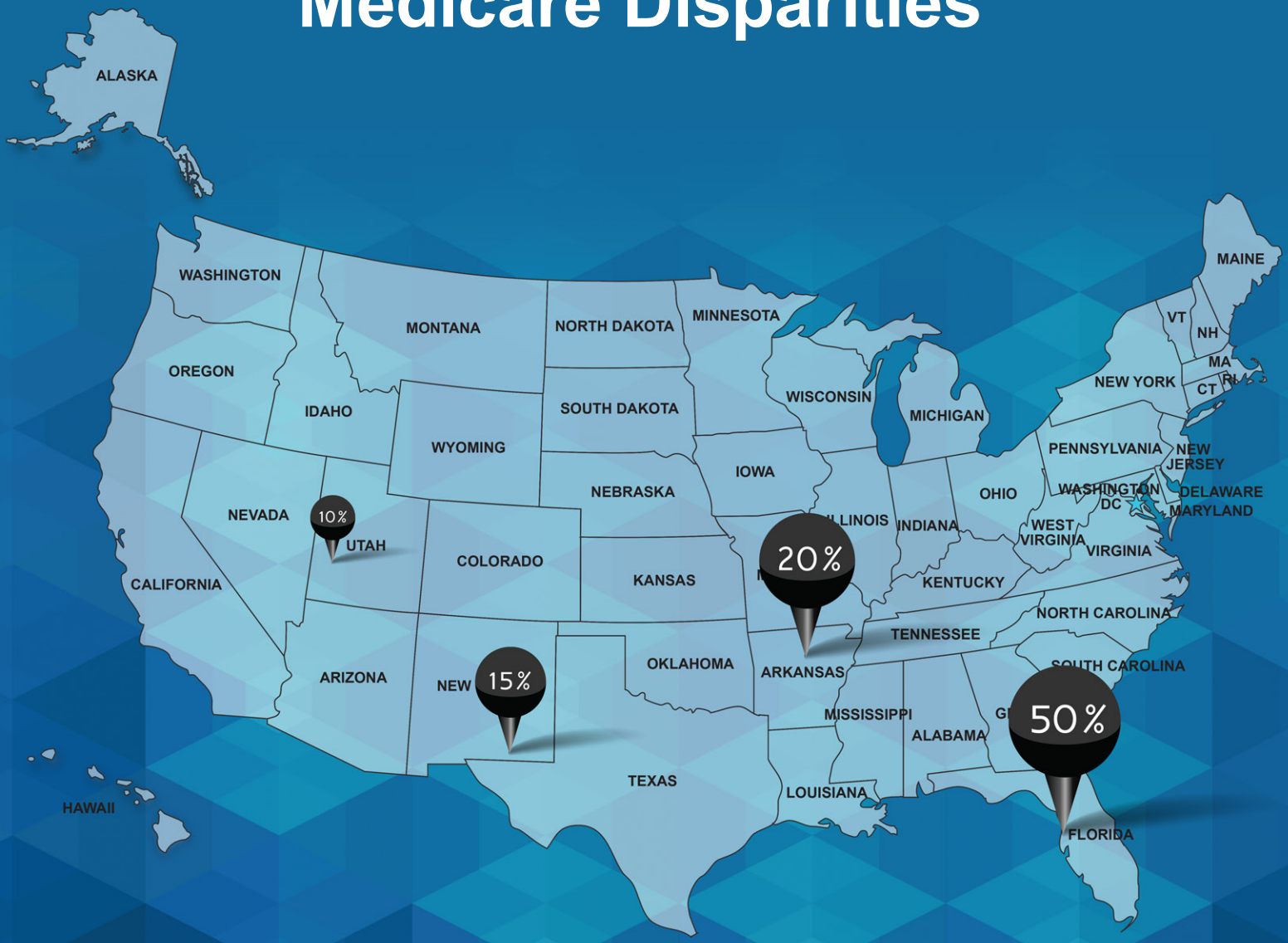
Mapping Medicare Disparities



CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

INTRODUCTION & BACKGROUND

Chronic diseases, such as diabetes and cardiovascular diseases, pose a significant problem in the United States, resulting in substantial morbidity, mortality, disability, and cost. In 2018, more than one-third of Medicare beneficiaries had multiple chronic conditions and accounted for 97% of Medicare spending.[1] Racial and ethnic minority communities are disproportionately affected by the disparities in disease, and the burden of disease differs by where individuals live.[2]

The Centers for Medicare & Medicaid Services (CMS) Office of Minority Health (OMH) released the first ***CMS Equity Plan for Improving Quality in Medicare.***

From this equity plan, CMS developed an interactive map to increase understanding of geographic disparities in chronic disease among Medicare beneficiaries. The Mapping Medicare Disparities (MMD) Tool identifies disparities between sub-populations (e.g., racial and ethnic groups) in health outcomes, utilization, and spending. The MMD Tool also allows quality measure comparisons between different hospitals at the national, state/territory, or county level. The MMD Tool is expected to help government agencies, policymakers, hospitals, researchers, community-based organizations, health providers, quality improvement organizations, and the general public analyze chronic disease disparities, identifying how a region or population may differ from the state or national average.

Understanding geographic differences in disparities is important to informing policy decisions and efficiently targeting populations and geographies for interventions.

Racial and ethnic minorities experience disproportionately higher rates of disease, inferior quality of care, and reduced access to care. The identification of areas with large numbers of vulnerable populations (including beneficiaries eligible for Medicare and dually eligible for Medicare and Medicaid) with chronic diseases will increase understanding of geographic differences in disparities, helping to inform policy decisions and better target interventions. This initiative provides an important first step on the path to health equality by improving the infrastructure for health equity activities and initiatives. CMS OMH collaborated with the Centers for Disease Control and Prevention (CDC), as well as other centers and offices within CMS, in designing the MMD Tool to ensure that it would add value by building on existing tools.

The MMD Population View presents health-related measures from Medicare claims by sex, age, dual eligibility for Medicare and Medicaid, race and ethnicity, original reason for entitlement, and state/territory and county via a public interactive website. The Hospital View allows users to compare quality measures between hospitals. The MMD Tool provides users with a quick and easy way to identify areas with large numbers of vulnerable populations and to target interventions to address racial and ethnic disparities. This issue brief provides an overview of the MMD Tool, highlighting five ways in which it can be used and how it differs from other federal mapping tools.

1. Center for Medicare and Medicaid Services (2018) Multiple chronic conditions. Retrieved from https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Chronic-Conditions/MCC_Main.
2. Agency for Healthcare Research and Quality (AHRQ). 2019 National Healthcare Quality and Disparities Report. Publication No. 20(21)-0045-EF. Rockville, MD: AHRQ, December 2020.

DESCRIPTION OF THE MMD TOOL

The MMD Tool provides a dynamic interface in two views, the Population View and the Hospital View. The Population View provides descriptive statistics on chronic disease prevalence, Medicare spending, hospital and emergency department (ED) utilization, preventive services, and preventable hospitalizations, average inpatient days per admission, patient safety indicator admissions, average Medicare reimbursement, inpatient admission type, inpatient admission discharge destination, readmissions, and mortality rates for specific Medicare beneficiary sub-populations, defined by state/territory, or county of residence, urban or rural location, sex, age, dual eligibility for Medicare and Medicaid, and race and ethnicity (i.e., white, black, Asian and Pacific Islander, Hispanic, American Indian/Alaska Native, and other). Users can view measures both at the state/territory and county levels, or urban/rural location. The Population View also offers built-in benchmarking features to investigate disparities:

- within counties and across racial and ethnic groups
- within racial and ethnic groups across counties

The Population View includes ten health outcome and five inpatient measures with information on up to 60 specific chronic conditions based on diagnostic information and allows the user to examine the prevalence of multiple chronic conditions grouped into four categories (i.e., 0, 1, 2, and 3 or more).

Additionally, the Population View includes information on the prevalence, costs, and hospitalizations of beneficiaries having ESRD and/or a disability based on the original or current reason for entitlement.

The MMD Tool Population View also includes COVID-19 prevalence and hospitalization data beginning with the year 2020. The COVID-19 measure can be found in the Domain drop down menu.

For a complete list of the chronic conditions, services, and measures presented by the MMD Population View, refer to Tables 1-3 below.

Using Hospital Compare data, the Hospital View allows users to identify disparities in selected health outcome and quality measures between hospitals at the state or county level. To view the measures included in the Hospital View, refer to Table 4 below. To review the data and methodology used for both the Population and Hospital Views, visit The Mapping Medicare Disparities Tool: Technical Documentation.

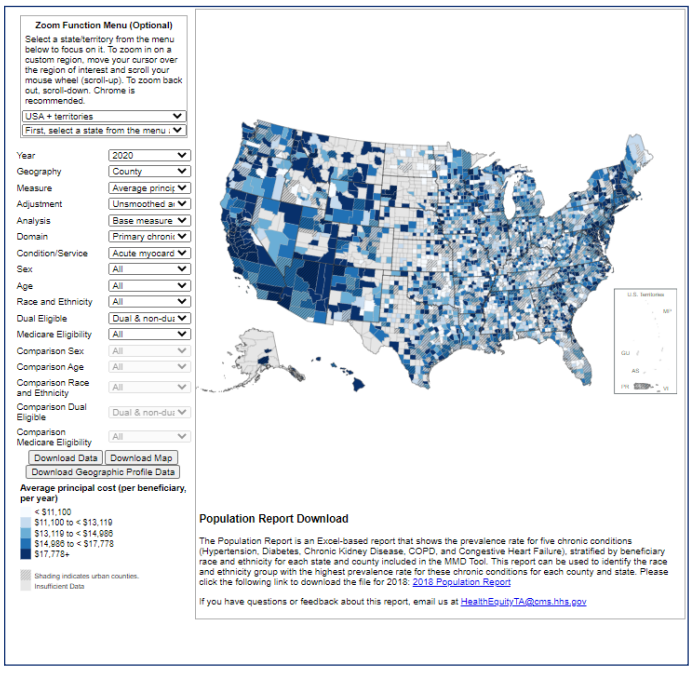


Table 1. Data and Definitions Used in the Mapping Medicare Disparities Tool — Chronic Conditions

Measure	Prevalence Rates and Costs	Hospitalization Rates	AHRQ Prevention Quality Indicators (PQIs)	Readmission Rates	Mortality Rates	Emergency Department Visit Rates	AHRQ Patient Safety Indicators (PSIs) [8]
Method	Chronic Conditions Data Warehouse (CCW) methodology	Centers for Disease Control and Prevention (CDC) Interactive Atlas methodology or CCW methodology [1]	Agency for Healthcare Research and Quality (AHRQ) methodology	CMS 30-day risk-standardized methodology	CMS 30-day risk-standardized methodology	Research Data Assistance Center (ResDAC) methodology	Agency for Healthcare Research and Quality (AHRQ) methodology
Condition	• Acute Myocardial Infarction • Alzheimer's Disease, Related Disorders, or Senile Dementia • Asthma • Atrial Fibrillation • Breast Cancer • Cancer (breast, colorectal, lung, and/or prostate) [2] • Chronic Kidney Disease • Chronic Obstructive Pulmonary Disease (COPD) • Colorectal Cancer • Depression [3] • Diabetes • Heart Failure • Hyperlipidemia (high cholesterol) • Hypertension • Ischemic Heart Disease • Lung Cancer	• Acute Myocardial Infarction (CDC) • Alzheimer's Disease, Related Disorders, or Senile Dementia (CCW) • Asthma (CCW) • Breast Cancer (CCW) • Cancer (breast, colorectal, lung, and prostate) (CCW) [2] • Cardiac Dysrhythmia (CDC) • Chronic Kidney Disease (CCW) • COPD (CCW) • Colorectal Cancer (CCW) • Depression (CCW) [3] • Diabetes (CCW) • Heart Failure (CDC) • Hyperlipidemia (high cholesterol) (CCW) • Hypertension (CDC) • Ischemic Heart Disease (CDC)	• Diabetes Short-term Complications (PQI 01) • Perforated Appendix (PQI 02; retired in 2019) • Diabetes Long-term Complications (PQI 03) • COPD or Asthma in Older Adults (PQI 05) • Hypertension (PQI 07) • Heart Failure (PQI 08) • Dehydration (PQI 10; retired in 2019) • Bacterial Pneumonia (PQI 11) • Urinary Tract Infection (PQI 12) • Uncontrolled Diabetes (PQI 14) • Lower-Extremity Amputation among Patients with Diabetes (PQI 16)	• Acute Myocardial Infarction • Heart Failure • "All-Cause"	• Acute Myocardial Infarction • Heart Failure	• Acute Myocardial Infarction • Alzheimer's Disease, Related Disorders, or Senile Dementia • Asthma • Atrial Fibrillation • Breast Cancer • Cancer (breast, colorectal, lung, and/or prostate) [2] • Chronic Kidney Disease • Chronic Obstructive Pulmonary Disease (COPD) • Colorectal Cancer • Depression [3] • Diabetes • Heart Failure • Hyperlipidemia (high cholesterol) • Hypertension • Ischemic Heart Disease • Lung Cancer • Obesity • Osteoporosis • Prostate Cancer	• Death in Low Mortality DRGs (PSI 02) • Pressure Ulcer (PSI 03) • Death among Surgical Inpatients (PSI 04) • Latrogenic Pneumothorax (PSI 06) • Central Venous Catheter-Related Bloodstream Infections (PSI 07) • Postoperative Hip Fracture (PSI 08) • Postoperative Hemorrhage or Hematoma (PSI 09) • Postoperative Physiologic and Metabolic Derangement Rate Numerator (PSI 10) • Postoperative Respiratory Failure (PSI 11)

1. Listed in the parentheses following each condition under the hospitalization measure is the agency (Centers for Disease Control and Prevention [CDC] or Chronic Condition Date Warehouse [CCW]) whose methodology was used for determining which of the International Classification of Diseases, 9th edition (ICD-9) diagnosis codes (valid until 2015 September), or International Classification of Diseases, 10th edition (ICD-10) diagnosis codes (effective October 1, 2015) are used to calculate hospitalization rates for each condition.
2. Cancer includes: breast cancer, colorectal cancer, prostate cancer, and lung cancer. An individual having two or more cancers from this list only is identified once as having cancer in our methodology.
3. Depression differs from the "Depressive Disorder" in Other Chronic or Potentially Disabling Conditions.

Table 1. Data and Definitions Used in the Mapping Medicare Disparities Tool — Chronic Conditions (continued)

Measure	Prevalence Rates and Costs	Hospitalization Rates	AHRQ Prevention Quality Indicators (PQIs)	Readmission Rates	Mortality Rates	Emergency Department Visit Rates	AHRQ Patient Safety Indicators (PSIs) [8]
Condition	• Obesity • Osteoporosis • Prostate Cancer • Rheumatoid Arthritis / Osteoarthritis • Schizophrenia/ Other Psychotic Disorders • Stroke / Transient Ischemic Attack • 0, 1, 2, or 3+ Conditions [4] • Population-wide [5] • End Stage Renal Disease (ESRD) • Disability	• Lung Cancer (CCW) • Obesity (CCW) • Osteoporosis (CCW) • Prostate Cancer (CCW) • Rheumatoid Arthritis / Osteoarthritis (CCW) • Schizophrenia/ Other Psychotic Disorders (CCW) • Stroke (CDC) • 0, 1, 2, or 3+ Conditions, or "Overall", regardless of the condition specified [6] • ESRD • Disability	• Prevention Quality Overall Composite (PQI 90) • Prevention Quality Acute Composite (PQI 91) • Prevention Quality Chronic Composite (PQI 92)			• Rheumatoid Arthritis / Osteoarthritis • Schizophrenia/ Other Psychotic Disorders • Stroke / Transient Ischemic Attack • 0, 1, 2, or 3+ Conditions, or "Overall", regardless of the condition specified [7] • ESRD • Disability	• Postoperative Pulmonary Embolism or DVT (PSI 12) • Postoperative Sepsis (PSI 13) • Postoperative Wound Dehiscence (PSI 14) • Accidental Puncture or Laceration (PSI 15)
Data	100% Claims (claim types depending on the condition), except for ESRD and disability which depend on the reason for entitlement from the 100% MBSF	100% Inpatient Claims	100% Inpatient Claims	100% Inpatient Claims	100% Inpatient Claims	100% Inpatient and Outpatient Claims	100% GVDB Inpatient Claims

4. Identifies the prevalence rate (i.e., not condition specific) for beneficiaries having 0, 1, 2, or 3 + conditions from the list above.
5. Only available for costs. It provides the costs (i.e., not condition specific) by demographic variables only, regardless of the number of chronic conditions.
6. Identifies the hospitalization rate (i.e., not condition specific) for beneficiaries having 0, 1, 2, or 3 + conditions from the list above. Overall hospitalization rate provides the rate by demographic variables only, regardless of the number of chronic conditions.
7. Identifies the emergency department visit rate (i.e., not condition specific) for beneficiaries having 0, 1, 2, or 3 + conditions from the list above. Overall emergency department visit rate provides the rate by demographic variables only, regardless of the number of chronic conditions.
8. Four inpatient measures do not require a pre-developed and validated methodology due to their straightforward definition. These measures are average inpatient days per admission, average Medicare reimbursement per admission, admission rate by admission type, and admission rate by discharge destination. Definition of these measures can be found later in this section.

Table 2. Data and Definitions Used in the Mapping Medicare Disparities Tool — Other Chronic or Potentially Disabling Conditions

Measure	Prevalence Rates, Costs, and Hospitalization Rates [1]	
Other Disabling Condition	**Congenital and Developmental Conditions** [2] ADHD, Conduct Disorders, and Hyperkinetic Syndrome Autism Spectrum Disorders Cerebral Palsy Cystic Fibrosis and Other Metabolic Developmental Disorders Intellectual Disabilities and Related Conditions Learning Disabilities **Liver Conditions** [2] Liver Disease, Cirrhosis and Other Liver Conditions Viral Hepatitis (General) **Mental Health and Substance Use Conditions** [2] Anxiety Disorders Bipolar Disorder Depressive Disorders Post-Traumatic Stress Disorder (PTSD) Personality Disorders Schizophrenia/Other Psychotic Disorders [3] Tobacco Use Opioid Use Disorder (OUD): Overarching OUD Indicator, Diagnosis- and Procedure-code-based OUD Indicator, Hospitalization and Emergency Room Visits-based OUD Indicator, and Utilization of Medication-Assisted Therapy based OUD Indicator [4] **Mobility Limitations and Chronic Pain Conditions** [2] Fibromyalgia, Chronic Pain and Fatigue Multiple Sclerosis and Transverse Myelitis Mobility Impairments Muscular Dystrophy	**Neurological Conditions** [2] Epilepsy Migraine and Chronic Headache Spina Bifida and Other Congenital Anomalies of the Nervous System Spinal Cord Injury Traumatic Brain Injury and Nonpsychotic Mental Disorders due to Brain Damage **Other Chronic or Disabling Conditions** [2] Human Immunodeficiency Virus and/or Acquired Immunodeficiency Syndrome (HIV/AIDS) Leukemias and Lymphomas Obesity [3] Peripheral Vascular Disease (PVD) Pressure and Chronic Ulcers Sensory - Blindness and Visual Impairment Sensory - Deafness and Hearing Impairment **Other Developmental Delays**

1. All measures are based on CCW methodology: https://www.ccwdata.org/web/guest/condition-categories. Prevalence rates and costs are based on 100% of claims (claim types depending on the condition) while hospitalization rates are based on 100% of inpatient claims.
2. The six bolded conditions provide overall rates and costs for the conditions that are listed.
3. "Schizophrenia/Other Psychotic disorders" shown in Table 2 is included in the calculation of prevalence rates, costs, and hospitalization rates for "Mental Health and Substance Use Conditions." Similarly, obesity shown in Table 2 is included in the calculation of prevalence rates, costs, and hospitalization rates for "Other Chronic or Disabling Conditions.
4. CCW developed four Opioid Use Disorder (OUD) indicators. Indicator 1 is an overarching indicator that satisfies the criteria for Indicator 2, Indicator 3 or Indicator 4 that follow. Indicator 2 identifies OUD based on procedure and diagnosis codes. Indicator 3 identifies OUD based on hospitalization and emergency department visits due to opioid-related overdoses and poisoning events. Indicator 4 identifies OUD from the utilization of FDA approved drug for the treatment of MAT such as buprenorphine and naltrexone. All four indicators are available for prevalence rates. Only Indicator 1 is available for total cost, risk adjusted cost, hospitalization, and emergency department visits. Detailed definition of OUD indicators is available at https://www.ccwdata.org/documents/10280/19139421/other-condition-algorithms-and-reference-list-opioids.pdf.

Table 3. Definitions Used in the Mapping Medicare Disparities Tool — Preventive Services

Preventive Service	CPT/HCPCS Codes	Additional Criteria
Alcohol Misuse Screening & Counseling	G0442, G0443	
Annual Wellness Visit	G0438, G0439	Services limited to beneficiaries no longer in the first 12 months of Medicare enrollment.
Bone Mass Measurement	G0130, 77078, 77079, 77080, 77081, 77083, 76977 0554T, 0555T, 0556T, 0557T, 0558T, 77085	
Cardiovascular Disease Screening	80061, 82465, 83718, 84478	
Colorectal Cancer Screening	G0104, G0105, G0106, G0120, G0121, 82270, G0328, 00812	Services limited to beneficiaries aged 50 or older.
Counseling to Prevent Tobacco Use	99406, 99407	
Depression Screening	G0444	
Diabetes Screening	82947, 82950, 82951	
Diabetes Self-Management Training (DSMT)	G0108, G0109	
Glaucoma Screening	G0117, G0118	
Hepatitis B Vaccine	90740, 90743, 90744, 90746, 90747, G0010	
Hepatitis C Screening	86803, 86804	
HIV Screening	G0432, G0433, G0435, G0475	
Influenza Virus Vaccine	90630, 90653, 90654, 90655, 90656, 90657, 90658, 90660, 90662, 90672, 90673, 90674, 90682, 90685, 90686, 90687, 90688, 90689, 90694, 90756, Q2034, Q2035, Q2036, Q2037, Q2038, Q2039, G0008	

Table 3. Definitions Used in the Mapping Medicare Disparities Tool — Preventive Services (continued)

Preventive Service	CPT/HCPCS Codes	Additional Criteria
Initial Preventive Physical Examination (IPPE)	G0402, G0403, G0404, G0405, G0468	Services limited to new beneficiary during the first 12 months of Medicare enrollment
Intensive Behavioral Therapy (IBT) for Cardiovascular Disease (CVD)	G0446	
Intensive Behavioral Therapy (IBT) for Obesity	G0447	
Lung Cancer Screening Counseling and Annual Screening for Lung Cancer With Low Dose Computed Tomography (LDCT)		
Medical Nutrition Therapy (MNT) Services	97802, 97803, 97804, G0270, G0271	
Pneumococcal Vaccine	90669, 90670, 90732, G0009	
Prostate Cancer Screening	G0102, G0103	Services limited to men aged 50 or older.
Screening for Cervical Cancer with Human Papillomavirus (HPV) Tests		
Screening for Sexually Transmitted Infections (STIs) and High Intensity Behavioral Counseling (HIBC) to Prevent STIs	86631, 86632, 87110, 87270, 87320, 87490, 87491, 87810, 87800, 87590, 87591, 87850, 86592, 86593, 86780, 87340, 87341, G0445	
Screening Mammography	77063, 77067	Services limited to women aged 35 or older.
Screening Pap Test	G0123, G0124, G0141, G0143, G0144, G0145, G0147, G0148, P3000, P3001, Q0091	Services limited to women.
Screening Pelvic Examination	G0101	Services limited to women.
Ultrasound Screening for Abdominal Aortic Aneurysm (AAA)	76706	

See the CMS Medicare preventive services quick reference guide for descriptions of the services and HCPCS/CPT codes: https://www.cms.gov/Medicare/Prevention/PrevntionGenInfo/medicare-preventive-services/MPS-QuickReferenceChart-1.html

Table 4. Definitions Used in the Mapping Medicare Disparities Tool — Hospital View

Domain	Sub-domain	Measures
Readmissions[1]	Readmissions	• Acute Myocardial Infarction (AMI) 30-Day Readmission Rate • Coronary Artery Bypass Grafting (CABG) 30-Day Readmission Rate • Chronic Obstructive Pulmonary Disease (COPD) 30-Day Readmission Rate • Heart Failure (HF) 30-Day Readmission Rate • Hip/Knee Replacement 30-Day Readmission Rate • Hospital 30-Day Readmission Rate (hospital-wide) • Pneumonia (PN) 30-Day Readmission Rate
	Unplanned Hospital Visits	• Rate of Unplanned Hospital Visits after Colonoscopy (per 1,000 colonoscopies) • Hospital Return Days for Heart Attack Patients • Hospital Return Days for Heart Failure Patients • Hospital Return Days for Pneumonia Patients
Safety	Patient Safety Indicators (PSI)	• PSI 3: Pressure Sores • PSI 4: Death among Patients with serious treatable complications after surgery. • PSI 6: Collapsed lung due to medical treatmen • PSI 8: Broken hip from a fall after surgery • PSI 9: Perioperative hemorrhage or Hematoma rate • PSI 10: Postoperative Acute Kidney Injury Requiring Dialysis Rate • PSI 11: Postoperative Respiratory Failure Rate • PSI 12: Serious blood clots after surgery • PSI 13: Blood stream infections after surgery (Sepsis) • PSI 14: Split open wound after surgery on the abdomen or pelvis • PSI 15: Accidental cuts and tears from medical treatment
	Mortality	• Acute Myocardial Infarction (AMI) 30-Day Mortality Rate • Coronary Artery Bypass Grafting (CABG) 30-Day Mortality Rate • Chronic Obstructive Pulmonary Disease (COPD) 30-Day Mortality Rate • Heart Failure (HF) 30-Day Mortality Rate • Pneumonia (PN) 30-Day Mortality Rate • Stroke (STK) 30-Day Mortality Rate
	Healthcare Associated Infections (HAIs)	Standard Infection Ratios (SIR) for the following: • Central line – associated bloodstream infections (CLABSI) in ICUs and select wards • Central line – associated urinary tract infections (CAUTI) in ICUs and select wards • Surgical site infections (SSI) from colon surgery • Surgical site infections (SSI) from abdominal hysterectomy • Methicillin-resistant Staphylococcus Aureus (MRSA) blood infections • Clostridium difficile (C.diff.) intestinal infections
	Hip/Knee Complications	Hip/Knee Complications

1. All readmission measures are based on a 30-day risk-standardized rate.

Table 4. Definitions Used in the Mapping Medicare Disparities Tool — Hospital View (continued)

Domain	Sub-domain	Measures
Medicare Spending	Value of Care	• Value of Care Heart Attack measure • Value of Care Hip/Knee Replacement measure • Value of Care Heart Failure measure • Value of Care Pneumonia Measure • Medicare Spending per Beneficiary
Patient Experience	Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey	• Care transition – star rating • Cleanliness – star rating • Communication about medicines – star rating • Discharge information – star rating • Doctor communication – star rating • Nurse communication – star rating • Overall hospital rating – star rating • Quietness – star rating • Recommended hospital – star rating • Staff responsiveness – star rating • Summary star rating
Hospital Value Based Purchasing (HVBP)	None	Unweighted Scores for each HVBP domain: • Unweighted Normalized Clinical Care Domain Score • Unweighted Normalized Efficiency Domain Score • Unweighted Patient and Caregiver Centered Experience Care/Care Coordination Domain Score • Unweighted Normalized Safety Domain Score Total Performance Score (TPS)
Inpatient Psychiatric Facility Quality Reporting (IPFQR)	None	• Hours of physical restraint use • Hours of seclusion • Patients discharged on multiple antipsychotic medications with appropriate justification • Influenza Immunization • Alcohol Use Brief Intervention Provided or Offered • Alcohol Use Brief Intervention • Tobacco Use Treatment Provided or Offered (during the hospital stay) • Tobacco Use Treatment (during the hospital stay) • Tobacco Use Treatment Provided or Offered at Discharge • Tobacco Use Treatment at Discharge • Medication Continuation Following Inpatient Psychiatric Discharge

2. Each unweighted score is equally weighted to calculate the Total Performance Score (TPS).

Table 4. Definitions Used in the Mapping Medicare Disparities Tool — Hospital View (continued)

Domain	Sub-domain	Measures
Prospective Payment System (PPS) – Exempt Cancer Hospital Quality Reporting (PCHQR)	Oncology Care	• Plan of Care for Pain – Medical Oncology and Radiation Oncology
	Exempt Cancer Hospital Quality Reporting	• Clostridium Difficile (C.Diff): SIR • MRSA Bacteremia: SIR • SSI - Colon Surgery: SIR • SSI - Abdominal Hysterectomy: SIR • Influenza Vaccination Coverage among Healthcare Personnel: Adherence Rate
Effective Care	Effective Care	• Appropriate Care for Severe Sepsis and Septic Shock

1. All readmission measures are based on a 30-day risk-standardized rate.
2. Each unweighted score is equally weighted to calculate the Total Performance Score (TPS).

MMD Tool Population

The MMD Population View presents information for Medicare beneficiaries age 65 years or older, persons under age 65 with certain disabilities, and persons of any age with ESRD. Medicare beneficiaries with any Medicare Advantage enrollment during the year are excluded since claims data are not available for these beneficiaries. Beneficiaries who died during the year are included up to their date of death, if they meet the other inclusion criteria described above. The Hospital View includes data from both fee-for-service beneficiaries, as well as Medicare Advantage beneficiaries.

Data Source

The MMD Population View is based on the CMS administrative claims data[3] for Medicare beneficiaries enrolled in the fee-for-service program and Geographic Variation Database Beneficiary (GVDB) Summary Files. The FFS files are available from CMS through the Chronic Conditions Data Warehouse, including beneficiaries who are also eligible for Medicaid.[4] These claims files are known as the CMS Research Identifiable Files (RIFs), which consist of the Denominator File—with beneficiary eligibility, enrollment, and characteristics data—and final action items for services covered by Medicare Part A (hospital insurance) and Part B (medical insurance). The prevalence rates are based on 100 percent of Part A and Part B claims. The hospital utilization, preventable hospitalization, and readmission and mortality rates are based on 100 percent of inpatient claims, while ED utilization rates are based on 100 percent of inpatient and outpatient claims. GVBD inpatient files include beneficiary eligibility, enrollment, and beneficiary characteristic data.

The data used in the Hospital View analysis is sourced from various data sources (e.g., CMS administrative claims for Medicare beneficiaries enrolled in the program, patient surveys), which are available from CMS via the Hospital Compare database.

Protection of Beneficiary Confidentiality & Privacy

The underlying data in the MMD Tool is certified as de-identified according to the HIPAA Privacy Rule. In addition, the MMD Tool performs a series of checks and data suppression decisions based on the size of the selected measure's study population and the share of the study population that leads to the calculated domain/measure (e.g., hospitalization rate). If the study population for the chosen set of beneficiary characteristics (i.e., every combination of state/territory and county of residence, sex, age group, racial and ethnic group, original reason for entitlement, and dual eligibility indicator) is less than 11 beneficiaries, the MMD Tool will not display the chosen domain or measure. Also, if the number of beneficiaries for the numerator of a measure (e.g., beneficiaries who are hospitalized) is less than three but greater than zero, the MMD Tool will display 0 percent.

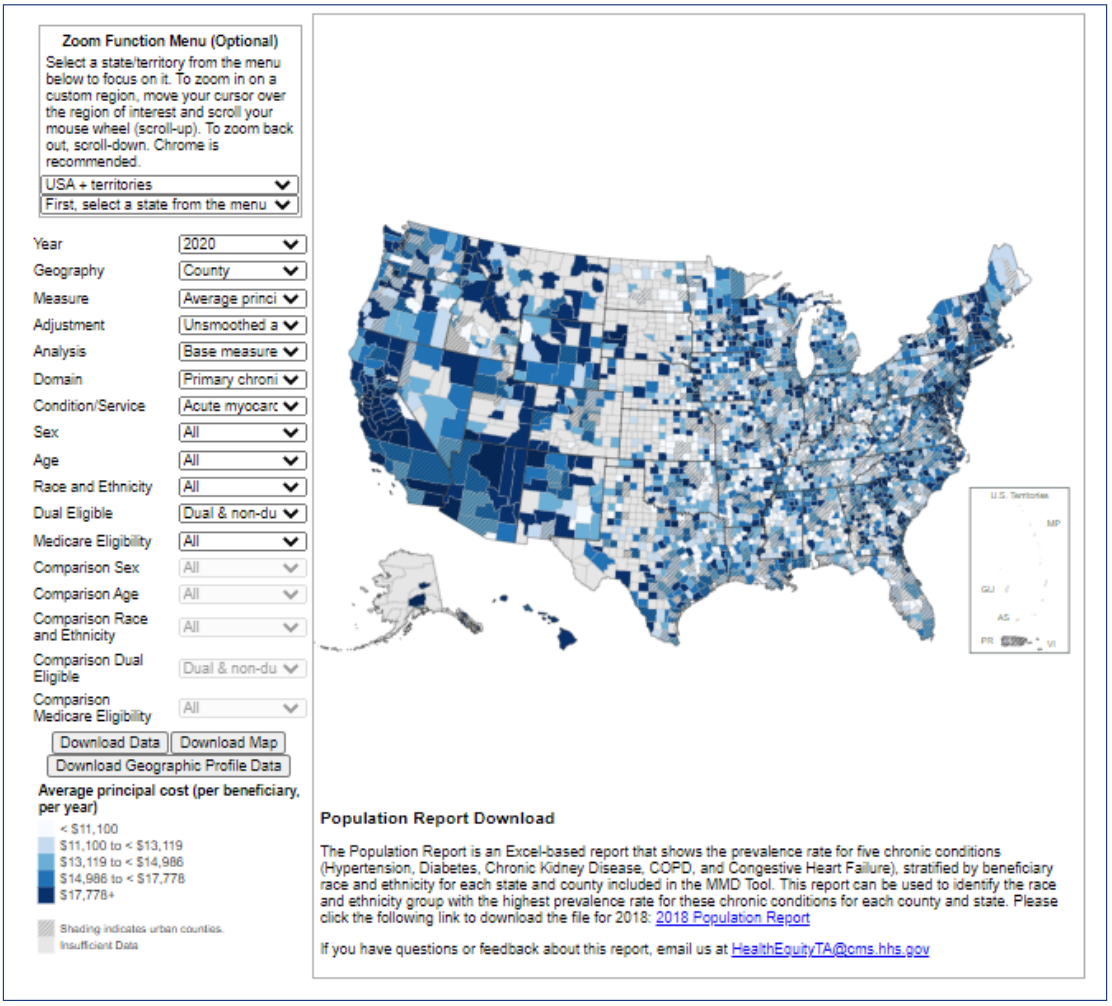
3. The MMD Tool provides measures for 2012-2020. However, the methodology for the prevalence of chronic conditions requires up to three years of claims, making 2010-2011 data necessary.
4. See www.ccwdata.org. Data dictionaries for CMS RIFs can be found on www.resdac.org.

Utilizing The MMD Tool

The MMD Tool provides users with a dynamic, interactive experience that can be used in a variety of ways. Some of the features that the MMD Tool provides are the ability to:

- Visualize health outcomes (e.g., prevalence rates) at a national, state/territory, or county level, or by urban/rural location.
- Identify health outcomes by select beneficiary characteristics (e.g., by age, race and ethnicity, sex, etc.)
- Compare differences between two geographic locations (e.g., benchmark against the national average)
- Compare differences between beneficiary characteristics within the same geographic area
- Compare quality measures by hospital
- Download maps at the county, state/territory, or national level.

A screenshot of the MMD Tool is provided below:



FIVE EXAMPLES OF THE MMD TOOL

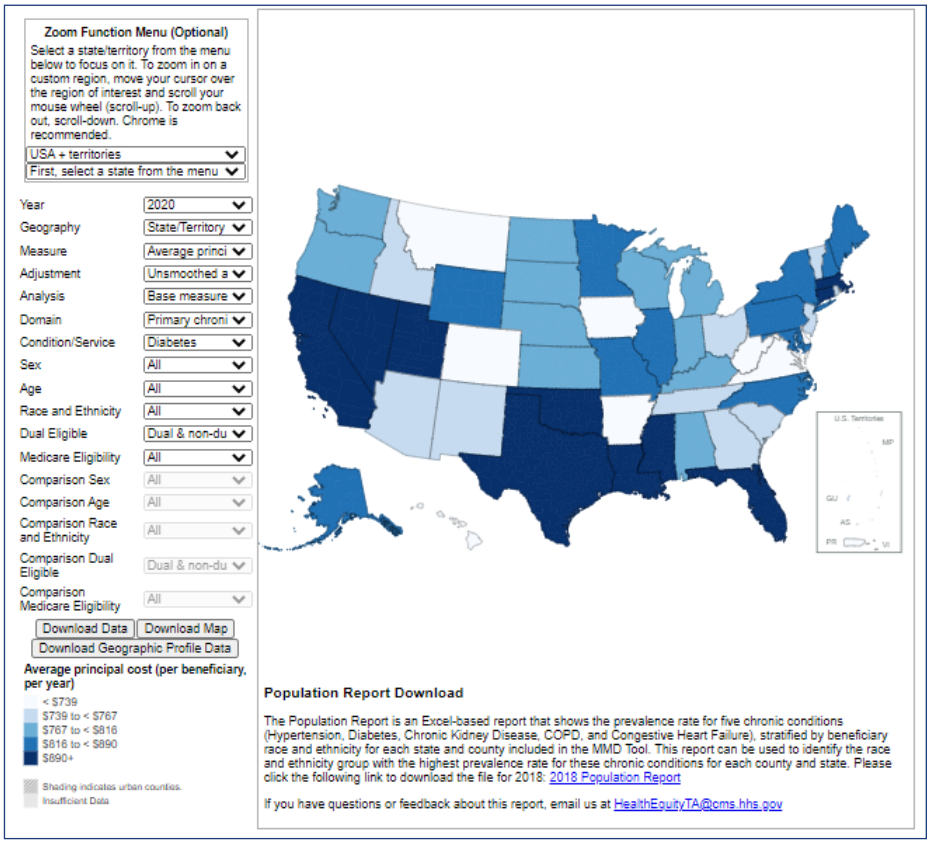
Here are five examples of what can be done using the MMD Tool. First, we will walk through examples using the MMD Population View. The MMD Population View allows users to build a query step-by-step. A user can choose to use all of the menus provided by the MMD Population View, or to leave one or more of the menus unselected, which will then default to "All." Not all of the menu options provided by the MMD Population View are utilized in the examples provided.

Example 1

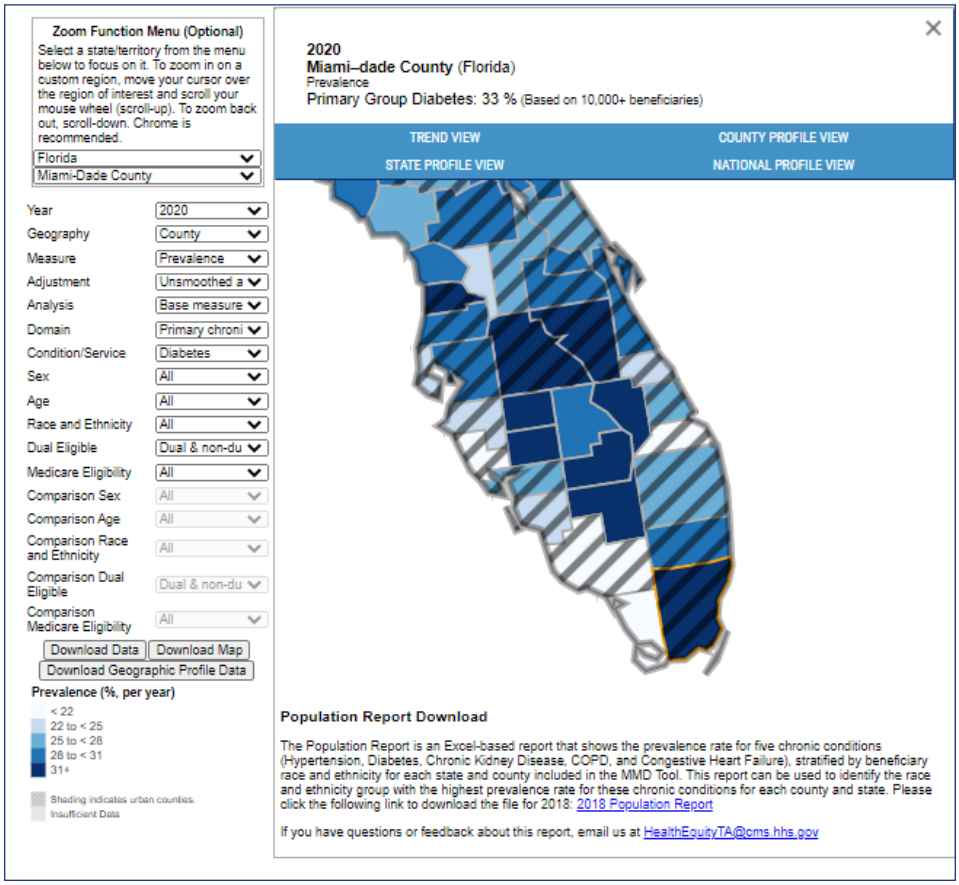
Using the MMD Population View, a user can identify specific regions (e.g., states, territories, counties, or urban/rural locations) of the United States that perform much worse than others for a specific chronic condition or service.

Suppose a user is interested in addressing the prevalence of diabetes among Medicare beneficiaries, and would like to locate the region where the impact of health initiatives could be the largest. The MMD Tool can provide this information in six steps:

- From the **Year** menu, select **"2020."**
- From the **Geography** menu, select **"State/Territory."**
- From the **Measure** menu, select **"Prevalence."**
- From the **Analysis** menu, select **"Base Measure."**
- From the **Domain** menu, select **"Primary Chronic Conditions."**
- From the **Condition/Service** menu, select **"Diabetes."**



Using the MMD Population View, a user can see that in 2020, the southern portion of the United States had the highest rates of diabetes among the Medicare population, and that it might be a good area to start investing in preventive programs. A user may manually zoom in on the map to an area of interest, or select the state of interest from the state dropdown menu. Noticing that Florida has very high rates of diabetes (identified by dark coloring on the MMD Tool) among the Medicare population, a user can examine which counties within Florida are the worst performers.



- From the **Geography** menu, replace **"State/ Territory"** with **"County."**
- From the **USA + Territories** menu, select **"Florida."**
- From the **Select A County** menu, select **"Miami-Dade County."**

The MMD Population View shows that, in 2020, Miami-Dade County, Florida, experienced very high rates of diabetes among the Medicare population, with approximately 33 percent of beneficiaries having been diagnosed with diabetes.

Example 2

The MMD Population View also allows a user to view the data based on a specific sub-population within a county or state. For example, if the same user in the previous example is interested in the rate of diabetes among Hispanic males, age 65 to 74, in Miami-Dade County, Florida, the MMD Population View will provide this information with the following additional selections:

- From the **Sex** menu, select **"Male."**
- From the **Age** menu, select **"65–74."**
- From the **Race and Ethnicity** menu, select **"Hispanic."**

The MMD Population View shows that 33 percent of Hispanic males, age 65 to 74, in Miami-Dade County, Florida, were diagnosed with diabetes among the Medicare population.

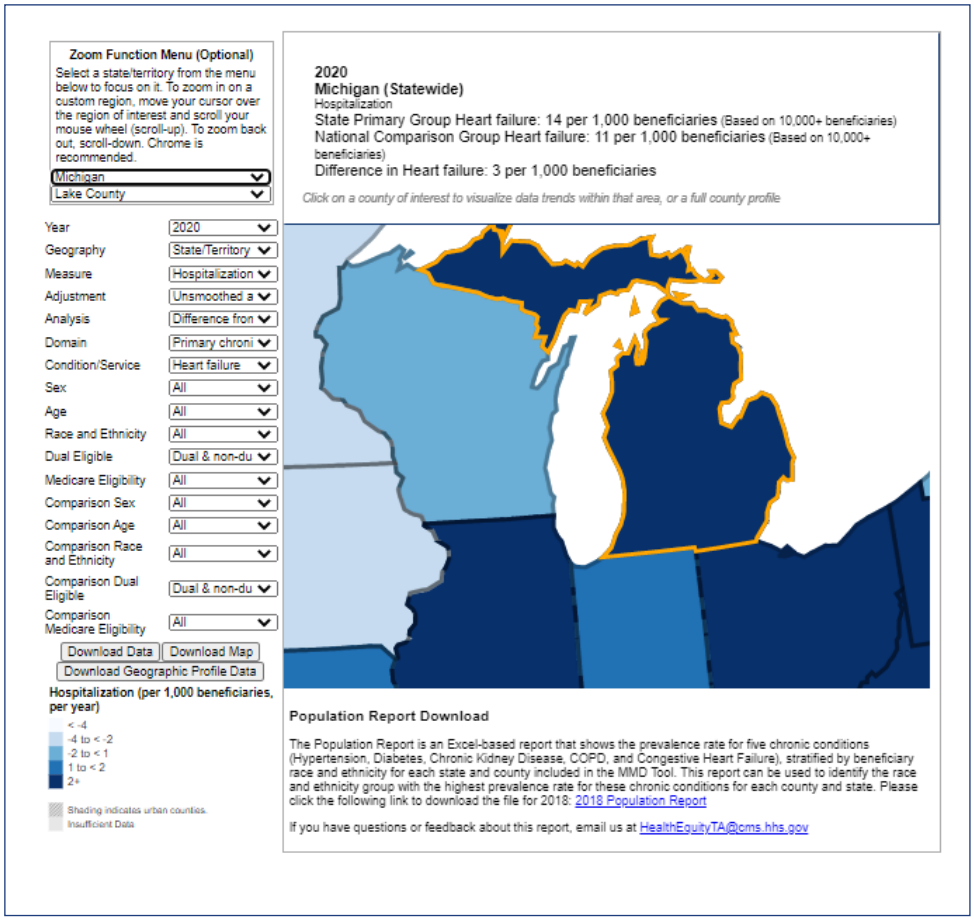
Example 3

Using the MMD Population View, a user can also analyze the *differences* in rates between a specific geographic location (i.e., state, territory, or county) for a selected measure and the national, state/territory, or county average rate.

Suppose a user is interested in how the 2020 rate of heart failure (HF) hospitalizations among Medicare beneficiaries in the state of Michigan compares to the national average. This information can be obtained from the MMD Population View in seven steps:

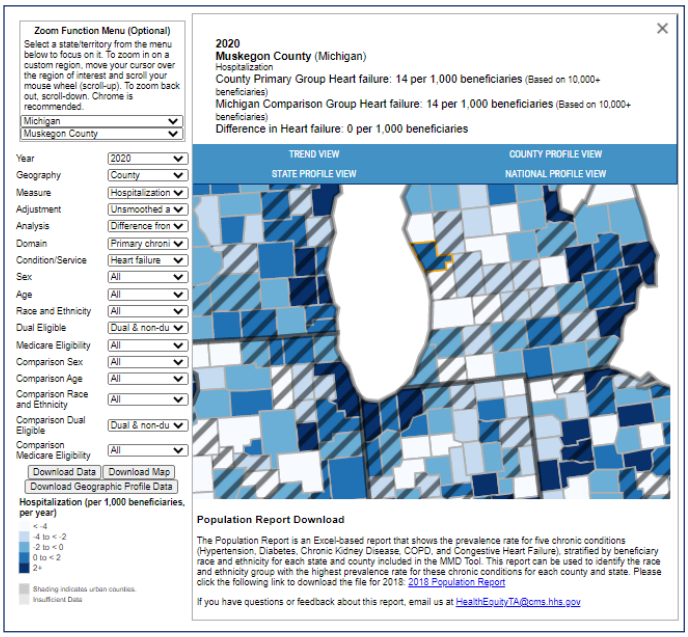
- From the **Year** menu, select **"2020."**
- From the **Geography** menu, select **"State/Territory."**
- From the **Measure** menu, select **"Hospitalization."**
- From the **Analysis** menu, select **"Difference from National Average."**
- From the **Domain** menu, select **"Primary Chronic Conditions."**
- From the **Condition/Service** menu, select **"Heart Failure."**
- From the **USA + Territories** menu, select **"Michigan."**

After completing these steps, the MMD Population View will update to inform the user that in 2020, the state of Michigan experienced approximately 3 more hospitalizations per 1,000 beneficiaries as a result of HF compared to the national average.



Suppose the user is further interested in how a specific county's (e.g., Muskegon County, Michigan's) rate of HF hospitalizations compares to the state average rate of HF hospitalizations. The MMD Tool can also provide this information by making the following replacement selections:

- From the **Geography** menu, replace **"State/ Territory"** with **"County."**
- From the **Analysis** menu, select **"Difference from State/Territory Average"** instead of **"Difference from National Average."**
- From the **Select A County** menu, select **"Muskegon County."**

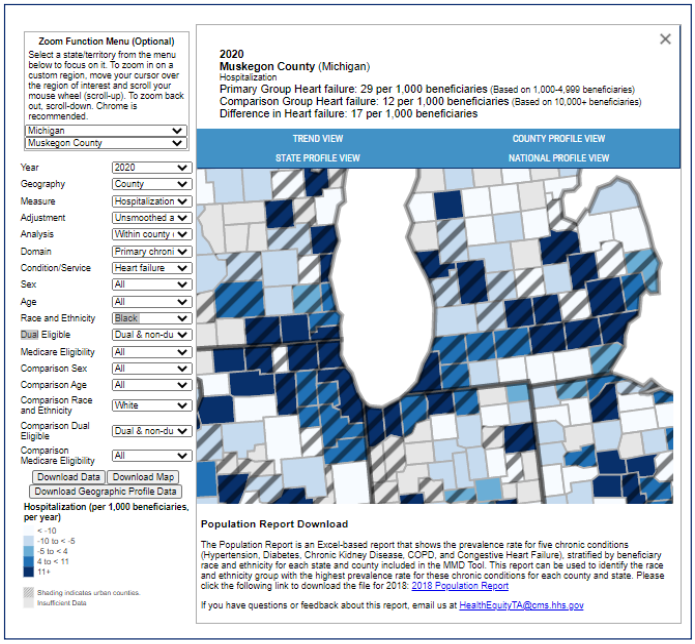


Following the completion of these steps, the MMD Population View will inform the user that in 2020, Medicare beneficiaries in Muskegon County, Michigan experienced approximately the same number of hospitalizations as a result of HF compared to the state average (14 per 1,000 beneficiaries)

Example 4

Continuing from the example above, the MMD Population View can also show a user how the rates of HF hospitalizations differ among two racial and ethnic groups *within the same county*. For example, suppose a user is interested in the rate of HF hospitalizations among Black Medicare beneficiaries in Muskegon County, Michigan compared to the 2020 rate of HF hospitalizations among White Medicare beneficiaries in the *same* county. The MMD Population View can be used to obtain this information by making the following replacement selections:

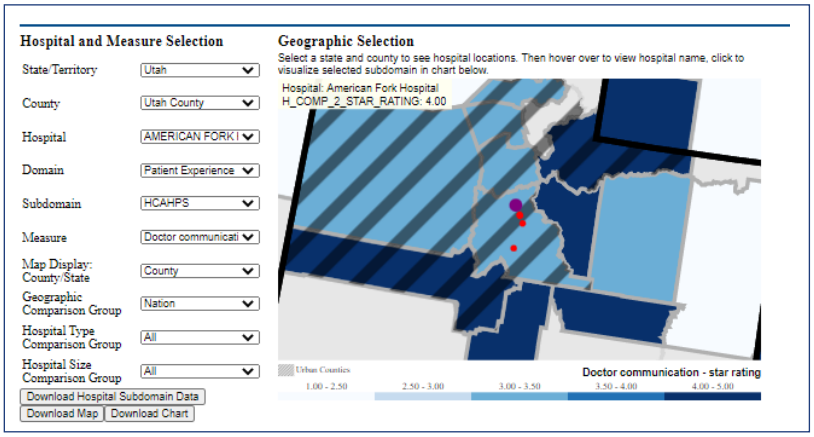
- From the **Analysis** menu, select **"Within County Difference"** instead of **"Difference from State Average."**
- From the **Race and Ethnicity** menu, select **"Black."**
- From the **Comparison Race and Ethnicity** menu, select **"White."**



The MMD Population View will then inform the user that in 2020, Black Medicare beneficiaries in Muskegon County, Michigan experienced approximately 17 more hospitalizations per 1,000 beneficiaries as a result of HF than White Medicare beneficiaries in the same county.

Example 5

Using the MMD Hospital View, a user can compare hospital quality measures between hospitals based on geography, hospital type, hospital ownership, and/or hospital size.



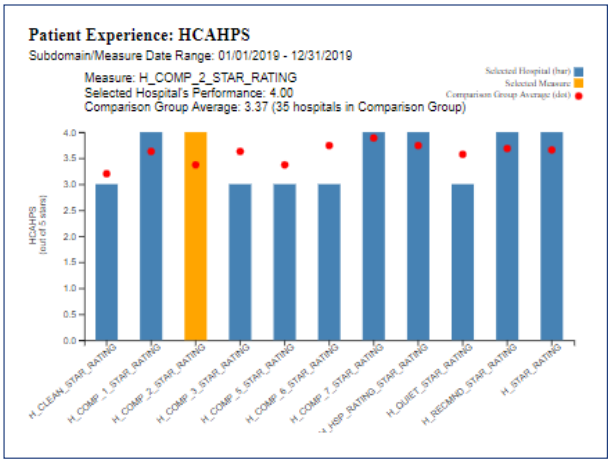
Suppose a user is interested in patient experience measures between different hospitals in Utah County, Utah. The MMD Hospital View can provide this information with the following steps:

- From the **State/Territory** menu, select **"Utah."**
- From the **County** menu, select **"Utah County."**
- From the **Hospital** menu, select **"American Fork Hospital."** The American Fork Hospital will be highlighted as a purple dot on the map; other hospitals in Utah County will be highlighted as red dots.
- From the **Domain** menu, select **"Patient Experience"** The **Subdomain** menu will automatically populate with the **"HCAHPS"** quality metrics.
- From the **Measure** menu, select **"Doctor Communication."**

The user will see that the American Fork Hospital has an HCAHPS Doctor Communication rating of 4.00. The other four hospitals in Utah County have Doctor Communication ratings of 2.00 or 3.00.

In addition to viewing the hospitals on the map, a user may view all HCAHPS measures in a bar chart below the map, which displays the selected metric, **Doctor Communication** with an orange bar. Next to the chart the user will see the selected hospital's information including type, size, ownership, and address.

To compare a user's selected hospital to other hospitals, the user may select from the **Geographic Comparison Group**, **Hospital Type Comparison Group** or **Hospital Size Comparison Group** drop down menus. Suppose a user is interested in how American Fork Hospital's HCAPHS ratings compare to the state average.



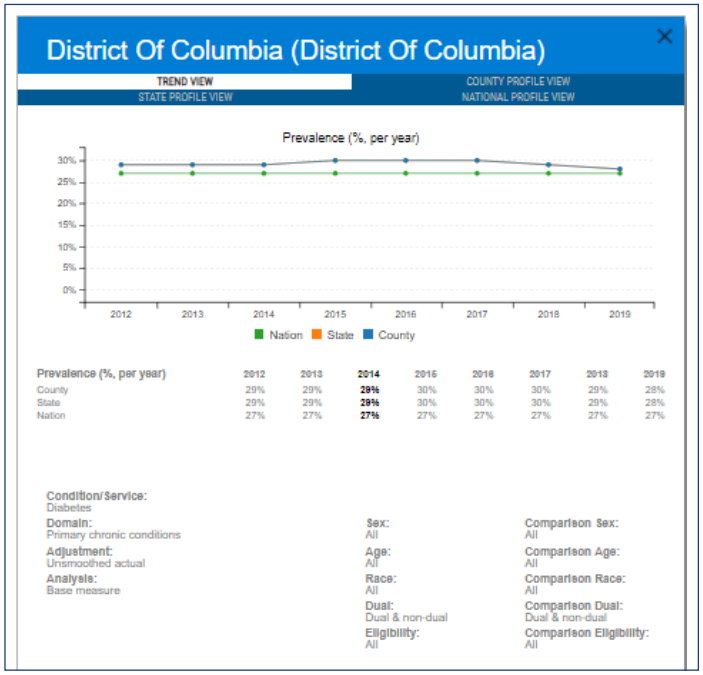
- From the **Geographic Comparison Group** menu, select **"State."**

The MMD Hospital View displays American Fork Hospital's HCAHPS ratings as bars in the bar chart, with Utah's overall state ratings as red comparison dots. American Fork Hospital shows a higher **Doctor Communication** rating than the state, with a 4.00 versus Utah's overall state rating of 3.37.

OTHER FEATURES OF THE MMD POPULATION VIEW

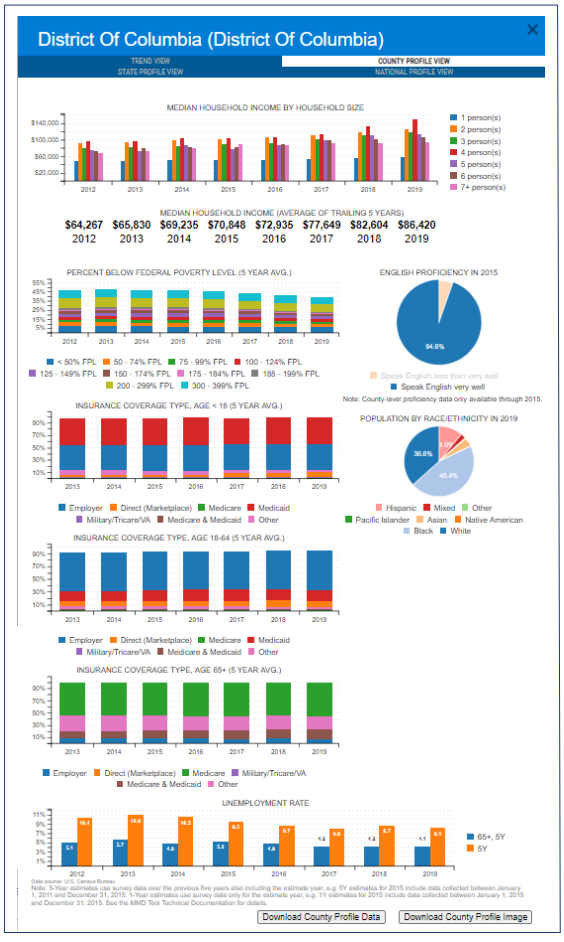
Trend View

The MMD Population View allows users to analyze trends for all health measures. By clicking on a county, and then selecting “Trend View”, users can view line charts for the selected metric together with state and national benchmarks. This view also allows users to download the resulting image to their computers.



County, State, and National Profile Views

The MMD Population View provides socio-economic variables in three profiles, at the county, state, and national level. The variables displayed in these profiles include: median household income by household size, median household income, percentage below the poverty level, insurance coverage type by age, unemployment rate, English proficiency rate, and population by race/ethnicity. By clicking on a county and then selecting “County Profile View” users can view these socioeconomic variables for the selected county. To view the socio-economic variables for a selected state or nationally, click on “State Profile View” or “National Profile View”. The socio-economic variables are not specific to the Medicare population, but some variables include data for individuals that are 65 or older.



DIFFERENCES BETWEEN THE MMD TOOL AND OTHER FEDERAL HEALTH MAPPING TOOLS

There are other publicly available tools with similar objectives as the MMD Tool that may provide users with additional, complementary information on health disparities. Four of these tools are described in the following pages.

NEXT STEPS

The MMD Tool is a dynamic and analytical product, which will be continuously improved and enriched over time. Planned enhancements include adding data for more recent years to allow for trending analyses and adding measures for other chronic conditions and services.

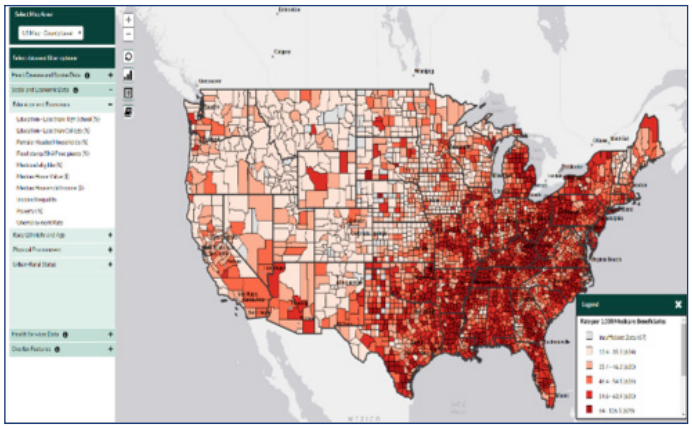
CDC Interactive Atlas of Heart Disease and Stroke

The CDC Interactive Atlas of Heart Disease and Stroke is a dynamic mapping tool that can be used to identify hospitalizations and mortality rates for cardiovascular diseases by race and ethnicity, sex, and age at a state or county level, along with maps of social and economic factors (e.g., education levels, unemployment rate, etc.) and health services for the entire United States.

Using the CDC Interactive Atlas, users can also view socioeconomic information, as well as information regarding the number of providers and the location of hospitals and facilities at a state or county level. This information can be used in conjunction with the MMD Tool, in order to make inferences on how wealth, education, and access to care affect the health outcomes of Medicare beneficiaries.

The MMD Tool distinguishes itself from the CDC Interactive Atlas by providing users with additional diseases and measures, as well as offering additional racial and ethnic groups and age groups from which to select.

Interactive Atlas of Heart Disease and Stroke.



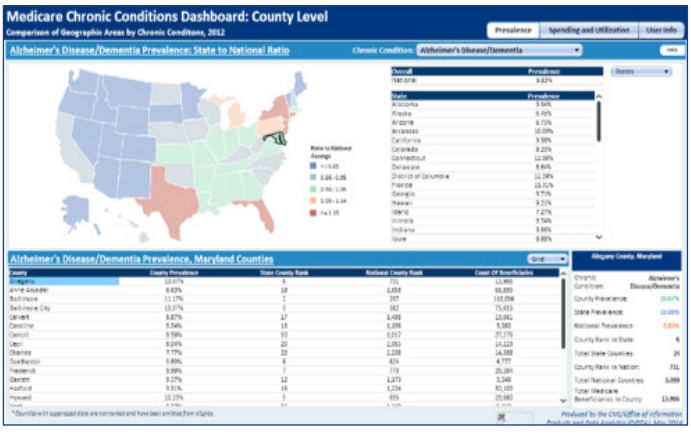
CMS Medicare Chronic Conditions Dashboard

The Medicare Chronic Conditions Dashboard(s) is a set of four geographically defined interactive tools that present information on prevalence, utilization (ED visits and hospital readmissions) and Medicare spending for Medicare FFS beneficiaries with 17 chronic conditions and multiple chronic conditions.

The information is presented for the U.S. Department of Health and Human Services/ CMS regions, states, counties, and hospital referral regions. The region- and state-level dashboards also allow the user to select information for specific beneficiary sub-groups defined by sex, age group, and Medicare and Medicaid enrollment (dual eligibility status), though not by race and ethnicity. The dashboards present data for 2018.

The MMD Tool distinguishes itself from the CMS Medicare Chronic Conditions Dashboard by beneficiary race and ethnicity, the ability to view these measures in U.S. territories and by urban/ rural location, and to compare certain measures by hospital.

CMS Medicare Chronic Conditions Dashboard.



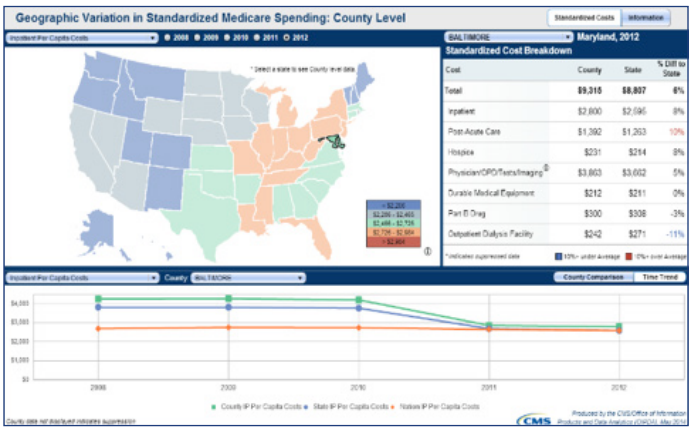
CMS Geographic Variation Dashboard

The CMS Geographic Variation Dashboard provides users with a tool to identify geographic differences that exist in Medicare spending by service type (e.g., inpatient, post-acute care, hospice, physician, etc.) across multiple years (from 2014–2018). These features allow users to view how spending, across all service types, has changed over time in a state or county, as well as how spending within a specific county compares to all the other counties in the selected county's state, the state's average, and the national average.

This dashboard also provides users with rankings of counties within a state with regards to Medicare spending.

The MMD Tool distinguishes itself from the CMS Geographic Variation Dashboard by providing users with the ability to filter total costs by disease and beneficiary characteristics (e.g. sex, age, or race and ethnicity), the ability to view these measures in U.S. territories and by urban/ rural location, and to compare certain measures by hospital.

CMS Geographic Variation Dashboard.

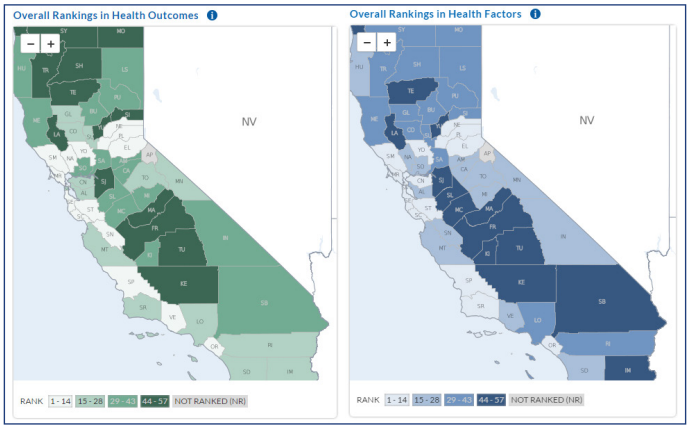


County Health Rankings & Roadmaps

The County Health Rankings & Roadmaps provides users with a tool to identify relationships that may exist between a state's or county's health-related factors (i.e., social and economic, clinical care, behavioral, and environmental factors) and its health-related outcomes (i.e., the average length of life and the quality of life). Using the tool, a user can also identify how a state's or county's performance (as measured by its rankings in health-related outcomes and health-related factors) has changed over time relative to other states or counties from 2011 through 2020.

The information provided by the County Health Rankings & Roadmaps—specifically with regards to behavioral factors (e.g., tobacco use, alcohol and drug use, sexual activity) and social and economic factors (e.g., education, employment, and income level)—can be used in conjunction with the MMD Tool to analyze potential correlation between health-related factors and disease prevalence and other measures in the MMD Tool.

County Health Rankings & Roadmaps.



The MMD Tool distinguishes itself from the County Health Rankings & Roadmaps tool by providing users with additional health-related outcome and performance measures, the ability to view these measures by beneficiary characteristics (e.g., sex, age, or race and ethnicity), and the ability to view these measures in U.S. territories and by urban/rural location.

CONCLUSION

The MMD Tool is expected to be a useful new resource for government agencies, policymakers, hospitals, researchers, community-based organizations, health providers, quality improvement organizations, and the general public to identify and explore different facets of Medicare chronic disease disparities. Using the MMD Tool, organizations can identify regions and populations where Medicare outcomes differ from state/territory or national averages, or from urban versus rural locations, thereby allowing policymakers to develop and target strategies and programs to eliminate disparities that exist between different populations (e.g., racial and ethnic groups). The MMD Tool offers data stratified by beneficiary characteristics to support the development of tailored interventions to reduce gaps in care. It also can be used by researchers and academics as a starting point to identify important health-related questions that impact the Medicare population. Finally, given that the MMD Tool visually summarizes large amounts of data in a simple format, users with a wide diversity in data sophistication may take advantage of the breadth of information contained in the MMD Tool.

To access the MMD Tool, visit:

https://www.cms.gov/About-CMS/Agency-Information/OMH/OMH-Mapping-Medicare-Disparities.html

REFERENCES

The technical documentation for the MMD Tool can be viewed at The Mapping Medicare Disparities Tool: Technical Documentation.

CORRESPONDENCE

Any questions or concerns related to the MMD Tool can be addressed to: HealthEquityTA@cms.hhs.gov

The MMD Tool was developed by CMS OMH in collaboration with NORC at the University of Chicago as part of the CMS Equity Plan for Improving Quality in Medicare.

NORC at the University of Chicago