Minnesota Oral Health Statistics System

Executive Summary

Minnesota is using data to help bring healthier smiles to all state residents. It is the first state in the nation to have an interactive website with oral health data. Minnesota Oral Health Statistics System (MNOHSS) uniquely allows users to customize and download state and county oral health data via a user-friendly query, view data highlights, and learn more about the specifics of the datasets presented.

MNOHSS is a collaborative effort between MN.IT Services technology staff and Minnesota Department of Health (MDH) staff to create a one-stop source for oral health data. The MDH Oral Health Program was awarded funding from the Delta Dental of Minnesota Foundation to develop the state-based oral health surveillance system using guidance from the Association of State and Territorial Dental Directors and the Council of State and Territorial Epidemiologists. The MNOHSS Team also partnered with staff from the Environmental Public Health Data Tracking Program to add oral health as a topic on the Minnesota Public Health Data Access (MNData) Portal.

The addition of oral health to the MNData Portal permits MDH to have greater audience reach and highlights oral health as an important public health issue. Data shows serious racial/ethnic and poverty-based oral health disparities exist. The addition to the portal also allows oral health data to be viewed with other related chronic diseases such as heart disease, smoking and oral/pharyngeal cancers.

Prior to this project, oral health data was fragmented across national, state, and local agencies. Data either was not publicly accessible online or was not in useful format for public health analyses, such as evaluation, program planning, targeting resources effectively and guiding policies. Online oral health data is frequently not in a user-friendly format, not easily accessed and not understood by many audiences. The MNOHSS web portal broke these barriers to accessible oral health data by providing web-based interface, updated web design, and application of health literacy and numeracy best practices.

The primary audience for MNOHSS is county-level public health and oral health professionals without data processing resources or epidemiological expertise on staff. The web portal is also available to the general public, allowing access to state, county, and local oral health data through several features including interactive data queries, charts, and web content. During 2015, Geographic Information System (GIS) interactive maps were added to the site to show free/reduced price lunch data (proxy for low-income families in schools) filtered by county, school district, and school.

MNOHSS can be found at https://apps.health.state.mn.us/mndata/oral-health.

Concept

A comprehensive, central data system is important to assess the overall state of population health, identify health disparities, track trends in disease and service utilization, identify unmet needs, and target resources more efficiently. Until the development of the [Minnesota Oral Health Statistics System](#) (MNOHSS pronounced "minnows"), oral health data users had difficulty finding national and state level data, because it was collected and stored within several divisions across multiple agencies. The data was not easily accessible, not query able at multiple levels (e.g., by county, age group, or racial group), nor comprehensive (i.e., health literate data interpretation/historical context/plain language).

Groundwork for the MNOHSS project was accomplished by the Minnesota Oral Health Surveillance Advisory Group (MOHSAG), which is a panel of epidemiologists, statisticians, oral health experts, data stewards, and partner organizations. MOHSAG developed a list of critical oral health data indicators/measures based on recommendations from the Association of State and Territorial Dental Directors (ASTDD) and Council of State and Territorial Epidemiologists (CSTE). These indicators were prioritized based on data availability and usability and incorporated into the Minnesota Oral Health Surveillance Plan.

Stakeholders from the Minnesota Oral Health Coalition, including dental/dental hygiene schools and research institutes, dental nonprofits, and state/local government were surveyed about their use of oral health data, data needs, and barriers to use. This survey was critical in understanding the needs of online data users and supported the priority indicators listed in the Minnesota Oral Health Surveillance Plan.

Survey respondents stated they use oral health data to prepare grant applications, conduct needs assessments, support community actions and organize reports and other work duties. Several respondents indicated they would benefit from a centralized, online source for oral health data equipped with tools such as interactive graphs, maps, and query able data. The survey found that barriers included not knowing that oral health data are publicly available, difficulty finding and accessing data, and not having oral health data located in a single place or publication. These barriers also are reflected in the public and other requests for various state and county level oral health data that the Oral Health Program frequently receives. Having up-to-date oral health data and indicators that are accurate, timely, query able, and actionable are important for partners, policy makers, and other stakeholders in order to use data to drive strategies, set benchmarks, and measure impact.

MNOHSS is an excellent example of government and industry (sponsor and funder Delta Dental of Minnesota Foundation) working together to improve public service delivery. The Minnesota Department of Health's Oral Health Program worked with data

stewards to secure Data Use Agreements, collect and analyze data, and present data accurately, and in plain language, with team members who have expertise in oral health practice, epidemiology, statistics, and health literacy. MN.IT Services developed all technical aspects of the system using modern technology and best practices for user interface design, mobile responsiveness, accessibility (Section 508 compliance), and database interaction. For example, the interactive query delivers data in a user-friendly layout and dynamically adjusts to the screen size of various desktop and mobile devices. The system also contains interactive charts and graphs. The Minnesota Department of Health's Environmental Public Health Tracking Program provided web design expertise, audience testing the MNDATA Portal for optimal navigability and usability. The Minnesota Department of Health's Oral Health Program also conducted audience testing of MNOHSS with a representative sample of its data users, testing for navigability, usability, and health literacy. Feedback from testing was incorporated into the product's final look.

While the goal of this project is to increase public access to state relevant oral health data. other goals included: raising public awareness that oral health is integral to overall health, showing links between poor oral health and chronic disease, supporting oral health epidemiology and evaluation work, identifying health disparities, tracking trends in disease and service utilization, targeting prevention efforts, informing policy, assisting city and state planning, educating communities, and improving state surveillance. MNOHSS accomplishes these goals by: (1) collecting, analyzing, and disseminating state and county oral health data on the Minnesota Public Health Data Access (MNDATA) Portal, a time-saving, one-stop source for environmental health outcomes data; (2) integrating best practices in surveillance from the Association of State and Territorial Dental Directors and the Council of State and Territorial Epidemiologists; and (3) integrating best practices in health literacy and numeracy, resulting in greater understandability and usability of data.

MNOHSS's Communications Plan includes the following promotion strategies:

1. Create demand by referencing the site in funding announcements and giving weight to utilization of data available on the site in review of grant proposals,

2. Drive traffic to the portal through development of written communication such as bookmarks, brochures, newsletters, press release and social media feeds that advertise uses of the Minnesota Oral Health Statistics System, portal technological capabilities and enhanced features.

3. Test written and promotional materials with the target audience to ensure relevancy and audience appeal.

4. Test for navigability, usability, and readability to ensure our finished product will be used and promoted.

5. Promote the Oral Health topic on the portal through leveraging organization and partnership interactions, tabled events, presentations, and demonstrations.

Significance

The online portal significantly improves access to data affecting the oral health of Minnesotans. MNOHSS offers oral health data in an accessible, readable, and user-friendly format through the web. Visitors to the web application can access tailored information specific to their communities. Policymakers, state and local government, oral health practitioners, community organizations, researchers, and grant writers find this new resource beneficial to their work. New data sets are continually being updated or added to the oral health topic on the MNData portal, making it a timely and dynamic database. MNOHSS saves consumers both time and money because information is already analyzed and provided through a central location on the web.

MNOHSS became an online, time-saving, one-stop source for national, state, and local oral health data. It was a collaborative project between the Minnesota Department of Health's Oral Health Program, the Minnesota Environmental Public Health Tracking Program, and MN.IT Services. Generous funding from the Delta Dental of Minnesota Foundation has allowed the Minnesota Oral Health Statistics System to become one of the very few state oral health surveillance systems in the nation. Since 2013, it's *the* only publicly available, online, interactive system to be housed on the [Minnesota Public Health Data Access Portal](#), an infrastructure project of the CDC Environmental Public Health Tracking Network (EPHTN).

The Network is a state data infrastructure project that tracks consistent data on 96 environmental indicators and 17 public health outcomes. CDC currently funds 25 states including Minnesota, one city, and five academic partners. These entities are responsible for collecting and presenting state, county, and/or local level data on environmental indicators and health outcomes on their portals, which feed into the national Tracking Network. Academic Partners for Excellence provide training and research support to grantees, including investigating best practices in web architecture, online communications, and developing new methods for data linkage, pattern detection and assessment of exposure-disease associations.

The State of Minnesota also has been a leader in health equity with establishment of the [Center for Health Equity](#), located within the Executive Office. The Minnesota Health Equity Report highlights the importance of providing data relevant and actionable to people of color and American Indians who disproportionately suffer the worst health disparities, including oral health. MDH provides relevant and actionable data when available on the portal, including oral health measures by age, race/ethnicity, poverty level, and insurance status.

Lastly, MDH is required to produce a Burden of Oral Disease document to summarize key oral health measures and compare trends through time. The MNData Portal expands upon the concept of a Burden of Disease Document by providing a living, breathing, just-in-time portal for all oral-health related data. As the portal continues to grow, it replaces printed reports and can dynamically interact with requests for both recent and historical data.

This project supports Objective 7 of the State Oral Health Plan and required activities of the CDC Cooperative Agreement. It also supports priority areas 1 and 2 of the Minnesota Action Plan to Improve Health Literacy.

Impact

Minnesota is the first state to add oral health as a topic on a publicly available online, interactive data portal. It is also the first state to provide dynamic, tailored, understandable, and actionable data to users. In time, information generated from the project should allow the State of Minnesota to directly affect oral health and policy through evidence-based oral health measures and decision-making.

MNOHSS maintains sustainability, communications, and evaluation plans to ensure continued project success. In 2015, The MNDATA portal, where MNOHSS is housed, had 1,300 data portal bulletin subscribers. The portal averaged 1,750 monthly site visits and 1,200 unique visitors. Key metrics tracked using Google Analytics include: site frequency (sessions), user traffic patterns (page views and clicks), and user engagement (pages/session, bounce rate, and average session duration). Sessions are the number of times visitors are actively engaged on the site. Page views are the total number of pages people visited on the site. In 2015, there were 2,830 portal sessions related to oral health and 13,607 page views.

Additional analytics are tied to email announcements on the GovDelivery subscribers list to determine what data was most valuable to users. Cross-promotional efforts between the MDH Oral Health Program and the Minnesota Environmental Public Health Data Tracking Program aid linkages between oral health and other chronic diseases such as tobacco use, heart disease, and cancer and help drive traffic between topics. Finally, MDH keeps tabs on oral health data use through news alerts that mention MNOHSS or the oral health measures contained within, as well as types of data requests made through the MDH email and feedback from oral health grantees such as Smiles@School, school-based dental sealant program.

"This private-public partnership puts Minnesota at the forefront of oral health," said Commissioner of Health Ed Ehlinger. "It is already helping to inform MDH's efforts to ensure that every child in Minnesota regardless of race or place has the opportunity for a healthy smile and a healthy start."

Recent data show

- Minnesota third graders in schools with mostly lower-income families were three times more likely to have untreated tooth decay compared to third graders in schools with mostly higher-income families.
- Minnesota third graders in rural schools were 1.3 times more likely to have tooth decay compared to students enrolled in urban schools.
- Third graders in schools with mostly higher income families nearly twice as likely to be protected by cavity-preventing dental sealants compared to students in schools with mostly lower-income families.
- Half of older adults in Minnesota with an annual income of less than $35,000 had at least one natural tooth removed due to tooth decay or gum disease. And nearly two out of every 10 older adults with an annual income of less than $35,000 have had all their natural teeth removed due to tooth decay or gum disease.
- Nearly six out of every 10 older adults in Minnesota with less than a high school degree had at least one natural tooth removed compared to two out of every 10 older adults with a college degree. Older adults with less than a high school degree were three times more likely to have had all their natural teeth removed compared to older adults with a college degree
- Less than half of Minnesota children under 20 years old enrolled in Medicaid/Minnesota Health Care Programs had a paid dental claim (i.e. saw a dentist or oral health provider in the past year), and fewer than 40 percent had a preventive dental service claim, such as for a dental cleaning or exam.
- Less than 20 percent of Minnesota Health Care Programs enrollees ages six to 14 years received dental sealants per recommendation by the American Academy of Pediatric Dentistry for their age group.

These striking oral health disparities provide evidence that Minnesota children and older adults, and in particular low-income families, need special consideration in programming and policy.

"To solve a problem, first you need to know the facts," said Susan Hammel, Executive Director of the Delta Dental of Minnesota Foundation and Community Affairs. "Those passionate about finding public policy solutions to improve health, through oral health for all Minnesotans will find useful data in the new website."

You can find the Minnesota Oral Health Statistics System on the Minnesota Public Health Data Access Portal at https://apps.health.state.mn.us/mndata/oral-health.