



CENTER FOR IMPROVING
VALUE IN HEALTH CARE

Community Dashboard: Methodological Notes

Summer 2024

The Community Dashboard provides communities across Colorado with information on health care cost, utilization, access and quality of care. The most recent report is based on 2013-2022 claims from the Colorado All Payer Claims Database (CO APCD) which represents the majority of Colorado residents with health insurance. The CO APCD includes claims for Medicaid, Medicare Advantage, and Medicare Fee-for-Service, and commercial payers. The CO APCD does not include most of the ERISA-based self-insured employer claims, or federal insurance programs such as Veterans Affairs, Indian Health Services, and Tricare.

Below are methodological considerations applicable to both the interactive Community Dashboard and the associated data files. The data files include additional measures and demographic breakdowns (i.e. age and sex) for measures in the interactive dashboard. Both the interactive report and the data files are available publicly at www.civhc.org.

Description of Measures

Cost of Care Measures

Cost measures reflect payments made by health insurance payers and insured individuals for medical services and prescriptions filled Per Person Per Year (PPPY) for Colorado residents. The PPPY calculation does NOT include premiums paid and only reflects payments made by insurance companies and patients for health care services received or prescriptions filled. Prescription drug costs do not include provider administered drugs or rebates received by patients at the point of sale, or by payers after paying for prescription drugs. Inpatient, Outpatient and Professional costs do not include payments that occur outside the claims processing process except Medicaid payments made to hospitals. CIVHC receives supplemental hospital payments from Medicaid annually and includes those payments in the overall cost calculations for Medicaid.

The PPPY measure is calculated by summing all dollars spent on medical and pharmacy services divided by the total number of insured-years. The total dollars spent on medical and pharmacy services are based on insurance claims submitted to the CO APCD by health insurance plans. Insured-years are calculated by summing the months of insurance eligibility for all people with at least one month of eligibility in the reporting period, then dividing the result by 12. The PPPY value is displayed as a dollar amount. For all cost measures, **lower values are better**.

There are three cost breakdowns displayed in the report:

1. Health Plan Only Cost PPPY, or the amount of dollars paid solely by health insurance plans,
2. Patient Only Cost PPPY, or the amount of dollars paid solely by the patient, also known as “out-of-pocket” cost, which includes copay, coinsurance and deductibles, and
3. Total Cost (Health Plan and Patient) PPPY, the sum of Health Plan Cost and Patient Cost.

Dollar amounts were calculated in two ways: 1) without any adjustments for population risk, and 2) with risk-adjustment applied. Both sets of calculations are available in the detailed data files, whereas the interactive dashboard online displays only the risk-adjusted measures. The risk-adjusted amounts are based on the Johns Hopkins Adjusted Clinical Groups (ACG) System, which assigns weights to patients based on diagnoses, disease patterns, age, and sex to account for differences in patient illness burden. These weights are then used to calculate the risk-adjusted measures. By using these weights, the calculated amounts yield more apples-to-apples comparisons of cost between different populations, within a specific year and payer type. Neither cost calculation (with or without risk-adjustment) includes any adjustment for inflation over time.

There are four major service categories displayed for cost measures in this report: **Inpatient, Outpatient, Professional, and Pharmacy.**

- **Inpatient** services refer to health care services received after being admitted to a hospital, skilled nursing facility, or another institution offering inpatient services. Inpatient services include payments for facility services only, and do not include any professional or ancillary payments such as labs that may get billed separately. It is important to note that Medicaid pays for services that are not covered by commercial payers (e.g., long term care services and nursing facilities) and users should keep this in mind when comparing Medicaid inpatient costs with inpatient costs from other payers.
- **Outpatient** services are health care services received that do not involve a hospital admission. Outpatient services can take place in a hospital or hospital owned facility and include home health services and services provided in ambulatory surgery centers, rural health clinics, Federally Qualified Health Centers (FQHCs), or other outpatient facilities. Outpatient services include payments for facility services only and do not include any professional or ancillary payments such as labs that may get billed separately.
- **Professional** services are those provided by physicians or other health care professionals, such as a nurse practitioner, chiropractor, psychiatrist, or oncologist, and refer primarily to non-facility costs for evaluation and management services (e.g., office visits, specialist consultations, hospital and emergency room visits, home visits, nursing home visits) and procedures (e.g., major and minor surgical procedures, ambulatory procedures, anesthesia, endoscopies, imaging procedures). These services can be provided in conjunction with an inpatient or outpatient visit across a variety of health care facility types but are displayed separately in the dashboard. This category also includes additional costs from non-facility providers or suppliers for lab tests, cardiovascular tests, durable medical equipment (e.g., the administration of selected drugs, prosthetic devices, oxygen and other supplies), ambulance, chemotherapy, vaccinations, and other services and supplies.
- **Pharmacy** services refer to prescription drugs filled and paid for through health insurance for medications. Please note pharmacy costs do not include any rebates, discounts, or subsidies received by the payer or the patient. These costs also exclude physician-administered drugs that were received in an inpatient or outpatient setting.

PPPY values for Inpatient, Outpatient, and Professional services are based on insured-years for people with at least one month of *medical* eligibility in the reporting period. PPPY values for Pharmacy services are based on insured-years only for people with at least one month of *prescription drug* eligibility.

Overall PPPY values are calculated using insured-years for people with at least one month of either *medical* or *prescription drug* eligibility. An eligibility month with both medical and prescription drug coverage counts as a single month when calculating insured-years.

Note: Not all people with insurance coverage are eligible for both medical and pharmacy services. As a result, the Total PPPY values do not equal the sum of the PPPY values for Inpatient, Outpatient, Professional, and Pharmacy services.

Total Spending

Total spending (lower is better) is calculated as a sum of all dollars spent on medical and pharmacy services by health insurance plans and patients combined, during the measurement year. This measure encompasses all service categories described in the Cost of Care section above.

Utilization Measures

General Health Care Use Measures

The Johns Hopkins ACG grouping system¹ developed Resource Use categories to group people who use similar levels of health care resources. The data provided in the Community Dashboard includes two categories of ACG classification that describe whether or not Coloradans with health care coverage are using their coverage and accessing the health care system as recommended. The values are calculated as a rate per 1,000 insured people and include everyone in the CO APCD that has at least one month of medical coverage eligibility in the reporting period.

- **Non-Users (lower rates are better)** – count of people with insurance coverage, but without a CO APCD claim during the year (ACG Resource Utilization Band level 0). This measure indicates people with insurance who are not using their insurance. This count also includes people who do not have enough diagnostic information on their claims to be accurately classified into the appropriate resource use category.
- **Healthy Users (higher rates are better)** – count of people whose diagnostic information contains only data about preventive services and minor conditions during the year (ACG Resource Utilization Band level 1). This measure indicates people who are “healthy” and use their health insurance for well-visits, preventive and minor acute care.

Primary Care Users

The primary care users per 1,000 people measure (higher rates are better) is calculated as the number of people who had at least one day in which primary care was received or a primary care provider was visited during the measurement year of interest per 1,000 people. The definition for primary care used in this report is the same as the definition used in the CIVHC Primary Care Spending 2023 report. Specifics about the definition, including lists for the services and procedures that were considered primary care (Current Procedural Terminology (CPT) codes), and for the provider types (taxonomies)

¹ The Johns Hopkins University Bloomberg School of Public Health (2014). The Johns Hopkins ACG System Technical User Guide, Version 11.0. Retrieved from https://www.healthpartners.com/ucm/groups/public/@hp/@public/documents/documents/cntrb_035024.pdf on October 14, 2016.

that were considered primary care providers can be found on pages 23-44 of the Primary Care Spending report, available here for download ([Primary Care Spending - CIVHC.org](#)).

Outpatient Visits

The outpatient visits per person (higher rates are better) is calculated for all people with at least one month of medical coverage eligibility during the reporting period. The count of outpatient visits is calculated by the Johns Hopkins ACG grouping system and refers to visits in outpatient settings where patients receive ambulatory care, such as in hospital outpatient settings, physician offices, ambulatory surgery centers, rural health clinics, Federally Qualified Health Centers (FQHCs), community mental health centers, mass immunization centers, comprehensive outpatient rehabilitation facilities, other outpatient facilities or telehealth visits provided other than in patient's home.

Emergency Department Use Measures

The Community Dashboard includes a subset of measures referring to Emergency Department visits, calculated as the count of emergency department visits per 1,000 insured people. These measures were derived using the Patched New York University Emergency Department (ED) visit algorithm² (NYU algorithm). In addition to overall ED visits, the algorithm calculates the probability that an emergency department visit was preventable based on the primary diagnosis code of the visit. The interactive dashboard displays two categories: **Emergency Department Visits: All**^[1], and **Emergency Department Visits: Potentially Preventable**. Breakouts of the potentially preventable Emergency Department visits categories, listed below, are available in separate data files. Each measure represents the count of emergency department visits of a specific type per 1,000 insured people aged 18 or older with medical insurance coverage at least 11 months out of the measurement year. For all ED measures, **lower rates are better**.

- **Emergency Department Visits: All** – number of outpatient visits with an emergency department revenue code, procedure code, or place of service code, regardless of reason of the visits defined by primary diagnosis.
- **Emergency Department Visits: Potentially Preventable** – number of outpatient visits with an emergency department revenue code, procedure code, or place of service code; and a primary diagnosis code for which the NYU algorithm indicated that there was at least a 50% combined probability that the ED care need fell into one of the two preventable categories below:
 - **Emergency Department Visits: Potentially Preventable, Nonemergent** – number of outpatient visits with an emergency department revenue code, procedure code, or place of service code and a primary diagnosis code for which the NYU algorithm indicated at least a 50% probability that the need was nonemergent (did not require contact with the medical system within 12 hours). *Note that this measure is available only in the data files that accompany the interactive dashboard.*

² <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5517669/>

^[1] Please note that in the 2020 Community Dashboard, the methodology used for calculating this measure was different, and it was based on output from the Johns Hopkins ACG grouping system. Due to the change in methodology, we advise against comparing measure output from the previous Community Dashboard iteration with the current output.

- **Emergency Department Visits: Potentially Preventable, Emergent but Primary Care Treatable** – number of outpatient visits with an emergency department revenue code, procedure code, or place of service code; and a primary diagnosis code for which the NYU algorithm indicated at least a 50% probability that the need was emergent and could have safely been treated in a lower-severity setting. *Note that this measure is available only in the data files that accompany the interactive dashboard.*
- **Emergency Department Visits: Potentially Preventable, Emergent, ER Care Needed but Avoidable** – number of outpatient visits with an emergency department revenue code, procedure code or place of service code; and a primary diagnosis code for which the NYU algorithm indicated at least a 50% probability that the need was emergent and could not have been treated in a lower-severity setting, and where the need could have been avoided with earlier management. *Note that this measure is available only in the data files that accompany the interactive dashboard.*

Hospital Use Measures

Lastly, the report includes five measures referring to hospitalizations. One of the hospitalization measures in this report is a claims-based adaptation of the Prevention Quality Indicators (PQIs). The PQIs “identify issues of access to outpatient care, including appropriate follow-up care after hospital discharge.” The PQIs consist of “admission rates for ambulatory care sensitive conditions,” hospital admissions that evidence suggests could have been avoided through high-quality outpatient care or that reflect conditions that could be less severe if treated early and appropriately; these indicators can be a crucial tool for community health needs assessments.³

Hospital use measures in this report are:

- **Inpatient Hospitalizations Per 1,000 People (lower rates are better).** This measure reflects all inpatient hospitalizations (planned and unplanned) and is an observed rate derived with the Johns Hopkins ACG grouping system.⁴ The measure is calculated among people in the CO APCD with at least one month of medical coverage eligibility in the reporting period.
- **Hospital Admissions: Potentially Preventable, Per 100,000 People (lower rates are better).** The Prevention Quality Overall Composite (PQI 90), also referred to as Hospital Admissions for Ambulatory Care Sensitive Conditions, was developed by the U.S. Department of Health and Human Service’s Agency for Healthcare Research and Quality⁵ (AHRQ) and is a composite measure of the following individual PQI measures:
 - PQI 1 Diabetes Short-Term Complications Admission Rate;
 - PQI 3 Diabetes Long-Term Complications Admission Rate;

³ AHRQ PQI Technical Documentation, Version v2023, Agency for Healthcare Research and Quality, Rockville, MD. Retrieved from https://qualityindicators.ahrq.gov/measures/pqi_resources on April 16, 2024.

⁴ The Johns Hopkins University Bloomberg School of Public Health (2014). The Johns Hopkins ACG System Technical User Guide, Version 11.0. Retrieved from https://www.healthpartners.com/ucm/groups/public/@hp/@public/documents/documents/cntrb_035024.pdf on October 14, 2016.

⁵ AHRQ PQI Technical Documentation, Version v2023, Agency for Healthcare Research and Quality, Rockville, MD.. Retrieved from https://qualityindicators.ahrq.gov/measures/PQI_TechSpec on April 16, 2024.

- PQI 5 Chronic Obstructive Pulmonary Disease or Asthma in Older Adults Admission Rate;
- PQI 7 Hypertension Admission Rate;
- PQI 8 Heart Failure Admission Rate;
- PQI 11 Community Acquired Pneumonia Admission Rate;
- PQI 12 Urinary Tract Infection Admission Rate;
- PQI 14 Uncontrolled Diabetes Admission Rate;
- PQI 15 Asthma in Younger Adults Admission Rate;
- PQI 16 Lower-Extremity Amputation among Patients with Diabetes Rate.

The overall composite is calculated by summing the number of hospital discharges among patients ages 18 years or older that meet the inclusion and exclusion rules for the numerator, based on ICD diagnosis and procedure data, in any of a composite's component measures and dividing by the population ages 18 years or older. Hospital discharges that meet the criteria for the numerator in more than one of the above PQIs are counted only once in the composite numerator. The denominator was adapted to the purposes of this report, and it is calculated as the number of people in the CO APCD ages 18 and older with medical insurance coverage for at least 11 months during the measurement year. This measure is displayed as an observed rate.

- **Hospital 30-Day Readmissions Per 1,000 People (lower rates are better).** This measure reflects all inpatient hospitalizations (for both planned and unplanned readmissions) within 30 days after discharge and is an observed rate derived with the Johns Hopkins ACG grouping system⁶. The measure includes people in the CO APCD with at least one month of medical coverage eligibility in the reporting period. Higher readmission rates are associated with increased mortality and higher health care costs. Readmission may be prevented through increased quality of care at the hospital in conjunction with appropriate post-discharge planning and care coordination, and through increased support for patient self-management. There are two subcomponent measures included in the report, in addition to the total readmission rate:
 - **Hospital 30-Day *Unplanned* Readmissions Per 1,000 People (lower rates are better)** – unplanned admissions within 30 days after discharge for all cause (planned and unplanned) inpatient hospitalizations
 - **Hospital 30-Day *Planned* Readmissions Per 1,000 People (lower rates are better)** – planned admissions within 30 days after discharge for all cause (planned and unplanned) inpatient hospitalizations

Additional Utilization Measure

Pharmacy Fills Per Person (lower is better)

⁶ The Johns Hopkins University Bloomberg School of Public Health (2014). The Johns Hopkins ACG System Technical User Guide, Version 11.0. Retrieved from https://www.healthpartners.com/ucm/groups/public/@hp/@public/documents/documents/cntrb_035024.pdf on October 14, 2016.

This measure reflects the number of pharmacy prescriptions filled per person. A prescription can represent different quantities or days' supply of the respective medication (e.g. one day supply, 30-day supply, 90-day supply). The measure includes people in the CO APCD with at least one month of pharmacy coverage eligibility in the reporting period.

Breast Cancer Screening

This breast cancer screening measure (higher is better) is a preventive care measure endorsed by the National Quality Forum (NQF) and based on HEDIS® methodology: Breast Cancer Screening ([NQF 2372](#)). The measure is calculated as the percentage of women 50 to 74 years old who had one or more mammograms to screen for breast cancer during the measurement year and two years prior to the measurement year. To be included, patients must have medical insurance coverage for at least 11 months during the measurement year, during the prior year, as well as October through December two years prior to the measurement year.

Demographic Characteristics

The dashboard presents measure values by geographical location (by county and Division of Insurance Region) of the insured person's residence. Additional demographic breakdowns by age group and sex are available separately in the downloadable data files. However, some measures have consistently low cell sizes, and these demographic breakdowns have not been produced (e.g., Hospital Admissions: Potentially Preventable, Per 100,000 People). Individuals for whom age or gender information is not available or unknown are excluded from all analyses.

Demographic characteristics are determined at the person level as follows:

- Age is calculated as of December 31st of the reporting year. Typical age groups used in this report are: 0 to 17 ("Child"), 18 to 34 ("Young Adult"), 35 to 64 ("Mature Adult"), 65 or older ("Senior Adult").
- Quality of care and access to care measures have specific age ranges and, in some cases, age subgroup requirements.

Only residents of Colorado are reflected in the data. State resident status is determined based on the most recent insurance eligibility record available in a given year, which indicates whether the person resides in a ZIP code within Colorado. All calculations are based on where Colorado residents live, not where they received care. For example, cost of care for people living in Eagle County may not reflect cost to receive care in Eagle County if residents in that area travel to other counties to receive care. For specific information regarding prices for services at particular facilities in Colorado, [visit our reports at civhc.org](#).

Geographic Groupings

Geographic breakdowns available in the report include Colorado counties and Division of Insurance (DOI) commercial insurance geographic rate setting areas.⁷ The following is a list of counties in each DOI region, along with the label displayed for each region in this report:

- Rating Area 1 – **Boulder**: Boulder
- Rating Area 2 – **Colorado Springs**: El Paso, Teller

⁷ <https://www.cms.gov/CCIIO/Programs-and-Initiatives/Health-Insurance-Market-Reforms/co-gra>

- Rating Area 3 – **Denver:** Adams, Arapahoe, Broomfield, Clear Creek, Denver, Douglas, Elbert, Gilpin, Jefferson, Park
- Rating Area 4 – **Ft. Collins:** Larimer
- Rating Area 5 – **Grand Junction:** Mesa
- Rating Area 6 – **Greeley:** Weld
- Rating Area 7 – **Pueblo:** Pueblo
- Rating Area 8 – **East:** Alamosa, Baca, Bent, Chaffee, Cheyenne, Conejos, Costilla, Crowley, Custer, Fremont, Huerfano, Kiowa, Kit Carson, Las Animas, Lincoln, Logan, Mineral, Morgan, Otero, Phillips, Prowers, Rio Grande, Saguache, Sedgwick, Washington, Yuma
- Rating Area 9 – **West:** Archuleta, Delta, Dolores, Eagle, Garfield, Grand, Gunnison, Hinsdale, Jackson, La Plata, Lake, Moffat, Montezuma, Montrose, Ouray, Pitkin, Rio Blanco, Routt, San Juan, San Miguel, Summit

Payer Types

Payer groupings available in this report are: All Payers, Commercial, Medicaid, Medicare Advantage, Medicare Fee-For-Service (Medicare FFS).

For cost and selected health care use measures such as rates of non-users, healthy users, and for the Hospital 30-Day Readmissions Per 1,000 People (Overall, Planned and Unplanned), payer type is assigned based on eligibility months with primary medical insurance information for the respective payer type during a reporting year, counting the number of months with the respective payer type regardless of whether the person had insurance for just a single month, the full year, or any number of months in-between.

Pharmacy eligibility information is considered when assigning a payer type for calculating pharmacy costs, even if the medical eligibility information is not present. Once a person is assigned a payer type, all medical and pharmacy claim records for that person are associated with that assignment, regardless of the insurance type information on the claim record. Secondary insurance information is not considered when assigning a payer type.

For breast cancer screenings and the ED-related health care measures, payer type is defined based on primary insurance information at the person-eligibility-month level with additional measure- and payer-type specific criteria for continuous enrollment during the time frame specific to each measure. To be included in the calculation of the breast cancer screening measure, an individual had to have at least 11 months of continuous enrollment with the same payer type in a year; for the ED-related measures, respectively, individuals had to have six or seven months of coverage from the respective payer type.

For most measures in this report, the Medicaid payer type excludes individuals covered by CHP+ insurance. CHP+ refers to the Child Health Plan Plus health insurance coverage, a public low-cost health insurance option for certain children and pregnant women, for people who earn too much to qualify for Medicaid, but not enough to pay for private health insurance. The following measures are constructed for the adult population, and as such, the CHP+ payer type is largely not applicable; occasionally, some individuals with CHP+ coverage (children aged 18 and pregnant women) may be present in the Medicaid payer type for these measures:

- Emergency Department Visits: All, Per 1,000 People

- Emergency Department Visits: Potentially Preventable, Per 1,000 People
- Emergency Department Visits: Potentially Preventable, Nonemergent, Per 1,000 People
- Emergency Department Visits: Potentially Preventable, Emergent but Primary Care Treatable, Per 1,000 People
- Emergency Department Visits: Potentially Preventable, Emergent, ER Care Needed but Avoidable, Per 1,000 People
- Hospital Admissions: Potentially Preventable, Per 100,000 People (Observed)

For more information about the payer data in the CO APCD used for this analysis, [click here](#).

Comparison to Statewide and Urban/Rural Benchmarks

For each county or DOI region value, the dashboard displays three data points for comparison purposes: measure values at the state level, and overall for all urban counties and rural counties. The rural and urban county classification is based on the U.S. Office of Management and Budget county-level designation: counties that are part of a Metropolitan Statistical Area are considered “urban”, and all other counties are considered “rural”.⁸ The following is a list of rural and urban Colorado counties:

- **Urban counties (17):** Adams, Arapahoe, Boulder, Broomfield, Clear Creek, Denver, Douglas, El Paso, Elbert, Gilpin, Jefferson, Larimer, Mesa, Park, Pueblo, Teller, and Weld;
- **Rural counties (47):** Alamosa, Archuleta, Baca, Bent, Chaffee, Cheyenne, Conejos, Costilla, Crowley, Custer, Delta, Dolores, Eagle, Fremont, Garfield, Grand, Gunnison, Hinsdale, Huerfano, Jackson, Kiowa, Kit Carson, La Plata, Lake, Las Animas, Lincoln, Logan, Mineral, Moffat, Montezuma, Montrose, Morgan, Otero, Ouray, Phillips, Pitkin, Prowers, Rio Blanco, Rio Grande, Routt, Saguache, San Juan, San Miguel, Sedgwick, Summit, Washington, Yuma.

Data Suppression

Following privacy protection standards used by the Centers for Medicare & Medicaid Services (CMS), data are suppressed for values based on fewer than 11 units. For example, cost PPPY values based on fewer than 11 insured-years or emergency department rates based on fewer than 11 visits. Throughout the dashboard and the data files, data points impacted by low volume are replaced with an “n/a” on the dashboard and left as blank cells in the data files.

Data Limitations

Data presented in this report are the result of a process that strives to ensure high quality, reliable, and accurate information. Potential areas of concern are investigated and addressed accordingly, on a regular basis, and while every effort is made to address all known areas of concern for this report, some may remain. Additionally, when comparing costs across different payer types, keep in mind that not all payers cover the same services (i.e. the Medicaid program covers long term care and home health services that are not usually covered by other payers).

Data for small population breakdowns or for rare events should be interpreted with caution, since they are prone to significant fluctuations. Colorado counties with small populations (fewer than 5,000 people overall) at one point during the reporting time frame include: Baca, Cheyenne, Costilla, Custer, Dolores,

⁸ Colorado Rural Health Center (2016). *Colorado: County Designations, 2016*. Retrieved from <http://coruralhealth.wpengine.netdna-cdn.com/wp-content/uploads/2016/03/2016.CountyDesignations.pdf> on July 13, 2017.

Gilpin, Hinsdale, Jackson, Kiowa, Lincoln, Mineral, Ouray, Phillips, San Juan, Sedgwick, Saguache, and Washington.

Data Vintage

This report is based on claims data in the CO APCD data warehouse as of the May 11, 2024 release. For more information about number of claims in the CO APCD during a particular reporting year and data discovery information regarding payer submissions, please visit our website at civhc.org.

For more information or additional questions, contact us at info@civhc.org

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