

Public Use Files Developed from Quality Reporting System Data

AN OVERVIEW

March 2019

Public Use Files Developed from Quality Reporting System Data: An Overview

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Introduction

As part of Minnesota’s 2008 health reform initiative, the Minnesota Department of Health (MDH) is required to establish a standardized set of quality measures for health care providers across the state.¹ This standardized quality measure set, which built on earlier voluntary efforts and made data submission by providers mandatory, is called the Minnesota Statewide Quality Reporting and Measurement System (Quality Reporting System).²

Although Minnesota ranks among the healthiest states in the nation, it simultaneously has significant and persistent disparities in health outcomes for some of its population. To eradicate these disparities, it is important for the State to foster health equity through creating the, “conditions in which all people have the opportunity to attain their highest possible level of health.”³ One of the challenges related to developing and evaluating programs to address and eliminate health disparities is the relative lack of data on many of the contributing socio-demographic factors, including data directly available to communities concerning health disparities and inequities in clinical care.

In 2015, the Minnesota Legislature directed MDH to begin stratifying quality measures by socio-demographic factors. “Stratifying clinical quality measures” refers to calculating health care performance scores separately for different patient groups based on some characteristic.⁴ MDH worked with Voices for Racial Justice, a nonprofit that works with communities of color and American Indians on issues of equity and inclusiveness, to obtain community input on the collection and use of stratified quality measure data. To get this feedback, Voices for Racial Justice trained health equity champions and engaged with members and representatives of communities disproportionately impacted by health inequities and community-based organizations. Community representatives made a number of recommendations,⁵ narrowly focused on Quality Reporting System data, as well as more broadly regarding data strategies, including providing data and companion materials to communities.

In response to this recommendation, MDH created a first set of Quality Reporting System public use files (PUFs) that initially focus on geographic, health insurance type, and gender breakdowns of the data. In a second step, MDH is working on developing PUFs that include information on race, Hispanic ethnicity, preferred language, and country of origin.

As part of the release in March 2019, MDH prepared a set of infographics that demonstrate capabilities of data and represent synthesis of some findings. Following the release, MDH will engage with communities and data users through a series of in-person and virtual forums during 2019. Through these and other conversations, MDH hopes to gain insights into what

¹Minnesota Statutes, Section 62U.02.

²Minnesota Administrative Rules, Chapter 4654.

³Minnesota Department of Health (MDH). (2014). *Advancing Health Equity in Minnesota: Report to the Legislature*. Saint Paul, MN: Minnesota Department of Health.

⁴National Quality Forum (NQF). (2014). Risk adjustment for socioeconomic status or other socio-demographic factors; Technical report. Washington, DC: National Quality Forum.

⁵Voices for Racial Justice. (2016). *Advancing Health Equity by Sharing Data from the Minnesota Statewide Quality Reporting and Measurement System*. Minneapolis, MN: Voices for Racial Justice.

communities are learning from the data, and obtain guidance from communities about how to evolve the PUFs over time.

This document is a companion document to a range of information available on our [Health Care Quality Measures website](http://www.health.state.mn.us/data/hcquality) (<http://www.health.state.mn.us/data/hcquality>).

What is the Statewide Quality Reporting and Measurement System?

The goal of the Quality Reporting System is to create a more uniform approach to quality measurement to enhance market transparency and drive health care quality improvement through an evolving measurement and reporting strategy. Physician clinics and hospitals are required to report quality measures through the Quality Reporting System annually. At this point, more than 800 clinics report on at least one of ten clinical quality measures; similarly, more than 130 hospitals report on a number of hospital measures.

- Payers, including the Department of Human Services, use these statewide measures for performance-based contracting or pay-for-performance initiatives.
- Consumers can use available data to choose a clinic, and providers may use their data for quality improvement initiatives and benchmarking.

MDH updates the measure set annually after seeking public comments and recommendations from the community by issuing an updated administrative Rule. The Rule describes specific data elements that providers are required to submit to MDH for each measure.

The Quality Reporting System does not include sensitive information that would identify unique patients. Specifically, the dataset does not include any of the following information for individual patients: name, address, or Social Security number.

MDH currently contracts with MN Community Measurement (MNCM) for services related to creating analytic data files for physician clinic quality measures included in Rule.⁶ MNCM is a nonprofit organization that collects, analyzes, and reports health care data related to quality and costs, and develops quality measures. Physician clinics follow standardized guidelines when submitting their data to MNCM who works closely with data submitters to ensure that reported data are complete and of excellent quality. MNCM is also the steward of seven of the eight physician clinic measures included in these PUFs.⁷

What Are Public Use Files?

Most generally, public use files (PUFs) provide the opportunity for researchers and the public to use the information contained in datasets in an aggregated form that protects sensitive information. There are a number of state and federal programs that collect health care data for analysis and provide access to that information in a variety of forms. PUFs range from detail-

⁶MN Community Measurement (MNCM), mncm.org.

⁷A “measure steward” is an organization that owns and is responsible for maintaining the quality measure. Measure stewards are often the same as measure developers, but not always.

level, de-identified datasets that require a formal request process and data use agreements, to aggregate tables and interactive tools that are publicly available on state and federal websites.

MDH prepares a range of PUFs as part of our work, including based on health care claims information (i.e., [Minnesota All Payer Claims Database Public Use Files](https://www.health.state.mn.us/data/apcd/publicusefiles) (<https://www.health.state.mn.us/data/apcd/publicusefiles>)). Specifically, with Quality Reporting System PUFs, MDH takes information on eight physician clinic performance measures and stratifies them by a number of demographic characteristics.

What Is the Potential Value of Quality Reporting System Public Use Files?

The Quality Reporting System PUFs support the state's commitment to "open data" by providing free, user-friendly data on health care quality in Minnesota. Each PUF contains data on the health care that Minnesotans received for a specific condition or set of conditions. These data include the number of people in each ZIP Code who received optimal health care according to quality measure specifications. The PUFs also contain patient counts by gender and health insurance type (as a proxy for income), offering a high-level view of health care trends across these categories.

Requesters can use the PUFs to determine how many people in their area were treated for a given condition and how many of those patients received optimal health care, as measured by clinical standards for best practices. They can also investigate variation in care quality broken down by differences in genders, or insurance types to find patterns, strengths, and weaknesses in Minnesota's health care system.

MDH has started to analyze these data and we know there are untapped opportunities to use Quality Reporting System data in ways that can more rapidly inform improvements in population health. We are excited that others will use these quantitative data, likely combining them with qualitative data to reveal relationships between neighborhood and community characteristics, and health outcomes. As a summarized, aggregated product of the Quality Reporting System, the PUFs allow other users to bring their research questions and expertise to bear on a range of policy issues, thereby continuing to demonstrate the value of the Quality Reporting System. The PUFs make Quality Reporting System data approachable and accessible to any interested requester, which benefits the public and MDH by expanding the community of researchers and citizens working with the data. Broader engagement with the data will also help inform MDH's continuing efforts to improve the quality and effectiveness of the data and may help prioritize research at the agency.

Using the Data

The PUFs can be used to explore and compare measure data across the state. For example:

- See how many people in a given ZIP Code area were included in each measure, and how many received optimal health care;
- Create optimal care rates for each ZIP Code area by dividing the number of patients that received optimal health care by the total number of patients in the area;

- Compare optimal care rates across different ZIP Code areas, and combine ZIP Code areas to include all of the ZIP Codes in a city or a region;
- Compare the optimal care rates of male and female patients;
- Compare the optimal care rates of patients with different types of health insurance; or
- Link the PUFs with other data at the ZIP Code level, like data on average household income or rurality.

Here are some examples of research questions the PUFs can answer:

- **Were adolescents in your area screened for mental health conditions?** Maybe you're wondering how many teenagers in your ZIP Code area received the mental health or depression screening that's recommended for all adolescents. You can look up your ZIP Code in PUFs and see how many of the adolescents living in your area who visited a clinic were screened.
- **Did diabetics in Minneapolis receive optimal diabetes care regardless of their health insurance type?** Perhaps you want to know how many of the diabetics in Minneapolis who visited a clinic received optimal diabetes care, and whether patients with different types of health insurance had different optimal care rates. You can sum the patient counts for Minneapolis ZIP Codes to get citywide totals for each health insurance type. Calculating rates for each insurance type will show you whether there were differences between patients with commercial insurance, Medicare, Minnesota Health Care Programs, and uninsured/self-pay patients. You can use a statistical test to determine if any differences are statistically significant.
- **Did boys and girls have equal rates of optimal asthma control?** If you're interested in whether asthma control varied by gender, you can use the statewide counts of male and female patients, and male and female patients who had optimal asthma control, to calculate the rates of optimal asthma control for boys and for girls. You can use a statistical test to determine if any differences are statistically significant.

See Appendix A for more examples of analyses based on the PUFs.

Linking to Other Datasets

MDH created PUFs so that they protect individual information if users combine PUFs with other information. Therefore, users can link measure data to other data at the ZIP Code area level to add information about a ZIP Code area or the people who live in it. The American Community Survey (ACS), an ongoing survey by the U.S. Census Bureau, is one potential source of ZIP Code level data. The ACS collects information on many different characteristics of ZIP Code areas, such as the racial and ethnic distribution of residents, average household income, the percentage of residents receiving SNAP benefits (i.e. food stamps), and the percentage of residents with bachelor's degrees. However, since ZIP codes can be large and diverse, there are limits to the meaningful conclusions that can be drawn by linking PUF data and other data sources at the ZIP Code level.

What Data Are Available in Quality Reporting System PUFs?

The de-identified data for the measures included in the PUFs come from Minnesota physician clinics. When patients visit physician clinics, information about their medical conditions and the care they receive is recorded in their medical records. Medical records can be documented on paper, and increasingly they are stored in electronic health record systems. Clinics send required patient medical record data for each measure to MNMCM. MNMCM aggregates the data at the patient ZIP Code level and provides them to MDH. MDH does not currently receive any data on individual patients (e.g., names, addresses, Social Security numbers).

Basic Features of PUFs

PUFs are available for eight quality measures, for Minnesota patients seen in Minnesota clinics during 2015. Each measure is focused on a specific medical condition or screening for a specific condition, meaning that no single file provides an overview of optimal health care for all patients in Minnesota.

- **Adolescent Mental Health and/or Depression Screening:** Measures the number of adolescents who were screened for depression or mental health conditions during a well-child checkup.
- **Asthma Education and Self-Management – Adult and Child:** Measures the number of asthmatic patients who received education about asthma and had an up-to-date self-management plan for their asthma. There are separate PUFs for adults and children.
- **Colorectal Cancer Screening:** Measures the number of patients who were up-to-date on colorectal cancer screening.
- **Depression Remission at 6 Months:** Measures the number of patients with depression who showed improvement six months after being diagnosed.
- **Optimal Asthma Control – Adult and Child:** Measures the number of asthmatic patients who received optimal care for asthma. There are separate PUFs for adults and children. Both of these PUFs include data on the two components of this measure: asthma control and risk of asthma exacerbation.
- **Optimal Diabetes Care:** Measures the number of diabetes patients who received optimal care for managing Type 1 or Type 2 Diabetes. The PUF for this measure also includes data on the five components of this measure: statin use, blood pressure control, daily aspirin use, blood sugar control, and tobacco use.
- **Optimal Vascular Care:** Measures the number of ischemic vascular disease patients who received optimal care for diseases that involve the buildup of a waxy substance, called plaque, inside blood vessels.
- **Pediatric Overweight Counseling:** Measures the number of overweight children who received information about nutrition and physical activity from their doctor.

The specifications for each quality measure articulate what diagnoses are included, the ages of the patients to be included in the measure, and what aspects of the health condition and its care are being measured. This means that although many factors are considered in the care of patients, only a subset of those considerations are included in the standardized quality measure. For example, to be included in the Optimal Diabetes Care measure, a patient must be between the ages of 18 and 75, and visiting a physician clinic for the treatment of their

diagnosed diabetes. The measure tracks the patient's blood sugar, blood pressure, statin use, aspirin use, and tobacco use. While it is important to also screen patients for diabetic retinal disease and nephropathy, these indicators are not included in the Optimal Diabetes Care measure. **Measure specifications are included with the PUFs.**

Many factors that most significantly impact a person's health exist outside of the health care system, and physician clinics collect information on some of these factors. These first PUFs include information on patient gender, health insurance type (as a proxy for income), and ZIP Code. We aim to include information on patient race, Hispanic ethnicity, preferred language, and country of origin in future PUFs. Under the Quality Reporting System, physician clinics were required to report this information beginning in 2017 for Colorectal Cancer Screening and Optimal Asthma Control quality measures, and in 2018 for Optimal Diabetes Care and Optimal Vascular Care.

Sometimes, clinics report incomplete health insurance information to MNMCM, and in these cases, MNMCM randomly attributes patients to health insurance categories based on the statewide health insurance type distribution; therefore, there are decimals in some of the patient counts in the PUFs.

Gender

Each PUF includes counts of male and female patients in each ZIP Code, and counts of the male and female patients who received optimal care or the recommended screening, depending on the measure. The gender categories align with electronic health record system standards for representing patient sex. We expect health care data collection standards and practices to evolve and include more gender identity descriptions over time. We will include such information in future PUFs as it becomes available statewide.

Health Insurance Type

Each PUF includes counts of patients by health insurance type, and counts of the patients who received optimal care or the recommended screening, depending on the measure. Health insurance type serves as somewhat of a proxy for patient income. For example, many Minnesota Health Care Programs serve low-income people, and self-pay/uninsured people are frequently low-income. There are four health insurance categories in the files:

- Commercial insurance, which includes most types of insurance that from private insurance companies;
- Medicare;
- Minnesota Health Care Programs, which includes Medical Assistance, MinnesotaCare, and the Minnesota Family Planning Program; and
- Self-pay/uninsured.

ZIP Codes

The ZIP Codes in the PUFs represent where patients live, according to the address in their medical record. The average ZIP Code represents about 90 square miles and 7,500 people, and the area and number of people included in ZIP Codes varies throughout Minnesota.

The demographics of people living in a particular ZIP Code, including age, race, income and other characteristics, can vary widely. Because of this variation, ZIP Codes are not the ideal geographical unit to use for health care data; however, ZIP Codes are the smallest geographical unit that is available with the current data collection process.

Protection Against Re-Identification

As noted, the underlying data from the Quality Reporting System are de-identified. In addition, MDH deliberately excluded, or suppressed, some ZIP Codes from the PUFs. Although re-identification risk is vanishingly small, MDH suppressed these ZIP Codes to protect the identities of people living in areas with very small overall populations and very small patient populations for a particular measure.

- MDH suppressed 23 ZIP Codes in the Adolescent Mental Health Screening PUF. These 23 ZIP Code areas have fewer than 75 total residents according to the U.S. Census. Because this measure only includes adolescents, MDH suppressed more ZIP Code areas to protect the identities of this smaller and thus potentially more identifiable patient population.
- MDH suppressed 14 ZIP Codes in all other PUFs. These 14 ZIP Code areas have populations of 50 or fewer total residents according to the U.S. Census.
- To further protect patient identities, MDH removed all data from ZIP Codes that had fewer than five total patients in a given PUF, and all data from ZIP Codes that had only one male patient or one female patient within a given PUF. This suppression step removed up to 32 percent of ZIP Codes for some measures, and only a very small proportion (less than 5 percent) of the total patients in each measure.

Each PUF includes a statewide row with the total number of patients in each category for every ZIP Code in the state. The totals in the statewide row include counts from suppressed ZIP Codes. For a list of the ZIP Codes that were suppressed due to low Census populations, see Appendix B.

File Size and Format

The PUFs are available in Excel (.xlsx) or comma-separated value (.csv) files that range in size from 60 to 277 KB, depending on the measure and format.

How Can Potential Data Users Access the PUFs?

The PUFs are available to the general public upon request. Potential data users or interested parties can use an online form to issue a request and coordinate the logistics of obtaining data files. In order to gather users' input on MDH's strategy for future PUF expansions and to assure that users are best equipped to effectively use the data, MDH will seek to maintain contact with individuals and organizations that obtained PUFs.

Requesting the PUFs

Complete the **Quality Reporting System Public Use File Request Form** to obtain one or more PUFs. The form is available at [Public Use Files](http://health.state.mn.us/data/hcquality/pufs) (<http://health.state.mn.us/data/hcquality/pufs>).

- The form collects users' contact information so that the Quality Reporting System team can stay connected in order to understand users' experience with the PUFs and offer technical assistance.
- The form also asks users to confirm that they have read and understood relevant contextual information regarding the appropriate use of the PUFs.

Send completed forms via email to the MDH Quality Reporting System team at health.sqrms@state.mn.us. MDH will then coordinate the logistics for sending the requested PUFs to the user.

Citation

When reporting findings, please cite the data as follows:

- Minnesota Statewide Quality Reporting and Measurement System Public Use File, Minnesota Department of Health, 2015.

Feedback, Learning, and Future PUFs

MDH values users' feedback, as it will help inform future iterations of the PUFs. Users are encouraged to provide feedback on their experience accessing, obtaining, and using the PUFs by emailing us at health.sqrms@state.mn.us.

During 2019, MDH will consult with data users, community representatives, and other interested persons to share learnings and gather input to guide our approach to our next issuance of PUFs in 2020.

- **Survey:** We will survey data users and others about how they are using the data, what they are learning, and what questions and technical assistance needs they have. We will also meet with community representatives and interested persons to probe the survey questions and illicit feedback.
- **Roundtables:** We will hold in-person and virtual roundtables that will be open to the public to:
 - Introduce the PUFs and demonstrate how they can be used;
 - Present data users' analyses and applications of the PUFs;
 - Provide time for discussion and learning; and
 - Preview the data that will be used to create new PUFs, including information on measure outcomes by race, Hispanic ethnicity, preferred language, and country of origin.
- **Pilot test:** We will work with interested users to pilot test new PUFs and companion materials.

To stay informed of these opportunities to provide feedback and shape future PUFs, please subscribe to our Statewide Quality Reporting and Measurement System Announcements. Visit [Health Care Quality Measures](https://www.health.state.mn.us/data/hcquality) (<https://www.health.state.mn.us/data/hcquality>) to subscribe.

Resources

MDH

Visit the MDH resources highlighted below to learn more about the Minnesota Statewide Quality Reporting and Measurement System and related analyses.

Minnesota Statewide Quality Reporting and Measurement System

- <http://www.health.state.mn.us/data/hcquality>
- Information on Minnesota's Quality Reporting System.

Health Economics Program Health Care Markets Chartbook

- <http://www.health.state.mn.us/data/economics/chartbook>
- Section nine of the Minnesota Health Care Markets Chartbook provides an overview of summary results for selected physician clinic quality measures.

MNCM

MNCM publicly reports a range of health care information through websites and online resources.

Minnesota HealthScores

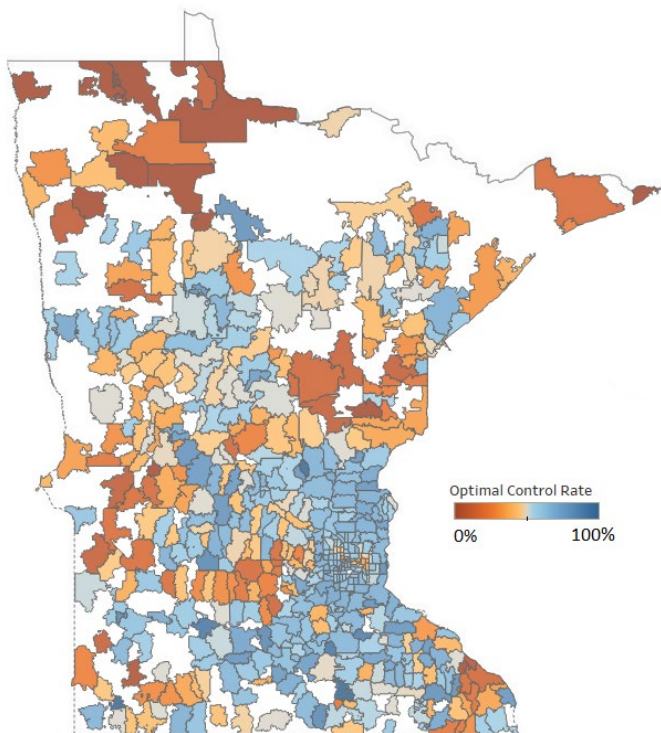
- <http://www.mnhealthscores.org>
- HealthScores allows users to compare ratings of the quality and cost of health care in Minnesota and neighboring areas.

MN Community Measurement

- <http://www.mncm.org>
- MNCM's website contains reports and other information about health care equity, disparities, quality, and costs.

Appendix A. Analysis Examples

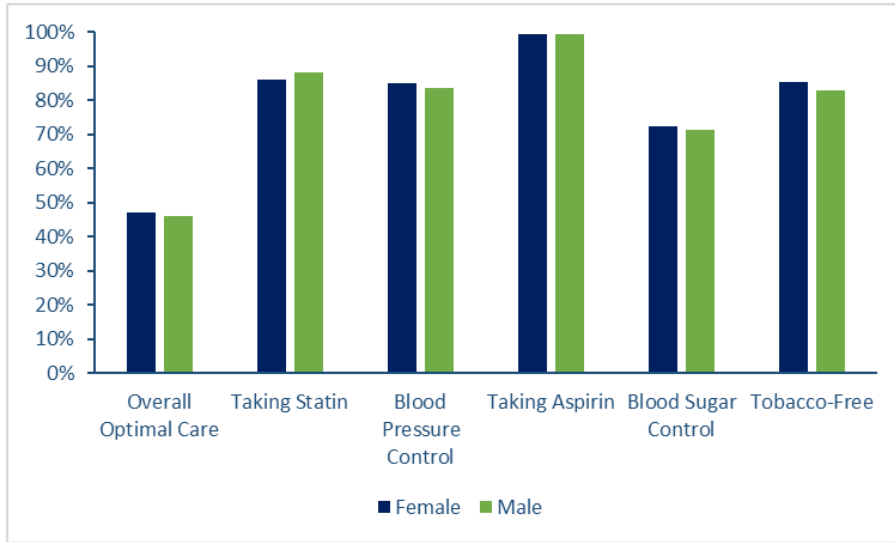
Adult Optimal Asthma Control Rates by ZIP Code



Source: Minnesota Statewide Quality Reporting and Measurement System Public Use File, Minnesota Department of Health, 2015.

Users can create customized ZIP Code maps with the PUF data. This is a map of optimal asthma control rates for adult patients with asthma in each Minnesota ZIP Code. These ZIP Codes represent where patients live, not where they received care. Many patients travel outside of their home ZIP Code to receive care. The data suppression methodology described in this PUFs overview guide accounts for some of the white spaces on this map. Other ZIP Codes may not have had asthma patients living in them. Note that the data displayed in this map were not adjusted for patient characteristics. Users should consider adjusting the data by patient characteristics depending on the analyses they conduct.

Optimal Diabetes Care Components by Gender



Source: Minnesota Statewide Quality Reporting and Measurement System Public Use File, Minnesota Department of Health, 2015.

Users can compare male and female patients’ optimal care rates. This chart displays the female and male rates for the Optimal Diabetes Care measure overall and for each of the individual care components that make up the measure.

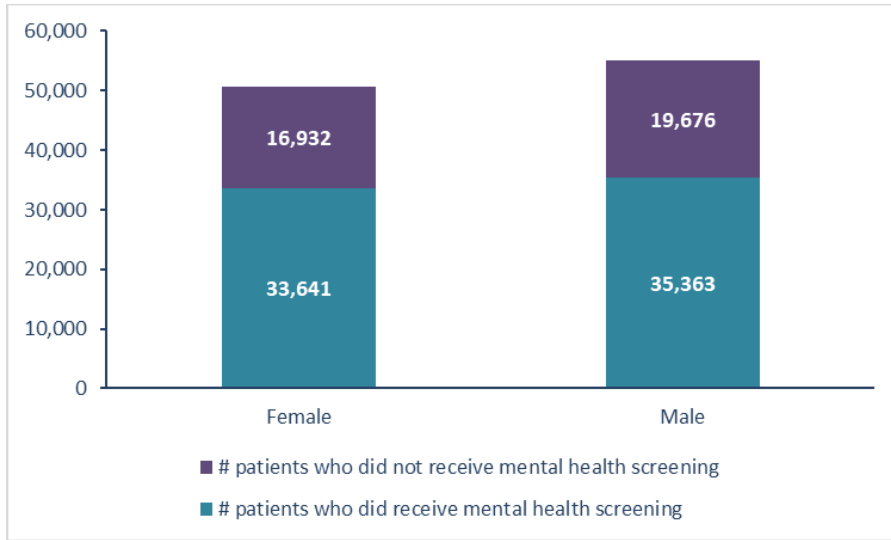
Optimal Diabetes Care by Health Insurance Type

This graphic highlights another finding connected to health insurance type. The rate of Optimal Diabetes Care for uninsured or self-pay patients (30%) was lower than the rate for patients with any other type of health insurance.

Only 30% of uninsured¹ patients received optimal diabetes care

Source: MDH Health Economics Program analysis of Quality Reporting System Optimal Diabetes Care Public Use File data from 2015 service dates.
1. Patients were either uninsured or self-paid for their care.

Adolescent Mental Health and/or Depression Screening by Gender



Source: Minnesota Statewide Quality Reporting and Measurement System Public Use File, Minnesota Department of Health, 2015.

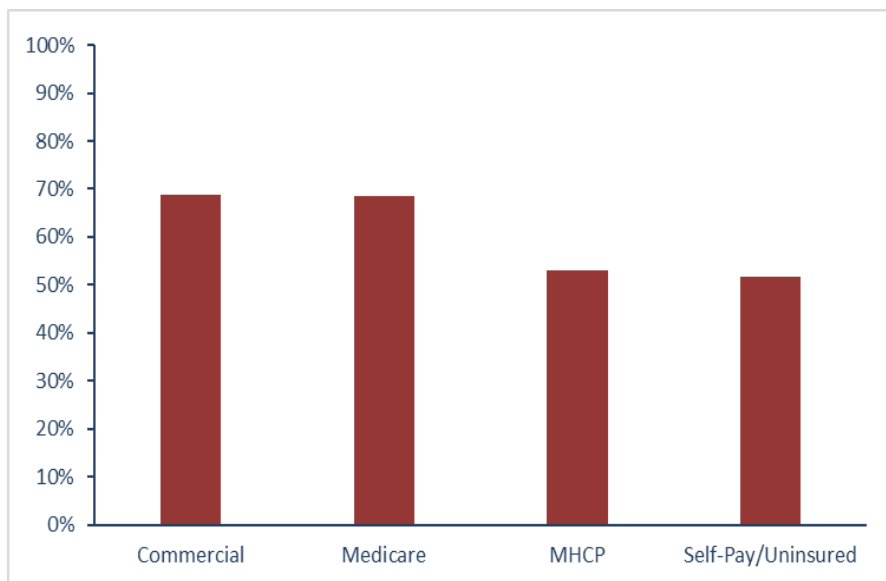
In addition to comparing optimal care rates across gender or health insurance types, users can also explore patient counts by gender, health insurance type, or geography. This chart displays the number of adolescent female and male patients who were screened for depression or other mental health conditions, and the number of patients who were not screened.

Optimal Vascular Care by Gender

This graphic displays another way of comparing optimal care rates across gender to assess male and female performance. Males had a significantly higher rate of Optimal Vascular Care (68%) compared to women (63%).



Optimal Vascular Care by Health Insurance Type



Source: Minnesota Statewide Quality Reporting and Measurement System Public Use File, Minnesota Department of Health, 2015.

The PUFs include health insurance type data, which allow users to compare care quality across insurance categories. This chart displays the rates of optimal vascular care for patients in different health insurance type categories.

Appendix B. Census-Suppressed ZIP Codes

The following 23 Minnesota ZIP Codes were suppressed in the Adolescent Mental Health and/or Depression Screening PUF because they had total populations below 75 according to the U.S. Census:

| ZIP Codes with Fewer than 75 Residents | |
|--|-------|
| 55111 | 55766 |
| 55155 | 56177 |
| 55905 | 56456 |
| 56658 | 56659 |
| 55450 | 56720 |
| 56210 | 56140 |
| 56593 | 56125 |
| 56577 | 56436 |
| 56741 | 56022 |
| 56541 | 55036 |
| 55029 | 56687 |
| 56146 | |

The following 14 Minnesota ZIP Codes were suppressed in all other PUFs because they had total populations below 50 according to the U.S. Census:

| ZIP Codes with Fewer than 50 Residents | |
|--|-------|
| 55111 | 56577 |
| 55155 | 56741 |
| 55905 | 56541 |
| 56658 | 55029 |
| 55450 | 56146 |
| 56210 | 55766 |
| 56593 | 56177 |