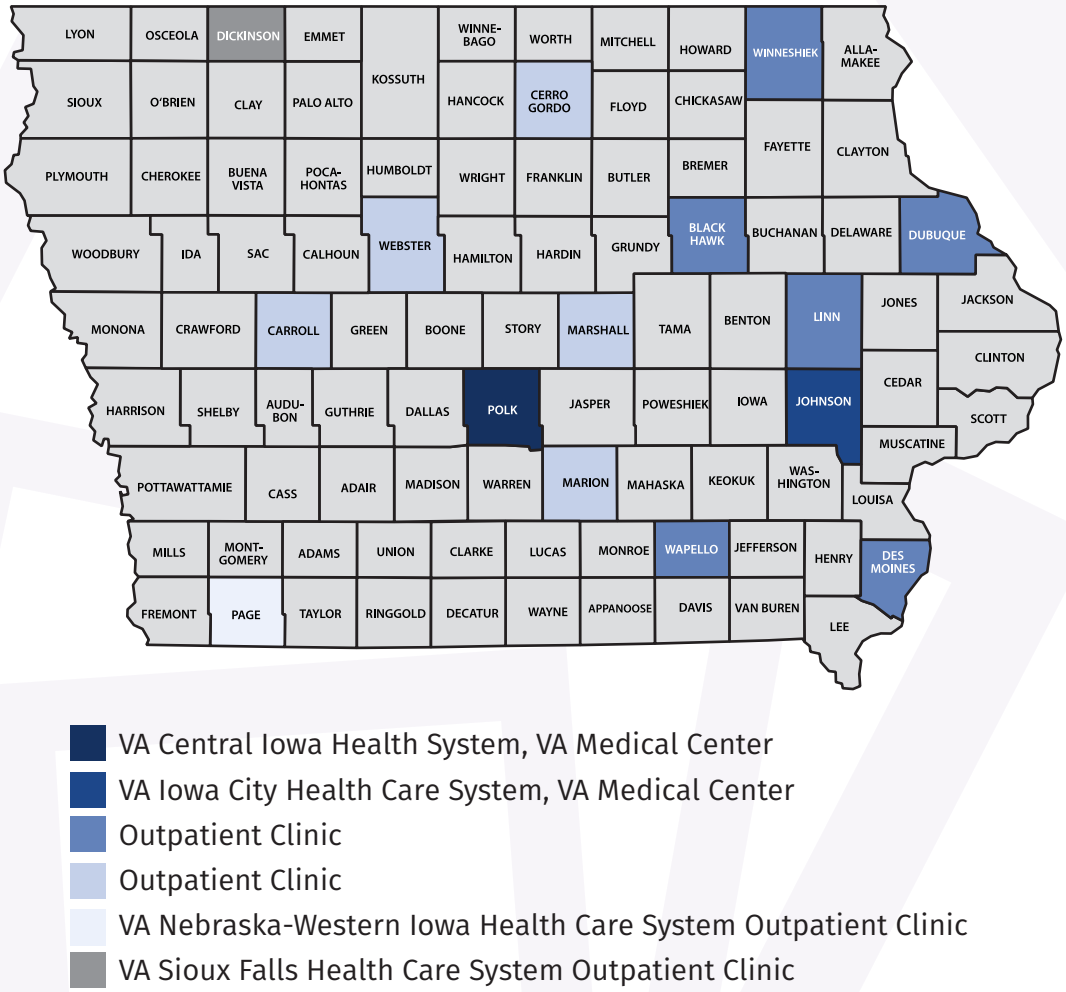
In general, the VA healthcare systems provide primary care, behavioral and mental healthcare services, specialty care, social programs and services, and telehealth services according to the specific coverage of the beneficiary and the types of services available at each clinic. The Iowa VA is part of the VISN 23: Midwest Health Care Network.[15] This regional VA system comprises Iowa, North Dakota, South Dakota, Nebraska, and Minnesota, as well as portions of Illinois, Wyoming, Kansas, Missouri, and Wisconsin. VISN 23 provides integrated dental services to veterans based on geographic location See Figure 2.

- VA Central Iowa Health Care System: This system includes Des Moines VA Medical Center, seven community-based outpatient clinics, and the Des Moines VA Mobile Clinic.
- The Iowa City VA Health Care System: This system includes the Iowa City VA Medical Center, 11 outpatient clinics in the state of Iowa, and three outpatient clinics in the state of Illinois. There are two clinics located in Iowa and part of another state-based VA system. One outpatient clinic is part of the VA Nebraska-Western Iowa Health Care System and is located in Shenandoah, Iowa. Another outpatient clinic is part of the VA Sioux Falls Health Care System and is located in Spirit Lake, Iowa.
- Iowa VA Dental Health Care System: In Iowa, the VA has two dental clinics: one located at the Des Moines VA Medical Center and one located at the Iowa City VA Medical Center. In September 2023, the wait for eligible veterans to receive dental care services at the Des Moines VA Medical Center was 29 days for new patients and 11 days for established patients. For the Iowa City VA Center, the wait time was 49 days for new patients and 27 days for established patients.
- In June of 2023, the VHA announced the construction of a 12,000-square foot facility as part of the Veterans Administration's Community-Based Outpatient Clinic System. Its mission will be to provide primary medical and specialty care to veterans living in central Iowa. The facility is expected to be completed in summer 2024.[16]

As of March 2023, there were 184,025 veterans enrolled in the VA healthcare system in Iowa. This number includes veterans who are enrolled in the VA's health insurance program, known as the Veterans Health Administration health plan, as

well as those who receive care through the VA's community-based outpatient clinics (CBOCs). There is no publicly available information on the number of veterans who are enrolled in the VA by disability status per state. However, according to the VA, as of September 2020, there were approximately 680,000 veterans in the United States enrolled in the VA healthcare system and designated as 100% disabled.[17] This means that roughly 7.1% of all veterans enrolled in the VA healthcare system are designated as 100% disabled. This measure is often used as a proxy for access to dental care, as most veterans who are not 100% disabled are ineligible for dental care coverage. Applying this percentage to the number of veterans enrolled in the VA healthcare system in Iowa, an estimated 13,764 veterans in Iowa who are enrolled in the VA healthcare system and designated as 100% disabled. This can serve as an approximation of veterans who are eligible for dental care through the VA, although it is likely an underrepresentation.

**Figure 2: VISN 23 — Iowa Locations**



## *Community Health Centers*

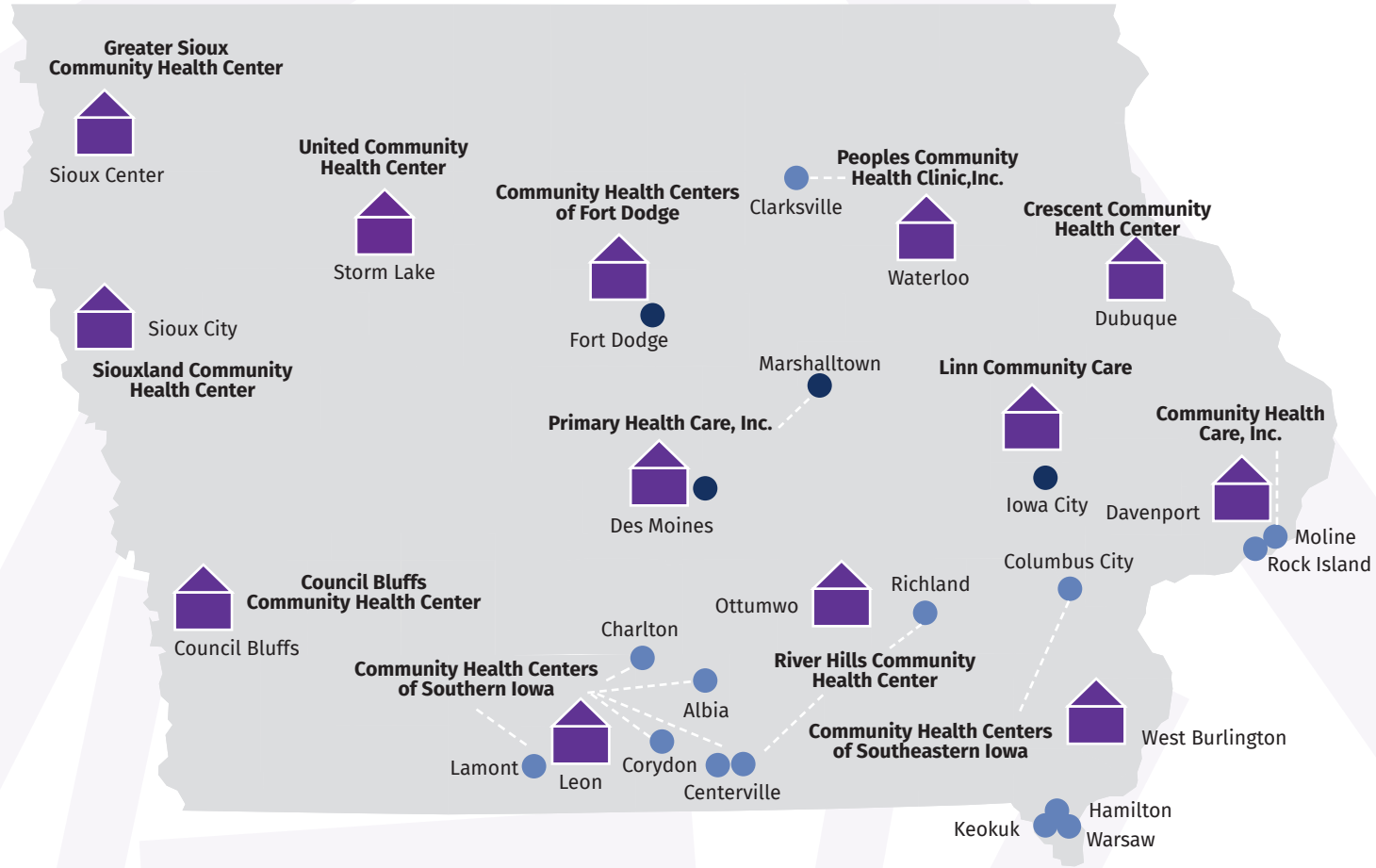
Community health centers offer medical and dental services at reduced or income-based fees for veterans. There are currently 14 federally qualified health centers in the state of Iowa, each of which offers dental services. See Table 3.

**Table 3: Community Health Center Names, Locations, and Percentage of Veteran Patients per Location**

| Health Center Name | City | Veterans % | Patients Received Oral Exam % |
|---|---|---|---|
| Proteus Employment Opportunities, Inc. | Des Moines | #N/A | #N/A |
| Community Health Centers of Southern Iowa, Inc. | Leon | 3.4% | 14.08% |
| Cresent Community Health Center | Dubuque | 2.6% | 39.65% |
| All Care Health Center | Council Bluffs | 2.2% | 15.47% |
| Community Health Centers of Southeastern Iowa, Inc. | West Burlington | 2.1% | 35.89% |
| Community Health Center of Fort Dodge, Inc. | Fort Dodge | 2.0% | 29.70% |
| River Hills Community Health Center, Inc. | Ottumwa | 1.9% | 36.48% |
| People's Community Health Clinic, Inc. | Waterloo | 1.4% | 19.20% |
| Siouxland Community Health Center | Sioux City | 1.2% | 21.40% |
| Primary Health Care, Inc. | Urbandale | 1.1% | 19.43% |
| Community Health Care, Inc. | Davenport | 0.9% | 25.51% |
| Eastern Iowa Health Center | Cedar Rapids | 0.8% | 27.81% |
| Greater Sioux Community Health Center | Sioux Center | 0.5% | 49.30% |
| United Community Health Center | Storm Lake | 0.5% | 30.60% |

Data on these health centers are limited by the data collection methodology of the Uniform Data Survey, a requirement of all federally qualified health centers to report certain statistics to the Health Resources and Services Administration. While some insights can be gleaned, such as percentage of veteran patients per location (see Figure 3), data on the number of veterans receiving dental examinations from each health center are not publicly available.

**Figure 3: Federally Qualified Health Centers: Impact of the ACA and Health System Change on the Iowa Safety Network by Peter Domiano**



## *Additional Dental Resources for Iowa Veterans*

**Iowa Veterans Trust Fund:** The Iowa Veterans Commission accepts applications and distributes money to qualifying veterans for dental care using the Iowa Veterans Trust Fund.

**The Iowa Veterans Home:** The Iowa Veterans Home offers long-term care for honorably discharged veterans and their spouses. The residents of this facility receive dental care at no additional cost through contracted dental providers.

### Iowa Veteran Dental Insurance and Program Resources

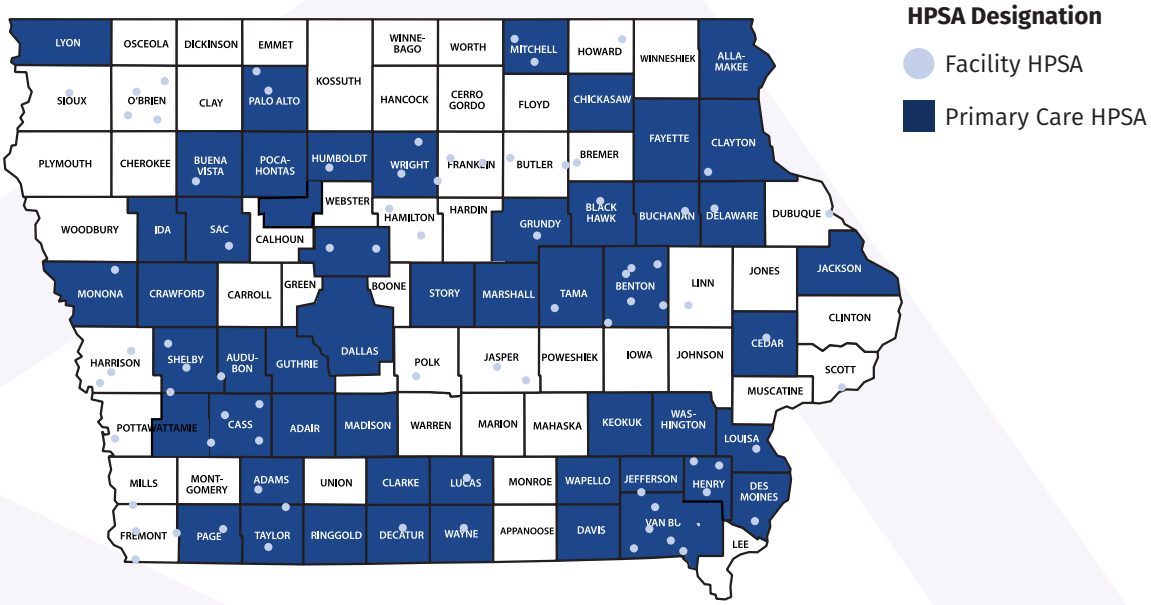
- **VA Dental Insurance Plan** offers dental insurance for purchase through the VA.
- **The Everyone for Veterans Program** offers free dental services for honorably discharged veterans who completed one enlistment period and are experiencing financial hardship but are less than 100% disabled.
- **Donated Dental Services/Dental Lifeline Network** provides free dental care to medically compromised people through a network of *pro bono* dental providers. These services are coordinated through a state manager and many disabled veterans are eligible.

## *VA and Non-VA Healthcare Workforce*

There are 7,737 physicians in Iowa (242.31 per 100,000 residents) and 36,899 registered nurses (1,171.39 per 100,000 residents).[17] In total, there are roughly 202,000 dentists in the United States. Iowa has a total of 1,640 dentists, approximately 0.8% of all U.S. dentists, and has a dentist-to-population ratio of 51.2 per 100,000 residents compared to 60.8 per 100,000 residents nationwide. Most dentists (89.7%) in Iowa are white; 62.6% are males (similar to the nationwide figure of 62.2% nationwide).[19] As of 2022, Iowa had 1,986 dental hygienists (63.05 per 100,000 residents).[17]

In 2023, three Iowa counties (Palo Alto County, Ringgold County, and Cherokee County) were designated as geographic HPSAs. In these areas, there was a shortage of dental services for the entire population residing in those counties. Another 45 counties in the state were considered to be population HPSAs. In those counties, a subset of the county population experienced a shortage of dental services, often based on income status.

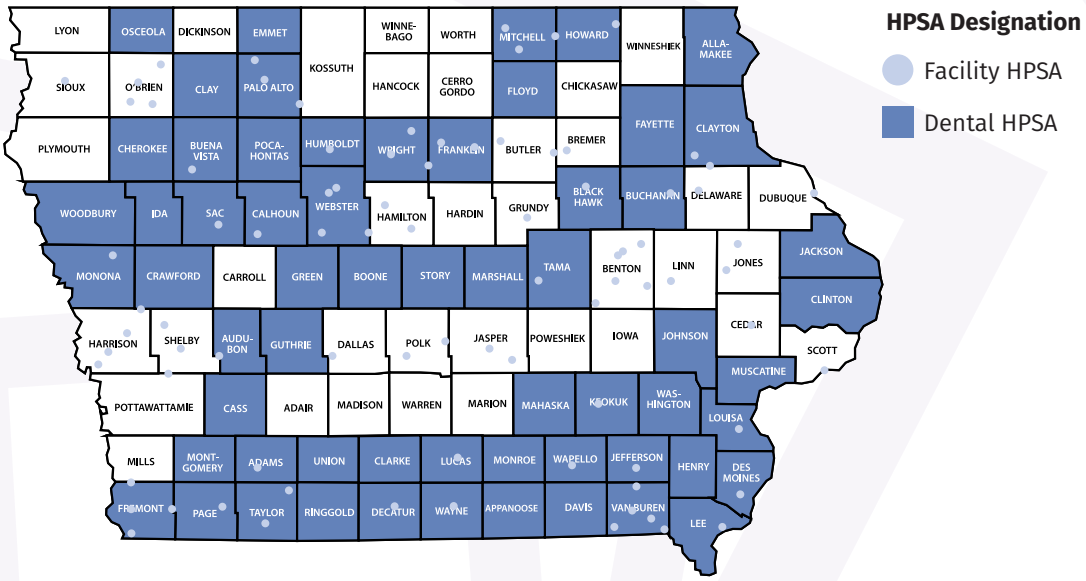
## Figure 4: Iowa Federal Primary Health Care Shortage Designations




This map is a snapshot and should not be used for the determination or approval of programs requiring a shortage designation. The official site for determination of shortages can be found here.

Created by: Iowa Department of Public Health, Bureau of Policy and Workforce Services. Source: Health Resources and Services Administration Data Warehouse. Created: December 31, 2019

## Figure 5: Iowa Federal Dental Health Care Shortage Designations




This map is a snapshot and should not be used for the determination or approval of programs requiring a shortage designation. The official site for determination of shortages can be found here.

Created by: Iowa Department of Public Health, Bureau of Policy and Workforce Services. Source: Health Resources and Services Administration Data Warehouse, accessed 1/30/2024. Updated by: American Institute of Dental Public Health.

## Insurance Landscape in Iowa

### *Veterans Affairs*

The VA serves as both a benefit system and care delivery access point. As of March 2023, there were 184,025 veterans enrolled in the VA healthcare system in Iowa. This number includes veterans enrolled in the VA health insurance program, as well as veterans who receive care through the VA's community-based outpatient clinics.

### *Medicaid*

Following the passage of the Affordable Care Act, Iowa expanded Medicaid coverage, including dental coverage through the Dental Wellness Plan. Nationally, Medicaid expansion states increased Medicaid coverage for working-age veterans by nearly a third. This change facilitated access to health insurance for more veterans in Iowa, especially those with complex medical conditions.[18]

According to the most recent data, approximately 8,800 working-age veterans are enrolled in the Iowa Medicaid program, with approximately 3,000 working-age veterans left uninsured.[18] Out of nearly 570,000 Iowa Medicaid enrollees, about 1.5% are veterans.[19]

While federal guidelines mandate the provision of certain services through Medicaid, including inpatient and outpatient services and prescription medications, it is up to states to offer dental benefits for adults. Those benefits vary in levels: no dental services, emergency-only care (pain relief in specific emergency situations), limited services (a restricted number of diagnostic, preventive, and restorative procedures with a $1,000 per-person annual expenditure maximum), and comprehensive care (extensive mix of services with a minimum $1,000 per-person annual cap).[20]

Iowa has a comprehensive Medicaid dental benefit. Veterans and other adult Iowans under age 65 must meet eligibility criteria, including an income level no higher than 133% of the federal poverty line.[21] In 2023, this income maximum was established at $14,580 for an individual and $30,000 for a family of four.[22]

Eligible individuals can choose from two dental carriers, MCNA Dental or Delta Dental, which offer the same benefits but have individual provider networks.[23] Veterans and other qualifying Iowans can access oral healthcare from a provider who accepts Medicaid insurance. Services include preventive care, gum treatment, fillings, root canals, extractions, crowns, and dentures. Total annual Medicaid dental expenditures in Iowa totaled nearly $105 million, with a cost of $13.85 per member per month with traditional Medicaid.

### *Medicare*

Publicly available data specific to the number of Iowa veterans enrolled in Medicare could not be sourced at the time of publication. However, Medicare is a potential supplement for older veterans who need dental care and are not eligible for care through the VA. Veterans older than age 65 who qualify for TRICARE also have the option to enroll in the separate system of Medicare. For enrollees in both programs, TRICARE functions similarly to a supplemental plan to reduce or fully cover out-of-pocket costs. Dental benefits are accessed through the Medicare Advantage program and incur out-of-pocket costs.

Nationally, nearly six in ten Medicare enrollees are enrolled in traditional Medicare, which does not include dental coverage. In Iowa, eight in ten (approximately 635,000 individuals) are enrolled in traditional Medicare, meaning that only two in ten older adults in the state may be eligible for

dental benefits through Medicare Advantage. Even though nearly all Medicare Advantage plans offer dental coverage, there are no established minimum requirements or coverage. Ultimately, individuals receiving their dental coverage through Medicare Advantage may still struggle to access and afford dental services.

### *Private Insurance and Out-of-Pocket Costs*

Nationally, veterans pay 65% more in out-of-pocket costs for dental care compared with nonveterans, and that percentage is even higher among veterans residing in rural areas. There are no representative data available on how many veterans use private insurance, such as employer-sponsored insurance or Health Insurance Marketplace plans, for dental care.

## Key Takeaways

An overview of Iowa healthcare access and care delivery

1. There are many dental healthcare access points in Iowa for veterans; however, they are primarily located in urban areas.
2. Dental care coverage for many Iowa veterans is limited to Medicaid, VA, and charitable programs, creating potential financial barriers for veterans who are underinsured or do not have employer-paid dental coverage.
3. The full scope of veteran access within the available infrastructure is difficult to determine given the limited data and the lack of veteran status indicators collected within some healthcare systems.

# SECTION TWO:
# THE ORAL HEALTH AND WELL-BEING OF IOWA VETERANS

**Offers an extensive analysis of veteran oral health at the national, state, and county levels. Moreover, this section provides key insights for dental health professional shortage areas in Iowa, as well as dental visits, edentulism (tooth loss), and dental emergency room visits observed in Iowa.**

## About This Section

Limited data are available for assessing veteran oral health nationally, and data are even more limited when assessing veteran oral health at the state, local, and community level. Data from this section were largely comprised from analysis of National Health and Nutrition Examination Survey (NHANES) and the Behavioral Risk Factor Surveillance System (BRFSS), internal surveys disseminated by AIDPH, and the State Emergency Department Database (SEDD). These data were analyzed to understand differences in veteran oral health related to age, income, rurality, and other demographic variables. You can learn more about these datasets in the appendices of this report. The data presented here are from original analysis conducted by The American Institute of Dental Public Health unless cited otherwise.

### What Does Veteran Oral Health Look Like Nationally?

NHANES analyses indicated over half of U.S. veterans (56%) report active and treated dental caries (tooth decay), a significantly higher proportion than nonveterans (37%).[24] More veterans than nonveterans (42% vs. 27%) also report experiencing periodontal disease, defined as gum problems or bone loss around the teeth. Oral health disparities are also observed across dental care utilization, risk of tooth loss, and edentulism. According to the most recent BRFSS data, 61.2% of veterans and 68.1% of nonveterans have had a dental visit within the past year. Half of Iowan veterans (52.3%) are at risk of experiencing tooth loss compared with 37.1% of nonveterans. Nearly twice as many (9.5%) Iowa veterans are completely edentulous (all teeth were extracted) compared with 4.4% of the Iowan adult population.

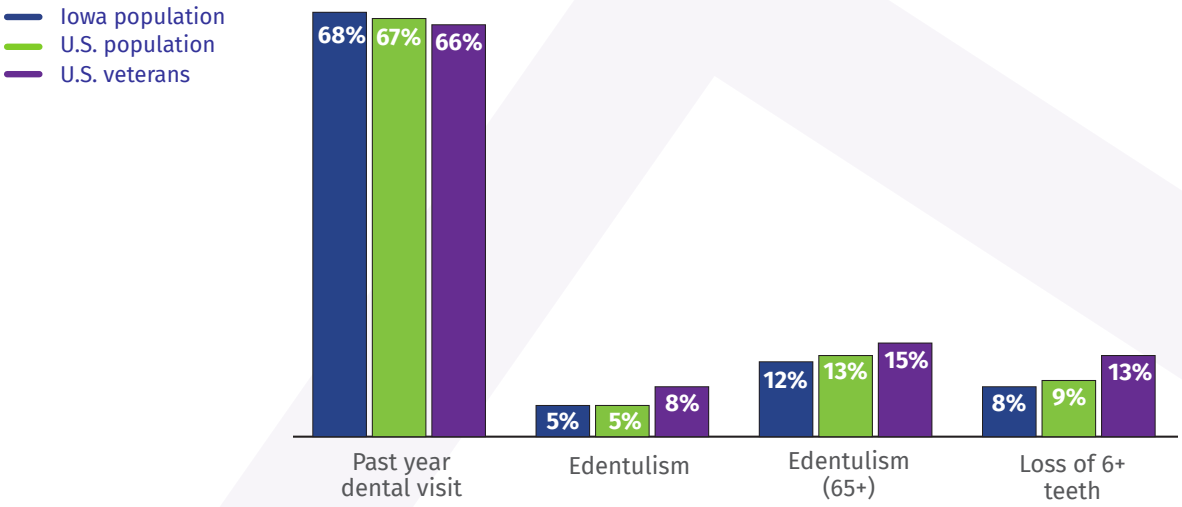
In 2021, 11.6% of all veterans were unable to visit a dentist despite having a dental need.[24] The top five reasons for not seeing a dentist were: inconvenient clinic hours (13%); being too busy (10%); expecting the problem to go away (10%); receiving a second opinion recommending against doing a dental procedure (7%); and not having insurance coverage for a particular procedure (7%). In the National Survey of Veterans, 41% of veterans described their oral health as “fair” or “poor,” and these veterans were more likely to report having a self-identified disability than veterans with better self-reported oral health. More than half (56%) of veterans had seen a dentist in the past 12 months, with the majority of those individuals paying out of pocket or through other payment sources, such as employer-based dental insurance.

## Comparing Iowa Veterans to All Americans, Iowans, and All Veterans

Data related to the oral health of Iowa veterans are limited; however, these limited data can be compared to state and national population indicators to attain deeper insight. This comparison indicates that Iowans have slightly better oral health outcomes than the national population.

BRFSS data indicated 68.1% of Iowan adults age 18+ had a dental visit in the last year, compared to 66.7% of the U.S. population. Iowa and U.S. rates of edentulism (complete tooth loss related to tooth decay or gum disease) were similar, at 4.9% and 4.8% respectively. Edentulism among those aged 65+ is slightly lower in Iowa than in the U.S. overall, at 11.9% and 13.4% respectively. Iowans had a slightly lower rate of loss of 6+ teeth among adults aged 18+, at 8.4% compared to the national average of 8.8%. See Figure 6.

**Figure 6: Oral Health Indicator Comparisons: Iowa Population, U.S. Population, and U.S. Veteran Population**




BRFSS analyses revealed approximately 61.5% of Iowa veterans had seen a dentist in the past year compared to 66.3% of U.S. veterans. In the nonveteran population, a greater proportion of Iowans had seen a dentist in the last year (68.8%) compared to the U.S. nonveteran population (64.6%). A slightly larger proportion of Iowa veterans were missing all their teeth (9.52%) compared to U.S. veterans (8.2%), and a slightly smaller proportion of Iowa veterans were missing none of their teeth (47.7%) compared to U.S. veterans (49.6%). See Table 8 in Appendix 4.

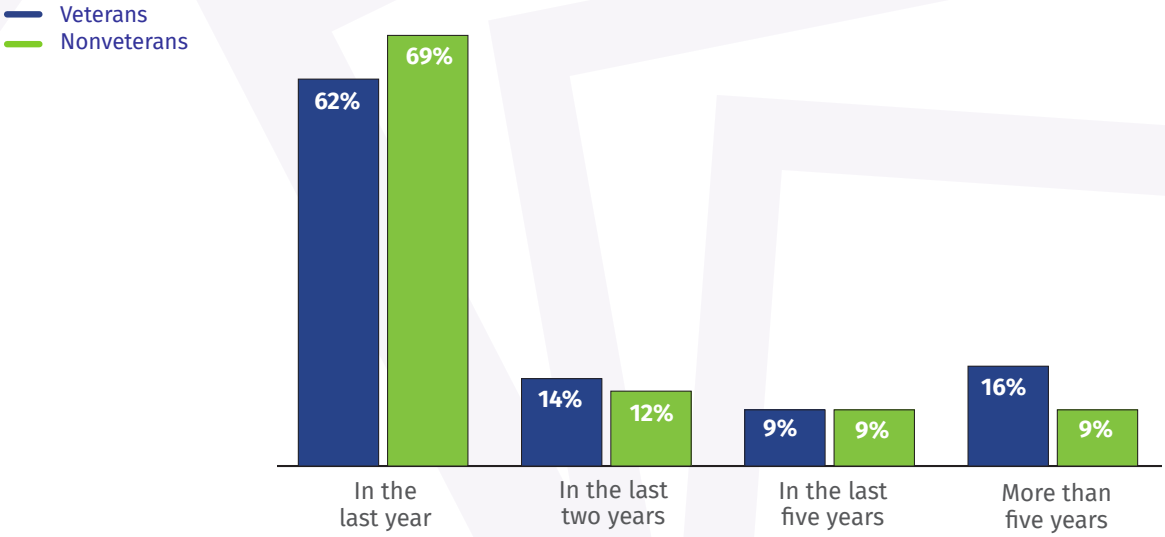
## Iowa Veterans and Oral Health

### *Iowa Veterans Have Poorer Access and Utilization Than Nonveterans*

While fewer Iowa veterans have visited a dentist in the past year, they are almost twice as likely to have gone more than five years without seeing a dentist (15.7%) compared to Iowa nonveterans (9.2%). These differences are statistically significant. See Figure 7.

Similarly, working-age veterans (those between 18 and 64 years of age) are less likely to have seen

**Figure 7: Oral Health Care Utilization by Years of Iowa Veteran and Nonveteran Populations**



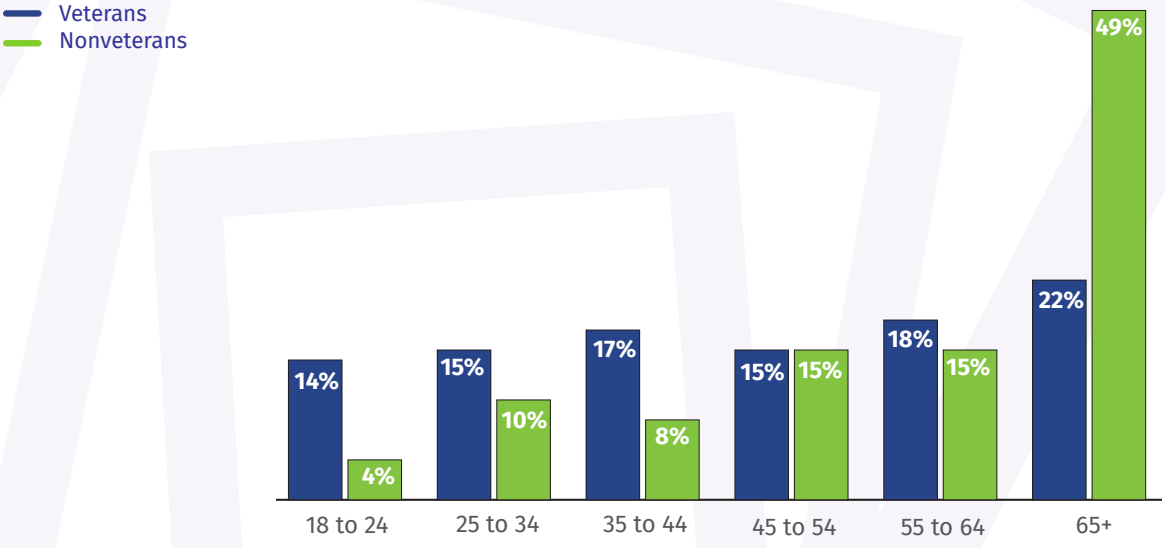
a dentist in the past year compared to working-age nonveterans, another statistically significant difference. Veterans aged 35 to 44 were half as likely to have seen a dentist in the last year compared to nonveterans. The largest gap was nonveterans aged 18 to 24 compared to veterans in that age category, with nearly five times as many nonveterans having accessed care in the past year compared to veterans. Interestingly, the disparity between veterans and nonveterans was reversed in the over 65 age group, with veterans having been more than twice as likely to visit a dentist in the last year compared to nonveterans. The alarming lack of dental care access and use among working-age veterans is particularly concerning given the low investment in preventive care, which negatively affects oral health outcomes, as evidenced in the next section. See Figure 8.

Unsurprisingly, income was a strong indicator of dental care access for veterans; veterans in higher income categories were more likely to have visited a dentist in the last year than those in lower income categories. In most income categories, nonveterans had more dental visits in the last year, with the exception of veterans making $25,000-$50,000 per year. Trends by education and rurality were not statistically significant; however, these analyses indicated that veterans were marginally less likely to have visited a dentist in the last year if they lived in a rural area or did not graduate from college. Details of the full analysis can be found in Table 6 in Appendix 4.

## *Iowa Veterans Have Poorer Oral Health Outcomes Than Nonveterans*

Approximately half of Iowan veterans (52.3%) are at risk of experiencing tooth loss, compared with 37.1% of nonveterans. Nearly one in ten Iowa veterans (9.5%) are completely edentulous, compared with 4.4% of the Iowan adult population. See Figure 9. Generally, rural veterans and nonveterans in Iowa experience poor oral health evidenced by some amount of natural tooth loss; however, Iowa veterans in rural areas are less likely to have all of their natural teeth and are more likely to be completely edentulous. Overall, veterans experience worse oral health outcomes than nonveterans by almost all measures, including edentulism, which is a profound marker of poor oral health.

**Figure 8: Oral Health Care Utilization by Age of Iowa Veteran and Nonveteran Populations**



## *Rural and Nonrural Iowa Veterans Face Challenges to Receiving Dental Care*

Over 80% of Iowa counties (82 out of 99) are designated as Dental Health Professional Shortage Areas (DHPSAs), and five counties have subregions within them considered DHPSAs. Veterans are distributed evenly between rural and urban counties, comprising 9.2% of rural populations and 9.0% of urban populations. Oral health indicators show disparities between rural and nonrural veterans related to access and outcomes. Analyses revealed rural veterans are less likely to have seen a dentist in the past year (57.9%) compared to urban veterans (62.8%). Nearly one in five rural veterans (18.1%) have not visited a dentist in the last five years.

These access indicators parallel the poor oral health outcomes experienced by rural veterans. Rural veterans in Iowa have an edentulism rate of 11.6%, compared to 8.5% of urban veterans. See Figure 10. More than one in ten rural veterans have lost all their natural teeth.

## *Dental Related Emergency Department Visits*

Nationally, it's estimated that over 1.1 million veterans spend a total of $1.7 billion on out-of-pocket dental care costs — costs that could potentially be averted through access to routine dental care.[25, 26] Veterans report visiting the emergency department (ED) at higher rates than nonveterans for dental problems (6% compared with the national average of 4%), an alarming manifestation of inadequate dental care access for veterans.

While there are no data specific to veterans in Iowa regarding emergency department use, data for Iowa in general shows improvements in addressing high costs associated with ED visits. In 2012, the cost of dental care in the emergency department setting in Iowa was $8.4 million.[27] Since 2013, Iowa has experienced nearly a 50% reduction in ED visits for dental problems. In 2022, there were 8,852 visits to the ED for dental care, with the highest rates observed among individuals ages 15-34 (42.73 visits per 10,000).[28]

National estimates indicate that the average cost of a dental emergency room visit is $1,520, and services there are usually limited to prescriptions for antibiotics and pain medications.[29] Extrapolating these data to the 8,852 visits in Iowa, an estimated $13,455,040 was spent using emergency departments for dental care in Iowa during 2022 — a number that has been increasing steadily since 2020. There were 7,770 visits in 2020, 8,225 visits in 2021, and 8,852 visits in 2022.[28]

**Figure 9: Percentage of Tooth Loss in Veteran and Non-Veteran Populations**

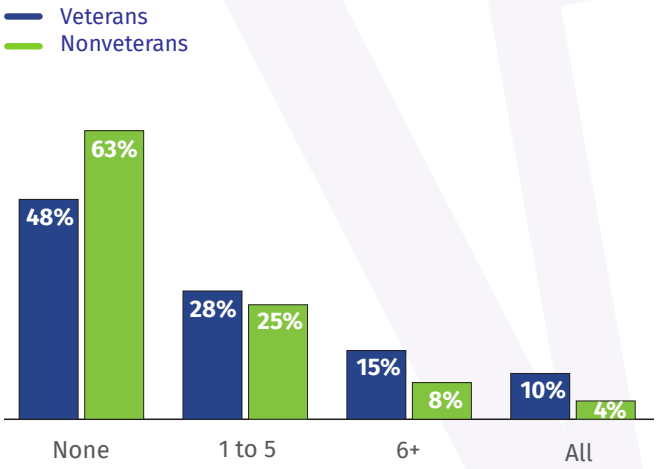
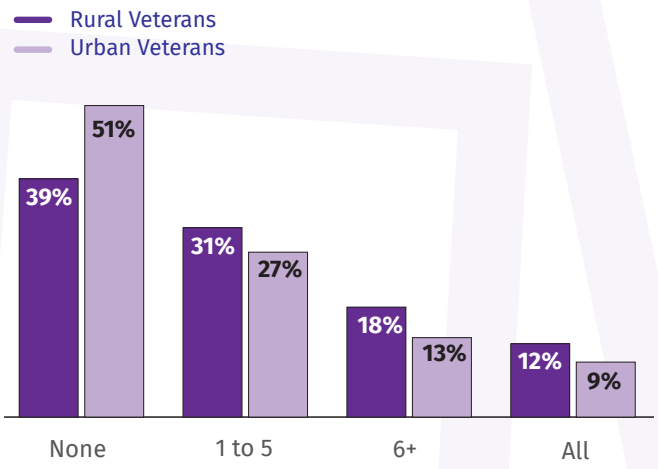



**Figure 10: Percentage of Tooth Loss in Rural and Urban Veteran Populations**



# THE ORAL HEALTH AND WELL-BEING OF IOWA VETERANS

## Key Takeaways

The oral health and well-being of Iowa veterans

1. Most oral health indicators show that Iowa veterans have poorer oral health outcomes
2. Indicators such as income, education, and age exacerbate those disparities; however, rurality is the largest driver of poor oral health among veterans.
3. Some veterans visit a dentist at similar frequency to nonveterans; however, the large disparities in outcomes such as edentulism suggest that optimal oral health is not being achieved through those visits.

# SECTION THREE:
# OVERALL HEALTH FOR IOWA VETERANS

**Delivers a comprehensive overview of the impact of chronic inflammatory diseases on the Iowa veteran population. Additionally, it underscores the financial burden these diseases place on State and VA expenditures, as well as out-of-pocket expenses for veterans.**

## How is Physical Health Connected to Oral Health?

The mouth is the conduit to the rest of the body and can either facilitate or inhibit overall health through the oral-systemic connection.[30] The oral–systemic connection underscores the bacterial and nutritional process that either mitigates or exacerbates inflammation in the body — inflammation that often manifests as periodontal (gum) issues in the mouth. This inflammation process has been linked to cardiovascular diseases, Alzheimer's disease and dementia, obesity, diabetes, metabolic disorders, rheumatoid arthritis, and several cancers. The bidirectional nature of chronic inflammation means that unmitigated chronic diseases can increase inflammation just like unmitigated periodontal disease.

The combination of diabetes and cardiovascular diseases significantly affects the health and overall well-being of veterans. These conditions lead to a higher incidence of other co-morbidities, including high blood pressure, nerve damage, and kidney complications. Furthermore, veterans with diabetes and heart disease tend to have lower quality of life and reduced physical functioning compared to veterans without these conditions.[31]

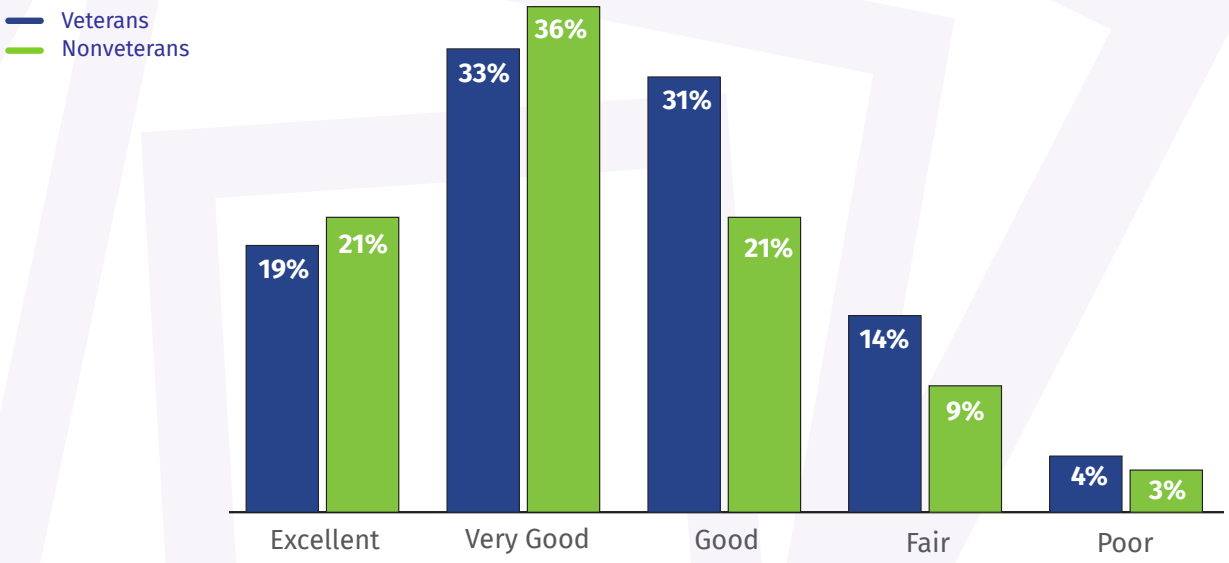
Compared to the national census of 9,116,200 veterans, 98,809, or 1.08%, are enrolled in the Iowa Veteran Affairs healthcare system. Among these Iowa veterans, more than 71.7% (70,860) are being treated for one or more systemic diseases, including diabetes, cardiovascular diseases, and mental health issues. The burden of treatment is often overwhelming and costly in the VA healthcare system.[32]

The most effective way to treat these chronic diseases and oral health conditions is through an integrated approach that considers physical and overall healthcare delivery alongside oral healthcare. This section reviews data on chronic disease conditions and physical health indicators that are linked to poor oral health for veterans in Iowa. Considering and treating oral health in an integrated manner reduces healthcare costs and increases positive health outcomes.

### Physical Health and Well-being of Iowa Veterans

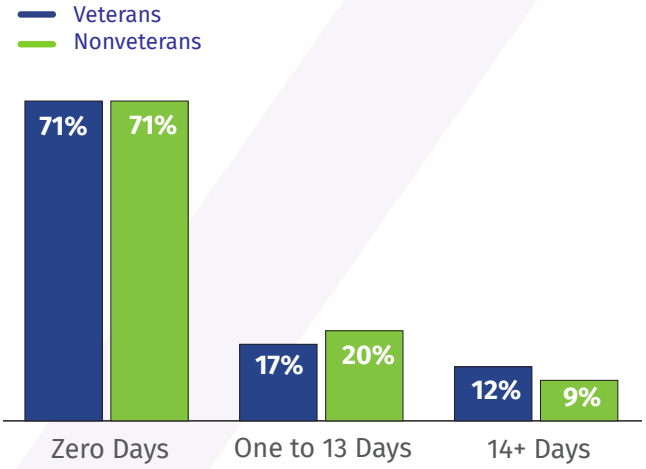
In general, veterans have relatively poorer physical health indicators than nonveterans in Iowa. BRFSS data indicate that Iowa veterans are more likely to self-report their general health as being good, fair, or poor as opposed to very good or excellent (48.1%) compared to nonveterans (33.6%). See Figure 11.

**Figure 11: Self-Reported Physical Health Ratings by Iowa Veteran Status**



This is slightly higher than the national average of veterans (44.7%) who reported their oral health as good, fair, or poor. Iowa veterans were also more likely to report multiple days a month with poor physical health: more than one in ten Iowa veterans experienced 14+ days per month of poor physical health. See Figure 12.

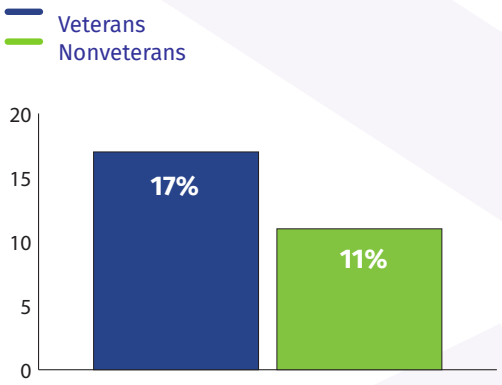
**Figure 12: Self-Reported Number of Days per Month with Poor Physical Health**




## Iowa Veterans Living With Diabetes

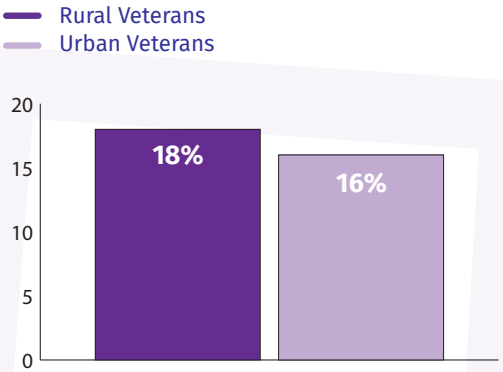
For veterans, managing diabetes and maintaining good oral hygiene are key aspects of overall health and well-being. Both veterans and nonveterans can enhance their general well-being and lessen the burden of this chronic condition by placing a high priority on diabetes prevention and education along with access to high-quality healthcare services. Among veterans and nonveterans, the prevalence of diabetes is a key physical health indicator – and an important indication of dental disease risk. Veterans have a greater prevalence of diabetes, necessitating personalized healthcare treatments, diabetes prevention measures, and comprehensive care programs that explicitly address the special problems faced by this population. Generally, the prevalence of diabetes is higher for veterans (17.1%) compared to nonveterans (11.3%) according to [data source]. See Table 5 in Appendix 4 and Figure 13.

**Figure 13: Prevalence of Diabetes by Iowa Veteran Status**




Veterans in rural Iowa experience a diabetes prevalence rate of 17.6%, which is higher than the state's overall incidence of 16.1%. In comparison, the national population's nonveteran rate is 12.1%. With a frequency of 9.0%, the percentages are significantly lower for working-age people (< 65) who are not veterans. These figures demonstrate the elevated risk of diabetes for veterans, particularly those who live in rural regions. See Figure 14.

**Figure 14: Prevalence of Diabetes by Rural and Urban Status**



## Iowa Veterans Living With Heart Disease

Heart disease prevalence among veterans in Iowa is also a major cause for concern. In Iowa, heart disease impacts 16% of all veterans and 1% of working age veterans. Additionally, veterans in rural Iowa experience heart disease at an increase rate (19%) compared to urban veterans (15%).

Veterans are disproportionately burdened by heart disease, as the national average for heart disease among all U.S. adults is 6.5%. This difference highlights the higher risk of coronary heart disease or myocardial infarction (heart attack) that Iowa veterans suffer as compared to nonveterans.

Nationally, veterans had a reported angina/coronary artery disease rate of 9.3% compared with 3.5% among nonveterans. In Iowa, 11.5% of veterans endorsed these specific cardiac conditions, compared with 3.9% of nonveterans. These results highlight the critical need for targeted healthcare initiatives to resolve this problem. Positive efforts can be made to enhance heart health outcomes among veterans in Iowa by implementing focused preventive measures, making sure healthcare services are accessible, and ultimately boosting their general well-being.

## The Cost of Poor Health for Veterans in Iowa

Data regarding out-of-pocket healthcare costs for veterans are generally limited to survey and self-report data. The Medical Expenditure Panel Survey (MEPS), the largest national dataset on medical spending, indicates that veterans in the Midwest, a region that includes Iowa, are paying higher out-of-pocket costs compared to nonveterans. More specifically, annual dental expenditures for Midwestern veterans are $494 annually compared to $373 annually for nonveterans. This trend continues for self-pay amounts with Midwestern veterans pay higher out-of-pocket costs ($237) compared to nonveterans ($169). These results underscore financial drivers delaying dental care due to cost compared to nonveterans and the financial burden experienced by veterans in the Midwest.

- Annual dental expenditures: $494 vs. $373
- Dental self-pay amount: $237 vs $169
- Could not afford dental care: 10% vs. 9%
- Delayed dental care due to cost: 16% vs. 13%


16% Veterans 13% Non-Veterans

**Delayed Dental Care Due to Cost**

**Dental Self-Pay**

**$237** Veterans **$169** Non-Veterans

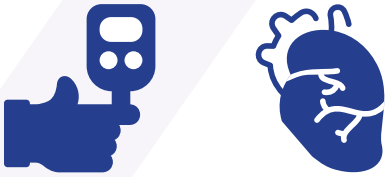
**10%**

**Could Not Afford Dental Care**

There are significant economic implications for untreated oral disease in the management of chronic medical conditions, including diabetes and heart disease. This established connection prompted Cigna Health, a national private insurance company to create a methodology evaluating medical cost savings associated with comprehensive dental care coverage for people with diabetes and heart disease.[35] These analyses

indicated people with diabetes receiving dental care, the annual medical savings is $1,687. For those with heart disease, $2,101 is saved annually through dental care.

In 2020, 16.7% of Iowa veterans (32,275 individuals) received a diagnosis of diabetes. Applying these cost savings estimates among this population, approximately $55 million can be saved annually by providing dental care to Iowa veterans with diabetes. When evaluating the 16.1% of Iowa veterans (31,212 veterans) with heart disease, approximately $66 million can be saved annually by providing dental care.



**$55M $66M**

## The VHA Can Save Millions By Providing Dental Care To Iowa Veterans With Diabetes and Heart Disease.

### *Additional Considerations for Financial Implications*

Medicaid does offer coverage to veterans who meet the standard criteria and are not enrolled in the VA programs due to ineligibility. Medicaid in Iowa provides an extensive range of healthcare services for low-income veterans who experience limited access to VA healthcare, including primary care, behavioral health, prescription drugs, and long-term care. According to the Kaiser Family Foundation, in 2018, 2000 Iowa veterans were enrolled in Medicaid and not enrolled in VA healthcare.[18]

The cost of medical care and long-term treatment for service-related injuries, and the growing number of veterans seeking VA healthcare, create financial challenges for the system. The aging veteran population requires more extensive and costly healthcare services, including chronic disease management and long-term care. According to the National Council on Aging, approximately 92% of older adults have at least one chronic disease, and 77% have at least two.[36] Similarly, the costs associated with treating service-related injuries and disabilities, such as post-traumatic stress disorder (PTSD) or other conditions requiring long-term and specialized care, add to ongoing healthcare expenses. These costs can be more efficiently managed through an integrated system.[37]

### Key Takeaways

The oral health and well-being of Iowa veterans

1. Iowa veterans experience considerably higher rates of inflammatory diseases compared to nonveterans.
2. Veterans living in rural communities have a greater risk of experiencing heart disease and diabetes compared to veterans living in urban communities.
3. Overall, veterans report that their general health status is significantly poorer compared to nonveterans.
4. Providing effective dental care to veterans with heart disease and diabetes can save Iowa a combined $120 million annually.

# SECTION FOUR:
# STAKEHOLDER INTERVIEW THEMES AND TRENDS

**Highlights trends that emerged from interviews conducted with key Iowa stakeholders regarding the access to, use of, and potential barriers to oral healthcare faced by Iowa veterans. This section reports a compilation of interviewee responses, supported by direct quotes. Cost, transportation, and oral health literacy were recurrent barriers reported by stakeholders, particularly aging veterans living in rural communities. The interviews also provided valuable insight into effective policy solutions, calling for increased funding of the Iowa Trust Fund and Medicaid expansion.**

# STAKEHOLDER INTERVIEW THEMES AND TRENDS

## Methodology

Representatives from government, nonprofit, research, veteran, policy, clinical, and advocacy stakeholder groups were contacted with a request to participate in an anonymous, confidential interview regarding veteran oral health in Iowa. In semi-structured interviews, participants shared feedback on access, utilization, and barriers to veteran oral health in Iowa. Trends from interviews were analyzed qualitatively and are described in this section with interview quotes to add context. All identifying information from quotes has been removed prior to reporting.

## Theme 1: Access to Care

All stakeholders emphasized the lack of access to care veterans experience throughout Iowa. Many participants were confused about the care options available and all participants named cost as a primary barrier to accessing care. There are few services available, outside of donated or charitable care, to absorb the cost of care for veterans experiencing financial barriers. Donated Dental Services, Dental Lifeline Network, and pro bono services can support dental care needs; however, these services are inconsistent, can have wait lists, and ultimately cannot replace an infrastructure of veteran dental care.

> **"Affordability is key... cost [is an issue] for a lot of the veterans, really most of the veterans that we have worked with. It's been many many years since they've had dental care, predominantly due to cost. Cost is a big factor because they haven't been able to afford dental care. It goes years and years and years and then we end up in a situation where there's thousands and thousands of dollar's worth of work to get them into good oral system of health."**

Veterans living in rural areas was the most frequently cited population when discussing barriers to accessing care. Community members noted that older veterans living in rural areas experience intersecting barriers that complicate the process of sourcing, paying for, and utilizing dental services.

> **That's been a challenge for a lot of our veterans, particularly in the rural areas, but even here in [this] County.... We have really good quality providers here, but just to get that veteran to those additional places has been difficult sometimes. And the time frame that that takes as well is really difficult.**

## Theme 2: Policy Solutions

Effective policy solutions were discussed during interviews. The Iowa Trust Fund, a limited fund established through legislation to financially support healthcare for veterans, was mentioned by every participant as a policy that effectively fills gaps in financing dental care.

> **Access at that time was pretty good because [of] the trust fund... The hard thing for us at that time for several of my veterans is they just didn't meet the needs financially. They were falling in that category where I would say they're not at poverty level, but they're also just struggling to make ends meet. And so paying for dental services was at the very bottom of their priority list.**

All participants called for an expansion of this fund to support additional veterans given its success. Increasing funding levels and expanding eligibility criteria can improve access to care and oral health outcomes, and ultimately decrease veteran pain and cost of care through earlier intervention.

Medicaid expansion and higher reimbursements were consistently listed as potential policy facilitators. Increasing eligibility criteria, particularly for disabled veterans, improves access to care and decreases barriers associated with cost. However, many dentists struggle with accepting Medicaid patients due to low reimbursement rates and a red tape process that disincentivizes the use of that program. In a time where the oral health workforce is struggling nationally, low reimbursement rates compound access issues for underserved communities such as veterans.

> **But even those veterans that I know that fall into a category of Medicaid, receiving Medicaid, they can't access the services, and it's not just a payment issue. Medicaid isn't paying a reimbursement rate that works for a private dental practice that isn't willing to do a lot of donated services. But there just aren't enough dentists to even accept the Medicaid population.**

> **I think it all comes down to insurance and what's accepted and what's not. And due to our very low reimbursement rates for Medicaid, there are less and less just accepting new patients... trying to find a place for a new dental home for that population is extremely difficult. And our FQHCs are at capacity. Our dental clinic is 6 months or more out, and we're hearing the same thing. We have a number of free clinics here in the state too, and they're 6 to 12 months out too for anything. So we have people who are trying to utilize all those systems. It's just difficult.**

## Theme 3: Social Drivers of Disparity

Transportation was the most consistent social or environmental complication in getting veterans to care. Even for veterans who live in urban areas, sourcing transportation is challenging when they require physical support or caregiver accompaniment. If a veteran faces financial barriers to care and cannot find transportation, or if they live too far from a VA dental clinic or an FQHC, using a ride-share service is not feasible. Transportation often arises as the main determining factor for a veteran getting the care they need — even if there is a willing dentist offering pro bono services.

> **In Iowa, what would be great is better policy on transportation. I think that that could really help with access to care. There may be veterans in rural areas that could potentially afford care, say at an FQHC, or maybe there's a dentist 100 miles from them that would be willing to offer a discount because they're a veteran or provide some care at no cost, but they can't get there.**

Many interviewees emphasized oral health literacy and the lack of understanding of how oral health affects total health. Lack of oral health literacy is compounded by a fragmented system that is often difficult to navigate. This concern was connected to veterans living in rural areas and aging veterans who may be experiencing more health concerns or financial barriers, and may not understand the importance of finding oral health solutions.

# SECTION FIVE:
# CONCLUSIONS

**Summarizes conclusions of results generated from this report in plain language for each major area of analysis, including cost, overall health, and oral health.**

# CONCLUSIONS

## Access and Infrastructure

### Iowa veterans experience a fragmented care delivery system.

Dental care is available through the VA, FQHCs, private insurance, Medicaid/Medicare, and charitable offerings, but many of these are limited in options. This fragmented care delivery system, like many dental systems in the US, does not drive care integration or reduce cost for patients or providers. While many people are working to make the system easier to navigate and fill the gaps, it remains a systemic issue that requires a systemic solution.

### Iowa veterans need financial support and effective policy solutions to overcome systemic barriers to accessing care.

State stakeholders and quantitative data confirm the existence of a financial barrier to accessing care. The Iowa Trust Fund and Medicaid expansion have improved access to and utilization of dental healthcare for Iowa veterans, but limited eligibility criteria keep these policy solutions from reaching all veterans in need.

### The oral health workforce in Iowa is strained, compounding access to care for veterans.

While low reimbursement rates and decreases in the oral health workforce are not unique to Iowa or to the veteran population, this systemic issue affects the availability of workforce to address the complication that veterans face in accessing dental care. Stakeholders shared the overarching strain on the entire oral healthcare system in Iowa creates additional challenges in addressing the complex dental needs of veterans. This strain also reduces the capacity for effective patient and provider education.

### Rural veterans are among the highest-need population.

Veterans living in rural areas are more likely to be aging, disabled, and experiencing chronic health conditions that exacerbate poor oral health. When these high-risk populations also struggle with accessing transportation, or experiencing financial barriers, these complex care needs worsen. Even among the most experienced navigators, transportation remains a problem that is consistently unsolved.

## Oral Health and Well-Being

### Many Iowa veterans are experiencing poor oral health outcomes.

Compared to nonveterans, Iowa veterans have a higher disease burden, making care more costly and invasive. Many of these veterans receive medical care through the VA, but not dental care. In these cases, care coordination is less effective given the lack of integrated treatment planning.

### Rural veterans experience poorer oral health.

Iowa veterans living in rural areas are more likely to be edentulous and living with a chronic disease condition. In many cases, rural veterans are sicker, live in more poverty, and cannot access transportation to address their healthcare needs. Rural veterans should be among the highest priority when considering policy and programmatic solutions.

## Overall Health and the Oral-Systemic Connections

### Veterans in Iowa are experiencing higher chronic disease prevalence as a result of military service.

Compared to nonveterans, Iowa veterans have a higher chronic disease burden and poorer physical health outcomes; as with dental care, poor physical health makes care more costly and invasive. As noted above, many of these veterans receive medical care through the VA and dental care from another source In these cases, care coordination can be less effective given the lack of integrated treatment planning.

### Rural veterans are experiencing the most profound disparities.

Rural veterans experience higher rates of chronic disease conditions, poor mental health, cancer, and other indicators of physical health. Many of these health indicators are exacerbated by poor oral health, and vice versa. Geographic barriers to accessing care widen these gaps and compound oral health disparities.


## The Cost of Poor Oral and Overall Health

### Poor oral healthcare is costing Iowa millions of dollars.

Providing oral healthcare to Iowa veterans with diabetes could save an estimated $55 million, and an estimated $66 million for Iowa veterans with heart disease. Substantial cost savings and improved oral health outcomes can be actualized through integrated, whole-person healthcare that includes dental care.

### Emergency dental visits are increasing in Iowa.

While not specific to veterans, implications for increased emergency department visits and the resulting rising costs can be extended to Iowa veterans, particularly in rural areas. Improving consistent access to dental care for high-risk, high-cost populations like veterans in Iowa reduces expensive emergency room visits and treats the root cause of dental pain.

# SECTION SIX:
# STRATEGIC RECOMMENDATIONS

**Provides a detailed list of actionable, evidence-based strategic recommendations for key stakeholders to use to ignite systemic change for Iowa veterans.**

# STRATEGIC RECOMMENDATIONS

Strategic recommendations were developed for key stakeholders to provide actionable next steps using the data and conclusions compiled throughout this report. This report contains comprehensive data analyses with implications for coordinated action in many critical areas. If stakeholders work collaboratively to address these areas, systemic change is possible.

These recommendations were developed using the evidence base created in this report and are specific to Iowa stakeholders, although many of these recommendations are considered best practice in public health policy. Stakeholders should feel free to examine recommendations and extrapolate next steps, mold them into the most actionable path forward, and tailor them to the veterans they serve in their daily work.

## POLICY MAKERS AND GOVERNMENT AGENCIES

- **Fund and conduct a comprehensive clinical needs assessment for veterans living in Iowa.** Available data are very limited in providing a comprehensive overview of the oral health and well-being of veterans living in Iowa. Most available data are limited to self-reporting from surveillance systems. Capturing clinical outcomes, such as with methods used in the National Health and Nutrition Evaluation Survey (NHANES), is critical in filling data gaps. These needs assessments are expensive and require both adequate funding and staffing. Policy makers should consider ways to fund state health departments to work together in completing a clinical needs assessment, then implementing key findings to improve the oral health and well-being of veterans in Iowa.

- **Expand and strengthen the I-Smile program.** The I-Smile Silver program, a pilot program implemented in ten Iowa counties, serves as a navigation mechanism into dental care for older adults. This program was developed from the I-Smile pediatric program and holds promise as a replicable model both throughout the state of Iowa and nationally. A dedicated I-Smile Veterans program, or an expansion of the I-Smile Silver program, can help the many veterans lacking access or the resources to use dental care or find affordable oral health services.

- **Strengthen and expand the Iowa Veteran Trust Fund.** Every stakeholder interviewed for this report affirmed the importance of the Iowa Trust Fund and the gaps it fills in accessing dental services. Despite its value, many veterans who need help still do not meet eligibility requirements and therefore go without care. These veterans ultimately cost the system more through emergency department visits instead of accessing effective prevention. Policy makers should allocate more funding and expand eligibility criteria so more Iowa veterans can address their dental needs.

- **Expand Medicaid eligibility to include veterans, particularly high-risk, high-cost veterans.** Veterans who have no other form of dental coverage should receive coverage through the state Medicaid program. Iowa veterans who live in rural communities, have diabetes, or have heart disease are among the highest risk for emergency department visits for an urgent dental need that could have been avoided through prevention and routine access to care. Expanding a dental benefit through Medicaid reduces the likelihood of complex medical conditions increasing to critical levels due to poor oral health access. Policy makers can consider fiscally viable options such as a prevention-only benefit or copayments.

# STRATEGIC RECOMMENDATIONS

- **Incentivize providers by increasing Medicaid reimbursement rates.** Stakeholder interviews confirmed that the low provider reimbursement rates create a barrier for accepting Medicaid patients. Of those who can see veterans, some providers opt to offer pro bono care vs. billing Medicaid to avoid the heavy administrative process with a small payout. Improving rates for Medicaid-eligible veterans in Iowa may incentivize dental providers to support care for this underserved population.
- **Expand the VA Community Care Network.** The VA Community Care Network (CCN) is a payer model that expands the VA's reach to care for veterans in the private sector. Many clinicians and FQHCs are enrolled in the VA CCN, creating ample opportunity for expansion. Policy makers and state governments can help facilitate entry into this program or even financially incentivize providers to enroll in the VA CCN. The VA serves as a payor for eligible veterans to receive care, reducing the financial burden on states. Given that the VA has only two clinics providing dental services, VA CCN expansion can increase the use of VA dental benefits in rural areas where dental clinics are difficult to access.
- **Expand and fund telehealth and mobile dental resources in underserved areas.** Rural veterans are among the most underserved populations in Iowa. The inability to afford or source travel to dental care remains one of the most commonly indicated barriers. Leveraging both mobile dental program models and telehealth frameworks, and ensuring that funding supports those initiatives, can extend the current oral health workforce into these geographically underserved areas while effectively triaging care to the most affordable and efficient option.
- **Add veteran oral health data to the Iowa Public Health Tracking Portal.** Iowa has a fantastic data resource in the Public Health Tracking Portal. This is an easy and user-friendly database with which to evaluate many different populations and health indicators; however, this database does not publicly track oral health indicators related to veterans. An expansion through this existing resource can increase the use of evidence-based recommendations and solutions for Iowa veterans.
- **Include veteran metrics and interventions in the state oral health plan.** The state of Iowa maintains an oral health plan that outlines both disease burden and state-level interventions for improving the oral health and well-being of Iowans. Currently, no population recommendations include dedicated interventions for Iowa veterans. Aspects of this report can inform next steps in the Iowa state oral health plan during the next planning phase.

**Policy makers and state governments can help facilitate entry into the VA Community Care Network (VA CCN) program or even financially incentivize providers to enroll in the VA CCN. The VA serves as a payor for eligible veterans to receive care, reducing the financial burden on states. Given that the VA has only two clinics providing dental services, VA CCN expansion can increase the use of VA dental benefits in rural areas where dental clinics are difficult to access.**

# STRATEGIC RECOMMENDATIONS

## HEATHCARE PROVIDERS

- **Add veteran status to intake paperwork and ask every patient if they are a veteran.** Oral health clinicians, particularly those in private practice, should include questions about veteran status and any chronic disease conditions on intake paperwork. Knowing veteran status and risk factors (such as chronic disease conditions) up front sets clinicians up for a whole-person care experience. Asking the right questions, then using the information during a veteran's clinical visit, may lead to more accurate diagnoses and more effective, culturally responsive treatment plans. The right information can also help in coordinating care with other healthcare providers treating the patient for other conditions.
- **Train yourself and your colleagues on the unique needs of veterans.** Oral health clinicians in Iowa need to understand the importance of personalized care plans. Veterans often have unique healthcare needs, including those related to oral health, that stem from their service experience. Oral health clinicians should be trained to recognize these unique needs and adapt their care plans accordingly. This not only improves the quality of care but also builds trust between veterans and their healthcare providers.
- **Develop checklists and resource guides to facilitate clinical encounters.** To ensure consistency in assessing the care needs of veterans, keeping checklists that include culturally and clinically relevant questions chairside can support a more effective patient visit. Having a rubric for clinical encounters reduces the likelihood of missing important information during intake and can even account for more effective billing for services.
- **Invest in the Community Health Center infrastructure as a critical access point for veterans.** In Iowa, there are 14 federally qualified health centers positioned to provide integrated care, including dental care, to veterans. These FQHCs need to be adequately funded and staffed to meet the needs of all Iowans, but veterans in particular given the lack of VA clinics that provide dental services. Expanding and strengthening this clinical infrastructure in rural areas is urgently needed given the intersecting barriers of transportation, financial need, and poorer oral health outcomes.
- **Require training in veteran oral health through continuing education and professional development.** Make continuing education courses on veteran-specific oral health issues either a requirement or a strong suggestion for oral health clinicians in Iowa. Continuing education can equip oral health clinicians with the latest knowledge and best practices for treating veterans. Whether mandated or strongly recommended, these courses should cover the unique oral health challenges faced by veterans, such as higher rates of edentulism and chronic diseases, improving the standard of care provided.
- **Use trauma-informed care approaches during clinical encounters.** Iowa veterans experience disproportionate rates of PTSD, poor mental health days, depression, and anxiety. This makes self-care, including oral hygiene, challenging to maintain. Iowa veterans may also come to the oral health visit with dental pain, fear, or triggers. To mitigate those issues and set the veteran up for success between visits, oral health clinicians should practice trauma-informed approaches to care.

# STRATEGIC RECOMMENDATIONS

- **Interprofessional care teams should integrate treatment planning.** The high prevalence of chronic disease conditions and mental health concerns among Iowa veterans necessitates an integrated, whole-person approach to care delivery. Iowa veterans, especially those in rural areas, experience significant intersecting inequity that compounds poor oral health outcomes. Using a treatment model that prioritizes the oral-systemic healthcare path ensures a prevention-focused care plan that is both cost effective and comprehensive.

- **Leverage dental and dental hygiene schools for preventive care.** Using dental schools and dental hygiene schools as access points in referral networks for Iowa veterans to receive preventive care expands the care delivery network. Dental schools and dental hygiene schools can serve as valuable resources for veterans seeking affordable preventive care. These institutions can also collect data on the oral health of veterans, contributing to research and policy development. Leveraging these educational settings for care not only improves access but also provides valuable training for future oral healthcare providers in culturally responsive care for Iowa veterans.

## NONPROFITS, ASSOCIATIONS, ADVOCACY GROUPS

- **Advocate for VA dental eligibility expansion.** Approximately 85% of veterans are not eligible for dental services through the VA, resulting in inadequate access to VA clinics in Iowa. Iowa veterans struggle through a fragmented dental system with many left uninsured or with too many barriers to using dental insurance. As the largest integrated healthcare system in the nation, the VA is best positioned to support the complex healthcare needs of veterans in a holistic setting—and benefit from the cost savings of managing the connection between oral and systemic conditions. A VA expansion of eligibility reduces the burden of sourcing and financing care for Iowa veterans while ensuring culturally responsive care in an integrated environment.

- **Investigate a dental therapy model for licensure optimization.** Analyze the feasibility and benefits of implementing a dental therapy model in Iowa and ensure that all oral health clinicians are working at the top of their licensure. A dental therapy model can extend the reach of oral healthcare services, particularly in underserved areas in rural Iowa where the need among veterans is greatest. Ensuring that all clinicians are working at the top of their licensure can optimize the healthcare workforce, making services more efficient and accessible. Iowa veterans, especially those in rural areas, experience significant intersecting inequity that compounds poor oral health outcomes. Using a treatment model that prioritizes the oral-systemic healthcare path ensures a prevention-focused care plan that is both cost effective and comprehensive.

- **Consider forming a coalition of veteran oral health advocates.** A diverse set of stakeholders including clinicians, advocates, researchers, and veterans who are dedicated to collaboratively addressing oral healthcare disparities among veterans can stimulate change and rally local support. A coalition can serve as a powerful platform for bringing together diverse expertise to address

the unique healthcare needs of Iowa veterans. By focusing on a wide range of solutions, the coalition can develop and implement targeted strategies to address disparities in healthcare access and outcomes among Iowa veterans. This collaborative approach can lead to effective and sustainable solutions for improving the oral health of Iowa veterans.

- **Ensure veteran patient representation in dental associations and initiatives.** Veterans should have patient representation on advisory boards, health boards, dental boards, and other stakeholder groups to inform solutions from the community voice and perspective. Importantly, these community members should be patients who have lived experience with accessing dental care. Advocates should use suggestions from these community members directly to advance the oral health and well-being of Iowa veterans.
- **Develop community-driven educational campaigns to support oral health literacy.** Given the concerns Iowa stakeholders articulated regarding oral health education and health literacy, advocates, in partnership with community members, can create educational campaigns focused on the importance of oral health for veterans. Education is key to prevention, and effective educational materials and campaigns that are tailored to the Iowa veteran community can increase prevention efforts. Disseminating resources through multiple channels, including social media, community events, and partnerships with other organizations, is an easy and cost-effective way to improve oral health literacy and reach Iowa veterans in a targeted manner.
- **Provide financial assistance programs that target transportation.** The cost of dental care remains a significant barrier for many veterans. Even when veterans can afford the care or find opportunities to finance care, geographic barriers jeopardize their ability to use these services. Advocates and associations can establish funds or voucher programs to help offset costs, making dental care more accessible. Ride share programs and corporate partnerships are a strategic way to leverage funding toward a targeted need for Iowa veterans.

**Approximately 85% of veterans are not eligible for dental services through the VA, resulting in inadequate access to VA clinics in Iowa. As the largest integrated healthcare system in the nation, the VA is best positioned to support the complex healthcare needs of veterans in a holistic setting—and benefit from the cost savings of managing the connection between oral and systemic conditions.**

- **Consider nontraditional stakeholder collaboration for multifaceted solutions.** Partnering with businesses, educational institutions, insurers, faith communities, and other nontraditional partners can drive creative solutions toward addressing complex oral health disparities faced by Iowa veterans. Increasing funding, infrastructure, and events that provide pro bono dental care are not systemic solutions, but they can bring awareness to the needs of Iowa veterans and serve as an intermediary measure to address urgent or short-term dental needs.
- **Train community members as lay health workers to increase care navigation.** Community health workers, like promotoras, who have community trust and culturally responsive can serve as a vital link between healthcare providers and the community. By training these individuals in basic oral health care, advocates can extend the reach of their services and improve community health outcomes while increasing oral health literacy and awareness.

## RESEARCHERS AND DATA SCIENTISTS

- **Fill the knowledge gaps surrounding veteran oral health in Iowa.** Limited data are available to assess the breadth and depth of veteran oral health in Iowa. Many national surveillance systems and data sources do not include comprehensive oral health indicators, veteran status, and state-level data resulting in a lack of evidence upon which to build solutions. By ensuring that veteran and oral health indicators are included in each state-based health assessment, existing information gaps around the oral health and well-being of Iowa veterans can be addressed.
- **Use an asset-based approach to identify facilitators, barriers, and drivers of oral health inequity.** Researchers, in partnership with community stakeholders, are well-positioned to investigate how workforce models can be leveraged and expanded through community-based needs assessments — particularly in rural areas. Researchers/analysts should use factors such as wait times, cost of care, and other social or political determinants of health data modeling to develop ways to improve care at both community and state levels.
- **Conduct longitudinal studies on veteran oral health outcomes.** Almost no data exist on longitudinal clinical indicators of veteran oral health, and none could be found for the state of Iowa. Longitudinal studies can provide invaluable insights into the long-term effects of military service on oral health, as well as the efficacy of clinical or social interventions. These data could be instrumental in shaping public policy and healthcare services tailored to the unique needs of veterans in Iowa. Researchers should collaborate with healthcare providers, community members, and policy makers to ensure that the data collected are both relevant and actionable.
- **Develop state-specific, standardized metrics for assessing oral health in veterans.** Standardized metrics can provide a consistent basis for evaluating oral health outcomes across different studies and programs. Iowa researchers should collaborate with community members, clinicians, and policy makers to develop actionable metrics, ensuring they are tailored to the unique healthcare needs of Iowa veterans. Data from this report can serve as a springboard for filling data gaps and creating predictive metrics regarding Iowa veteran oral health.
- **Study the intersection of oral health and mental health in veterans.** Given that many Iowa veterans face both oral health and mental health challenges, understanding the intersection between these two areas can provide a more holistic view of veterans' healthcare needs. By considering the social determinants of both oral and mental health while examining the clinical processes associated with PTSD, stakeholders/caregivers can create more evidence-based and personalized care approaches for Iowa veterans. Iowa researchers should aim to uncover how improvements in oral health can lead to better mental health outcomes — and vice versa.
- **Collaborate with policy makers on data-driven legislation.** Researchers provide valuable data that can inform public policy. By actively collaborating with policy makers, researchers can ensure that new laws and regulations are based on solid evidence, thereby increasing the likelihood of improved oral health outcomes. In turn, policy makers ensure that regulations and policy solutions are built on a solid foundation of evidence, increasing the likelihood of a successful policy implementation and responsible spending.

# APPENDICES

# APPENDIX 1: ADDITIONAL RESOURCES FOR UNDERSTANDING ORAL HEALTH AND OVERALL HEALTH FOR IOWA VETERANS

- Housing Assistance Council, Iowa Veterans
- County Health Rankings for the State of Iowa
- Rural Health Information Hub for Iowa Insights
- Iowa Public Health Tracking Portal
- Iowa State University Community Indicators Program
- Iowa State Data Center
- The Burden of Oral Disease in Iowa
- Iowa I-Smile Silver Program
- Iowa Medicaid Dashboard
- Iowa Mission of Mercy
- Iowa Hospital Association

# APPENDIX 2: DATA METHODOLOGY

## Methods

Multiple publicly available data sources and surveys conducted by AIDPH (see below) were used to gather information for this report. Data sources were selected if they contained oral health or overall health indicators and had other key features, such as specifying location (at least state level), veteran status, and/or rurality. The data from the selected public sources were obtained through their respective websites or data repositories. The data files were downloaded and stored in appropriate formats, such as CSV, Excel, or other statistical programing files (e.g., SPSS).

Data preprocessing involves cleaning the data, checking for missing values, resolving inconsistencies or errors, and transforming variables as necessary. Data points specific to the state of Iowa were extracted from the larger datasets and website repositories for analysis. Descriptive statistical analyses were performed to summarize the data and highlight key indicators, trends, patterns, and disparities within the state. Statistical measures such as frequencies, proportions, and means were used to provide an overview of the selected indicators and variables. Aggregated data were gathered into an Excel spreadsheet. Data visualization techniques, such as graphs and maps, were employed to present the findings in a visually appealing and easily understandable manner. The report was structured according to domain, with sections dedicated topically to primary findings. The report emphasizes data-driven conclusions and provides strategic recommendations based on the analysis.

When using nationally representative survey data (e.g., BRFSS), all estimates accommodated complex survey weights and clustering. All analyses were conducted in StataIC 15 or SPSS 25.

# APPENDIX 3: DESCRIPTION AND LINKS FOR DATASETS

- **US Department of Veteran Affairs:** The US Department of Veteran Affairs includes information from national surveys, administrative databases, clinical registries, and other publicly accessible sources. Access to these data sets can typically be obtained through the VA's official website or other authorized repositories. Using these publicly available data, descriptive statistics, such as frequencies and proportions, summarized the characteristics of the study population (veterans in Iowa). Generally, this information reflects data collected in 2017; this was the most recent year available at the time the data were pulled (early 2023). In addition, various state expenditures were also descriptively analyzed using the VA's Geographic Distribution of VA Expenditures (GDX) Report data (as reported for FY21). Expenditures per veteran were calculated by taking the total expenditures and dividing them by the total number of veterans or the number of unique patients seen at the VA.
- **MEPS:** The Medical Expenditure Panel Survey (MEPS) is a national survey conducted by the Agency for Healthcare Research and Quality, which collects information on healthcare utilization and expenditures in the United States. MEPS is a longitudinal survey that is designed to provide policy makers, healthcare providers, and researchers with comprehensive information on healthcare utilization, expenditures, insurance coverage, and health status. The MEPS data are publicly available and can be accessed through the AHRQ website. A primary analysis with MEPS (2019) calculated the weighted average medical expenditures for Veterans.

  Weighting is an important consideration when using the MEPS dataset. The survey uses a complex sample design with multiple stages of selection, which means that some individuals and households are more likely to be selected for the survey than others. To ensure that the survey data accurately represent the population, person-level sampling weights adjusted for differences in selection probabilities and to reflect the population from which the sample was drawn. Person-level weights account for the probability of selection, nonresponse, and survey attrition, as well as post-stratification adjustments to match population benchmarks on characteristics such as age and sex. One limitation of this dataset is that it was not weighted by veteran status or rurality, two variables of focus for this analysis.
- **UDS Data** (HRSA): Another data source used in this report is the publicly available data from the Health Center Program Uniform Data System (UDS) provided by HRSA. The UDS data includes aggregated and de-identified information from health centers across the country. Access to the UDS data can typically be obtained through the HRSA's official website or other authorized repositories. UDS (2020) data were used to summarize data about FQHCs in Iowa including the percentage of patients who were veterans (total number of patients/number of veteran patients) and the percentage of patients with diabetes (total number of patients/number of patients with diabetes).
- **Iowa Public Health Tracking Portal & SEDD:** Emergency department visits were analyzed using 2 data sources. The State Emergency Department Database (SEDD) was analyzed for trend data (2006-2021). Emergency department visits by county were extracted from the Iowa Public Health Tracking Portal (2021).
- **HRSA/Rural Health Information Hub:** Health Professional Shortage Areas (HPSAs) by county were summarized using data from the Rural Health Information Hub (2022). The primary source for these data is Health Resources & Services Administration. Dental Health Professional Shortage Areas are geographic areas that have been designated as having a shortage of dental healthcare professionals. This designation is based on criteria established by the Health Resources & Services Administration (HRSA) to assess the availability of dental services in an area. Dental HPSAs are determined based on factors including the ratio

of dental providers (such as dentists and dental hygienists) to the population. These factors help identify areas where there is a significant shortage of dental providers or limited access to dental care services. The percent of counties considered shortage areas was calculated by dividing the number of counties with a shortage area specification (e.g., "whole county is shortage area") by the total number of counties in Iowa (99).

- **Behavioral Risk Factor Surveillance System:** The Behavioral Risk Factor Surveillance System (BRFSS) is a state-based ongoing telephone survey conducted nationally by the Centers for Disease Control and Prevention (CDC). It collects data on various health-related behaviors, chronic conditions, and preventive health practices among adults. The BRFSS data are publicly available and widely used by researchers, policy makers, and public health professionals for epidemiological studies, program evaluation, health surveillance, and the development of evidence-based interventions. In the 2020 BRFSS wave, over 400,000 adults were surveyed across 279 variables. The data for Iowa were selected through filtering the dataset by state. Data were weighted using the BRFSS multistage complex sampling approach to ensure representation of non-institutionalized US adults. One limitation of this dataset is that it was not weighted by veteran status.
- **United States Census Bureau:** The United States Census Bureau is a federal agency responsible for collecting and providing data on various demographic, economic, and social aspects of the United States population. The bureau conducts decennial censuses, along with numerous other surveys and programs, to gather information that helps in understanding the nation's characteristics and informing decision-making processes.

# APPENDIX 4: ADDITIONAL DATA TABLES

### Table 1: Demographics of Iowa Residents

| | N | % |
|---|---|---|
| **Veteran Status** | | |
| Yes | 8,617 | 9.08 |
| No | 999 | 90.92 |
| **Rurality** | | |
| Rural county | 2,957 | 27.13 |
| Urban county | 6,706 | 72.87 |
| **Sex** | | |
| Male | 4,430 | 49.22 |
| Female | 4,868 | 50.78 |
| Race/Ethnicity | | |
| Non-Hispanic White | 8,768 | 90.74 |
| Non-Hispanic Black | 188 | 1.95 |
| Non-Hispanic Asian | 103 | 1.07 |
| Non-Hispanic AI/AN | 34 | 0.35 |
| Hispanic | 444 | 4.59 |
| Other race | 126 | 1.30 |
| **Age** | | |
| 18-24 | 746 | 13.40 |
| 25-34 | 1,025 | 15.95 |
| 35-44 | 1,357 | 15.77 |
| 45-54 | 1,521 | 14.80 |
| 55-64 | 1,766 | 16.67 |
| 65+ | 3,248 | 23.41 |
| **Education** | | |
| Never attended school | 16 | 0.21 |
| Grades 1-8 | 164 | 2.62 |
| Grades 9-11 | 323 | 5.59 |
| Grade 12 or GED | 2,985 | 30.52 |
| College 1-3 years | 2,952 | 34.87 |
| College 4+ years | 3,194 | 26.18 |
| **Income** | | |
| < $10k | 240 | 3.39 |
| $10k to $14,999 | 258 | 3.47 |
| $15k to $19,999 | 433 | 5.11 |
| $20k to $24,999 | 616 | 7.33 |
| $25k to $34,999 | 719 | 8.92 |
| $35k to $49,999 | 1,229 | 15.23 |
| $50k to $74,999 | 1,460 | 18.41 |
| $75k + | 3,051 | 38.15 |

# APPENDIX 4: ADDITIONAL DATA TABLES

### Table 2: Demographics by Iowa Veteran Status

| | Nonveterans | | Veterans | |
|---|---|---|---|---|
| | N | % | N | % |
| **Rurality** | | | | |
| Rural county | 2,631 | 27.08 | 311 | 27.54 |
| Urban county | 5,986 | 72.92 | 688 | 72.46 |
| **Sex** | | | | |
| Male | 3,528 | 44.99 | 876 | 91.69 |
| Female | 4,778 | 55.01 | 71 | 8.31 |
| **Race/Ethnicity** | | | | |
| Non-Hispanic White | 7,775 | 86.27 | 953 | 94.32 |
| Non-Hispanic Black | 180 | 3.64 | 7 | 1.19 |
| Non-Hispanic Asian | 101 | 2.59 | 1 | 0.12 |
| Non-Hispanic AI/AN | 30 | 0.63 | 4 | 0.48 |
| Hispanic | 425 | 5.51 | 16 | 2.09 |
| Other race | 106 | 1.35 | 18 | 1.79 |
| **Age** | | | | |
| 18-24 | 725 | 14.41 | 19 | 3.48 |
| 25-34 | 962 | 16.51 | 59 | 10.48 |
| 35-44 | 1,288 | 16.47 | 68 | 9.38 |
| 45-54 | 1,381 | 14.93 | 129 | 13.25 |
| 55-64 | 1,619 | 16.86 | 140 | 15.17 |
| 65+ | 2,642 | 20.82 | 584 | 48.25 |
| **Education** | | | | |
| Never attended school | 14 | 0.19 | 0 | 0.00 |
| Grades 1-8 | 153 | 2.71 | 11 | 1.83 |
| Grades 9-11 | 297 | 5.71 | 25 | 4.46 |
| Grade 12 or GED | 2,633 | 30.23 | 334 | 33.27 |
| College 1-3 years | 2,609 | 34.63 | 332 | 37.35 |
| College 4+ years | 2,888 | 26.53 | 294 | 23.10 |
| **Income** | | | | |
| < $10k | 228 | 3.62 | 11 | 1.09 |
| $10k to $14,999 | 239 | 3.57 | 19 | 2.50 |
| $15k to $19,999 | 395 | 5.27 | 37 | 3.52 |
| $20k to $24,999 | 545 | 7.34 | 71 | 7.26 |
| $25k to $34,999 | 621 | 8.80 | 96 | 10.13 |
| $35k to $49,999 | 1,056 | 14.69 | 172 | 20.33 |
| $50k to $74,999 | 1,290 | 18.10 | 170 | 21.50 |
| $75k + | 2,768 | 38.62 | 281 | 33.68 |
| **Insurance coverage** | | | | |
| Yes | 8,021 | 92.08 | 948 | 94.79 |
| No | 533 | 7.92 | 47 | 5.21 |

# APPENDIX 4: ADDITIONAL DATA TABLES

### Table 3: Number of days in last month when mental health was not good by Iowa veteran status

| | Nonveterans | | Veterans | | |
|---|---|---|---|---|---|
| | N | % | N | % | p-value |
| **Number of days in last month when MH was not good** | | | | | <.001 |
| 0 days when MH was not good | 5,414 | 60.69 | 755 | 75.28 | |
| 1-13 days when MH was not good | 2,064 | 26.21 | 129 | 13.29 | |
| 14+ days when MH was not good | 990 | 13.10 | 91 | 11.43 | |

### TABLE 4: Physical health by Iowa veteran status

| | Nonveterans | | Veterans | | |
|---|---|---|---|---|---|
| | N | % | N | % | p-value |
| **General health** | | | | | .0009 |
| Excellent | 1,679 | 20.64 | 164 | 18.79 | |
| Very good | 3,156 | 35.78 | 324 | 32.59 | |
| Good | 2,690 | 21.49 | 233 | 31.01 | |
| Fair | 833 | 9.34 | 146 | 13.90 | |
| Poor | 243 | 2.75 | 39 | 3.70 | |
| **Good or better health** | | | | | <.001 |
| Good or better | 7,525 | 87.91 | 811 | 82.40 | |
| Fair of poor | 1,076 | 12.09 | 185 | 17.60 | |
| **Physical health status** | | | | | .0084 |
| 0 days when PH not good | 6,051 | 71.40 | 687 | 71.04 | |
| 1-13 days when PH not good | 1,641 | 20.05 | 162 | 17.31 | |
| 14+ days when PH not good | 773 | 8.54 | 127 | 11.65 | |

### Table 5: Physical Health Disparities by Iowa veteran status

| | Nonveterans | | Veterans | | |
|---|---|---|---|---|---|
| | N | % | N | % | p-value |
| Diabetes | 1,046 | 10.44 | 172 | 16.17 | <.001 |
| CVD* | 565 | 5.71 | 184 | 16.14 | <.001 |
| Skin cancer | 653 | 5.97 | 152 | 14.25 | <.001 |
| Any other cancer | 663 | 6.04 | 130 | 10.6 | <.001 |

* This variable includes CHD or MI

# APPENDIX 4: ADDITIONAL DATA TABLES

### Table 6: Demographics among Iowa veterans and nonveterans who saw dentist in last year

| | Nonveterans with dental visit in the last year | | Veterans with dental visit in the last year | | |
|---|---|---|---|---|---|
| | N | % | N | % | p-value |
| **Rurality** | | | | | .9526 |
| Rural | 1,793 | 26.10 | 181 | 25.98 | |
| Urban | 4,227 | 73.90 | 446 | 74.02 | |
| **Sex** | | | | | <.001 |
| Male | 2,316 | 41.83 | 552 | 91.29 | |
| Female | 3,504 | 58.17 | 46 | 54.15 | |
| **Race/Ethnicity** | | | | | .005 |
| Non-Hispanic White | 5,511 | 87.79 | 601 | 94.77 | |
| Non-Hispanic Black | 110 | 3.38 | 5 | 1.54 | |
| Non-Hispanic Asian | 71 | 2.73 | 1 | 0.20 | |
| Non-Hispanic AI/AN | 15 | 0.45 | 1 | 0.04 | |
| Hispanic | 246 | 4.50 | 12 | 2.51 | |
| Other race | 67 | 1.15 | 7 | 0.94 | |
| **Age** | | | | | <.001 |
| 18-24 | 486 | 14.02 | 14 | 3.77 | |
| 25-34 | 587 | 14.75 | 34 | 10.15 | |
| 35-44 | 892 | 16.59 | 36 | 7.82 | |
| 45-54 | 982 | 15.33 | 89 | 15.03 | |
| 55-64 | 1,171 | 17.75 | 86 | 14.51 | |
| 65+ | 1,902 | 21.57 | 368 | 48.73 | |
| **Education** | | | | | .7192 |
| Never attended school | 4 | 0.08 | 0 | 0 | |
| Grades 1-8 | 71 | 1.87 | 4 | 1.24 | |
| Grades 9-11 | 136 | 4.13 | 10 | 3.55 | |
| Grade 12 or GED | 1,638 | 27.61 | 187 | 29.75 | |
| College 1-3 years | 1,821 | 35.09 | 200 | 37.15 | |
| College 4+ years | 2,337 | 31.21 | 224 | 28.30 | |
| **Income** | | | | | <.001 |
| < $10k | 124 | 2.93 | 2 | 0.40 | |
| $10k to $14,999 | 113 | 2.58 | 8 | 1.33 | |
| $15k to $19,999 | 191 | 3.82 | 10 | 1.9 | |
| $20k to $24,999 | 316 | 5.93 | 30 | 4.52 | |
| $25k to $34,999 | 355 | 7.08 | 58 | 9.25 | |
| $35k to $49,999 | 718 | 14.18 | 115 | 22.61 | |
| $50k to $74,999 | 937 | 18.43 | 110 | 20.51 | |
| $75k + | 2,239 | 45.05 | 211 | 39.47 | |

# APPENDIX 4: ADDITIONAL DATA TABLES

### Table 7: Demographics among Iowa veterans and non-veterans who had teeth removed

| | Nonveterans | | | | | | Veterans | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No teeth removed | | Some but not all teeth removed | | All teeth removed | | No teeth removed | | Some but not all teeth removed | | All teeth removed | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| **Rurality** | | | | | | | | | | | | |
| Rural | 1,410 | 57.47 | 1,079 | 37.96 | 142 | 4.57 | 114 | 38.31 | 161 | 50.34 | 36 | 11.35 |
| Urban | 3,541 | 63.31 | 2,148 | 32.41 | 297 | 4.28 | 316 | 49.56 | 312 | 41.95 | 60 | 8.49 |
| **Sex** | | | | | | | | | | | | |
| Male | 2,093 | 62.28 | 1,271 | 33.72 | 164 | 4.01 | 362 | 44.23 | 429 | 45.14 | 85 | 9.63 |
| Female | 2,661 | 60.89 | 1,850 | 34.28 | 267 | 4.83 | 38 | 63.33 | 25 | 31.54 | 8 | 5.14 |
| **Race/Ethnicity** | | | | | | | | | | | | |
| Non-Hispanic White | 4,454 | 61.63 | 2,912 | 33.81 | 409 | 4.56 | 408 | 46.55 | 454 | 44.14 | 91 | 9.31 |
| Non-Hispanic Black | 103 | 59.94 | 67 | 36.28 | 10 | 3.78 | 2 | 23.07 | 5 | 76.93 | 0 | 0 |
| Non-Hispanic Asian | 66 | 67.81 | 35 | 32.19 | 0 | 0 | 0 | 0 | 1 | 100.00 | 0 | 0 |
| Non-Hispanic AI/AN | 8 | 34.85 | 18 | 49.8 | 4 | 15.36 | 2 | 53.19 | 1 | 42.16 | 1 | 4.65 |
| Hispanic | 262 | 65.21 | 153 | 33.03 | 10 | 1.76 | 11 | 69.78 | 5 | 30.22 | 0 | 0 |
| Other race | 58 | 59.88 | 42 | 33.60 | 6 | 6.52 | 7 | 31.40 | 7 | 41.99 | 4 | 26.61 |
| **Age** | | | | | | | | | | | | |
| 18-24 | 659 | 90.42 | 64 | 9.33 | 2 | 0.25 | 18 | 95.75 | 1 | 4.25 | 0 | 0 |
| 25-34 | 766 | 78.55 | 193 | 21.04 | 3 | 0.41 | 47 | 80.73 | 12 | 19.27 | 0 | 0 |
| 35-44 | 902 | 68.40 | 365 | 29.85 | 21 | 1.75 | 50 | 73.48 | 16 | 23.79 | 2 | 2.73 |
| 45-54 | 838 | 59.02 | 496 | 37.72 | 47 | 3.26 | 82 | 61.96 | 42 | 34.28 | 5 | 3.77 |
| 55-64 | 801 | 48.26 | 712 | 44.26 | 106 | 7.48 | 63 | 41.07 | 66 | 49.71 | 11 | 9.22 |
| 65+ | 985 | 36.13 | 1,398 | 53.22 | 260 | 10.65 | 170 | 27.66 | 336 | 57.58 | 78 | 14.76 |
| **Education** | | | | | | | | | | | | |
| Never attended school | 6 | 63.84 | 6 | 24.09 | 2 | 12.07 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grades 1-8 | 60 | 41.86 | 71 | 46.60 | 22 | 11.54 | 2 | 21.4 | 4 | 42.1 | 5 | 36.50 |
| Grades 9-11 | 109 | 42.77 | 146 | 45.62 | 42 | 11.60 | 4 | 15.45 | 12 | 56.24 | 9 | 28.31 |
| Grade 12 or GED | 1,232 | 54.09 | 1,192 | 40.02 | 209 | 5.88 | 122 | 40.64 | 168 | 46.53 | 44 | 12.83 |
| College 1-3 years | 1,510 | 62.73 | 972 | 33.41 | 127 | 3.86 | 136 | 47.1 | 168 | 45.85 | 28 | 7.05 |
| College 4+ years | 2,021 | 75.18 | 831 | 23.89 | 36 | 0.93 | 166 | 62.1 | 118 | 35.92 | 10 | 1.98 |
| **Income** | | | | | | | | | | | | |
| < $10k | 111 | 56.4 | 92 | 35.50 | 25 | 8.10 | 2 | 34.48 | 7 | 54.48 | 2 | 11.05 |
| $10k to $14,999 | 90 | 41.26 | 105 | 43.49 | 44 | 15.25 | 4 | 16.17 | 13 | 67.27 | 2 | 16.56 |
| $15k to $19,999 | 146 | 45.83 | 185 | 42.47 | 64 | 11.70 | 9 | 23.58 | 19 | 52.20 | 9 | 24.22 |
| $20k to $24,999 | 220 | 48.06 | 269 | 42.72 | 56 | 9.22 | 17 | 22.68 | 38 | 54.81 | 16 | 22.52 |
| $25k to $34,999 | 295 | 52.86 | 288 | 41.76 | 38 | 5.37 | 29 | 34.86 | 51 | 48.07 | 16 | 17.06 |
| $35k to $49,999 | 544 | 57.02 | 455 | 37.96 | 57 | 5.02 | 63 | 39.91 | 97 | 54.44 | 12 | 5.65 |
| $50k to $74,999 | 735 | 61.37 | 517 | 36.08 | 38 | 2.55 | 76 | 48.91 | 87 | 46.73 | 7 | 4.37 |
| $75k + | 1,981 | 73.21 | 757 | 25.91 | 30 | 0.88 | 172 | 65.16 | 98 | 31.03 | 11 | 3.82 |

# APPENDIX 4: ADDITIONAL DATA TABLES

**Table 8: Oral health among Iowa veterans and nonveterans**

| | Nonveterans | | Veterans | | |
|---|---|---|---|---|---|
| | N | % | N | % | p-value |
| **Number of missing teeth** | | | | | <.001 |
| No missing teeth | 4,951 | 62.94 | 430 | 47.69 | |
| 1 to 5 missing teeth | 2,293 | 24.80 | 290 | 28.05 | |
| 6 or more but not all teeth missing | 736 | 7.82 | 154 | 14.74 | |
| All teeth missing | 439 | 4.44 | 96 | 9.52 | |
| **Dental visits in the last year** | | | | | .0001 |
| Yes | 6,020 | 68.82 | 627 | 61.45 | |
| No | 2,510 | 31.18 | 368 | 38.55 | |

# APPENDIX 4: ADDITIONAL DATA TABLES

### Table 9: Demographics by veteran status, total US population

| | Nonveterans | | Veterans | | Iowa Veterans | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| **Rurality** | | | | | | |
| Rural county | 51,378 | 6.34 | 7,429 | 93.31 | 311 | 27.54 |
| Urban county | 293,339 | 93.66 | 40,170 | 6.69 | 688 | 72.46 |
| **Sex** | | | | | | |
| Male | 36,317 | 44.25 | 9,733 | 47.76 | 876 | 91.69 |
| Female | 53,301 | 55.75 | 990 | 52.24 | 71 | 8.31 |
| **Race/Ethnicity** | | | | | | |
| Non-Hispanic White | 262,821 | 60.67 | 39,236 | 61.78 | 953 | 94.32 |
| Non-Hispanic Black | 26,747 | 11.60 | 3,427 | 11.76 | 7 | 1.19 |
| Non-Hispanic Asian | 9,624 | 5.96 | 536 | 5.58 | 1 | 0.12 |
| Non-Hispanic AI/AN | 6,043 | 0.98 | 852 | 1.00 | 4 | 0.48 |
| Hispanic | 33,936 | 18.71 | 2,251 | 17.8 | 16 | 2.09 |
| Other race | 12,039 | 2.07 | 1,919 | 2.1 | 18 | 1.79 |
| **Age** | | | | | | |
| 18-24 | 24,535 | 12.87 | 1,004 | 5.05 | 19 | 3.48 |
| 25-34 | 41,377 | 17.99 | 2,741 | 11.89 | 59 | 10.48 |
| 35-44 | 47,966 | 16.92 | 3,678 | 11.43 | 68 | 9.38 |
| 45-54 | 55,648 | 16.05 | 5,730 | 13.82 | 129 | 13.25 |
| 55-64 | 69,739 | 16.42 | 7,914 | 16.61 | 140 | 15.17 |
| 65+ | 111,945 | 19.74 | 27,154 | 41.20 | 584 | 48.25 |
| **Education** | | | | | | |
| Never attended school | 14 | 0.33 | 0 | 0.77 | 0 | 0.00 |
| Grades 1-8 | 153 | 4.5 | 11 | 1.33 | 11 | 1.83 |
| Grades 9-11 | 297 | 8.5 | 25 | 3.88 | 25 | 4.46 |
| Grade 12 or GED | 2,633 | 27.63 | 334 | 2.88 | 334 | 33.27 |
| College 1-3 years | 2,609 | 29.69 | 332 | 38.11 | 332 | 37.35 |
| College 4+ years | 2,888 | 29.34 | 294 | 27.82 | 294 | 23.10 |
| **Income** | | | | | | |
| < $10k | 12,141 | 5.5 | 744 | 1.78 | 11 | 1.09 |
| $10k to $14,999 | 12,483 | 4.6 | 1,203 | 2.51 | 19 | 2.50 |
| $15k to $19,999 | 18,971 | 8.54 | 2,041 | 4.25 | 37 | 3.52 |
| $20k to $24,999 | 24,349 | | 3,339 | 7.87 | 71 | 7.26 |
| $25k to $34,999 | 27,174 | 9.36 | 4,203 | 9.25 | 96 | 10.13 |
| $35k to $49,999 | 37,348 | 12.3 | 6,459 | 15.93 | 172 | 20.33 |
| $50k to $74,999 | 44,903 | 14.91 | 7,552 | 19.07 | 170 | 21.50 |
| $75k + | 317,936 | 37.76 | 14,773 | 39.35 | 281 | 33.68 |
| **Insurance Coverage** | | | | | | |
| Yes | 317,936 | 86.85 | 45,801 | 87.62 | 948 | 94.79 |
| No | 31,479 | 13.15 | 2,259 | 12.38 | 47 | 5.21 |

# APPENDIX 4: ADDITIONAL DATA TABLES

### Table 10: Number of days in last month when mental health was not good by Veteran status, total US population

| | Nonveterans | | Veterans | | Iowa Veterans | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| **Number of days in last month when mental health was not good** | | | | | | |
| 0 days when MH was not good | 218,276 | 61.29 | 355,668 | 71.43 | 755 | 75.28 |
| 1-13 days when MH was not good | 82,705 | 25.10 | 6,866 | 16.04 | 129 | 13.29 |
| 14+ days when MH was not good | 43,370 | 13.61 | 4,732 | 12.52 | 91 | 11.43 |

### Table 11: Physical health by veteran status, total US population

| | Nonveterans | | Veterans | |
|---|---|---|---|---|
| | N | % | N | % |
| **General health** | | | | |
| Excellent | 72,765 | 22.53 | 8,304 | 22.22 |
| Very good | 121,791 | 33.17 | 15,580 | 33.08 |
| Good | 130,500 | 29.89 | 5,270 | 30.01 |
| Fair | 39,511 | 11.08 | 6,456 | 11.22 |
| Poor | 12,885 | 3.33 | 2,452 | 3.48 |
| **Good or better health** | | | | |
| Good or better | 298,053 | 85.59 | 39,154 | 82.78 |
| Fair or poor | 52,396 | 14.41 | 8,908 | 17.22 |
| **Physical health status** | | | | |
| 0 days when PH not good | 243,739 | 72.27 | 33,119 | 71.99 |
| 1-13 days when PH not good | 63,494 | 18.15 | 7,746 | 18.00 |
| 14+ days when PH not good | 36,451 | 9.65 | 6,304 | 10.01 |

### TABLE 12: Oral health by veteran status, total US population

| | Nonveterans | | Veterans | |
|---|---|---|---|---|
| | N | % | N | % |
| **Number of missing teeth** | | | | |
| No missing teeth | 4,951 | 59.67 | 430 | 49.57 |
| 1 to 5 missing teeth | 2,293 | 27.63 | 290 | 28.94 |
| 6 or more but not all teeth missing | 736 | 8.27 | 154 | 13.32 |
| All teeth missing | 439 | 4.42 | 96 | 8.17 |
| **Dental visits in the past year** | | | | |
| Yes | 113,369 | 64.56 | 16,010 | 66.25 |
| No | 233,803 | 35.44 | 31,724 | 33.75 |

# APPENDIX 5: GLOSSARY

## Acronyms and Abbreviations

- **AHRQ**: Agency for Healthcare Research and Quality
- **AIDPH**: American Institute of Dental Public Health
- **BRFSS**: Behavioral Risk Factor Surveillance System
- **FQHC**: Federally Qualified Health Center
- **GDX**: Geographic Distribution of VA Expenditures
- **HPSA**: (Dental) Health Professional Shortage Areas
- **HRSA**: Health Resources & Services Administration
- **MEPS**: Medical Expenditure Panel Survey
- **NHANES**: National Health and Nutrition Examination Survey
- **PTSD**: Post-traumatic stress disorder
- **SEDD**: Staged Electronic Data Deliverable
- **UDS**: Uniform Data System
- **USCB**: United States Census Bureau
- **VA**: Veterans Affairs / United States Department of Veterans Affairs
- **VHA**: Veterans' Health Administration
- **VISNL**: Veterans Integrated Service Networks
- **VOH**: Veteran Oral Health

## Glossary

- **Dental Health Professional Shortage Area**: PA population-to-dental provider ratio is > 5,000:1.
- **United States Department of Veterans' Affairs (VA)**: Executive-branch department of the federal government, appointed to oversee healthcare services and eligibility of military veterans.
- **Unique Patient**: In a fiscal year, each patient is accounted for once, but could have multiple patient encounters (visits) at a given facility.
- **Veteran**: A person who served in the active military, naval, or air service who was discharged under circumstances other than dishonorable.
- **Veterans' Health Administration (VHA)**: Subcabinet agency of the US Department of Veterans' Affairs that provides healthcare services to qualifying military veterans.

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## About AIDPH

The American Institute of Dental Public Health is a 501(c)3 nonprofit dedicated to advancing the science and education of dental public health. Using a community-engaged approach, AIDPH pursues oral health equity in four core areas of focus: rural communities, LGBTQIA+ people, veterans, and people living with disabilities.

AIDPH offers educational training for oral health professionals, supports student growth and career development in dental public health, and serves as conveners of stature to facilitate systems change in the oral health community. AIDPH believes that as oral health equity advocates and leaders it is our responsibility to address individual, institutional, and systemic barriers that keep communities from achieving optimal oral health across the lifespan. When marginalized communities can access dental care from providers who look like them, understand their needs, and support their culture, their oral health and overall health significantly improves. We advocate for oral health workforce diversity using the lens of our core values to galvanize students, public health professionals, policy makers, and thought leaders to invest in health equity.

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