



University of Colorado **Anschutz Medical Campus**

Catchment Descriptive Tools

Population Health Shared Resource Seminar
July 25, 2024



Overview

- Introduction
- What is the University of Colorado Comprehensive Cancer Center (UCCC) catchment area?
- Catchment data available through PHSR
 - Colorado Central Cancer Registry (CCCR)
 - Colorado All Payers Claim Database (APCD)
 - Health Data Compass (HDC)
- Self-service tools versus custom data requests

Population Health Shared Resources (PHSR) Mission

- 1. Curate a broad array of population-based cancer prevention and control datasets**
- 2. Facilitate innovative and impactful population and behavioral cancer prevention and control research**
- 3. Support and promote growth in cancer prevention and control research across the UCCC**

PHSR supports the Office of Community Outreach and Engagement (COE) in their mission to understand our catchment area

PHSR

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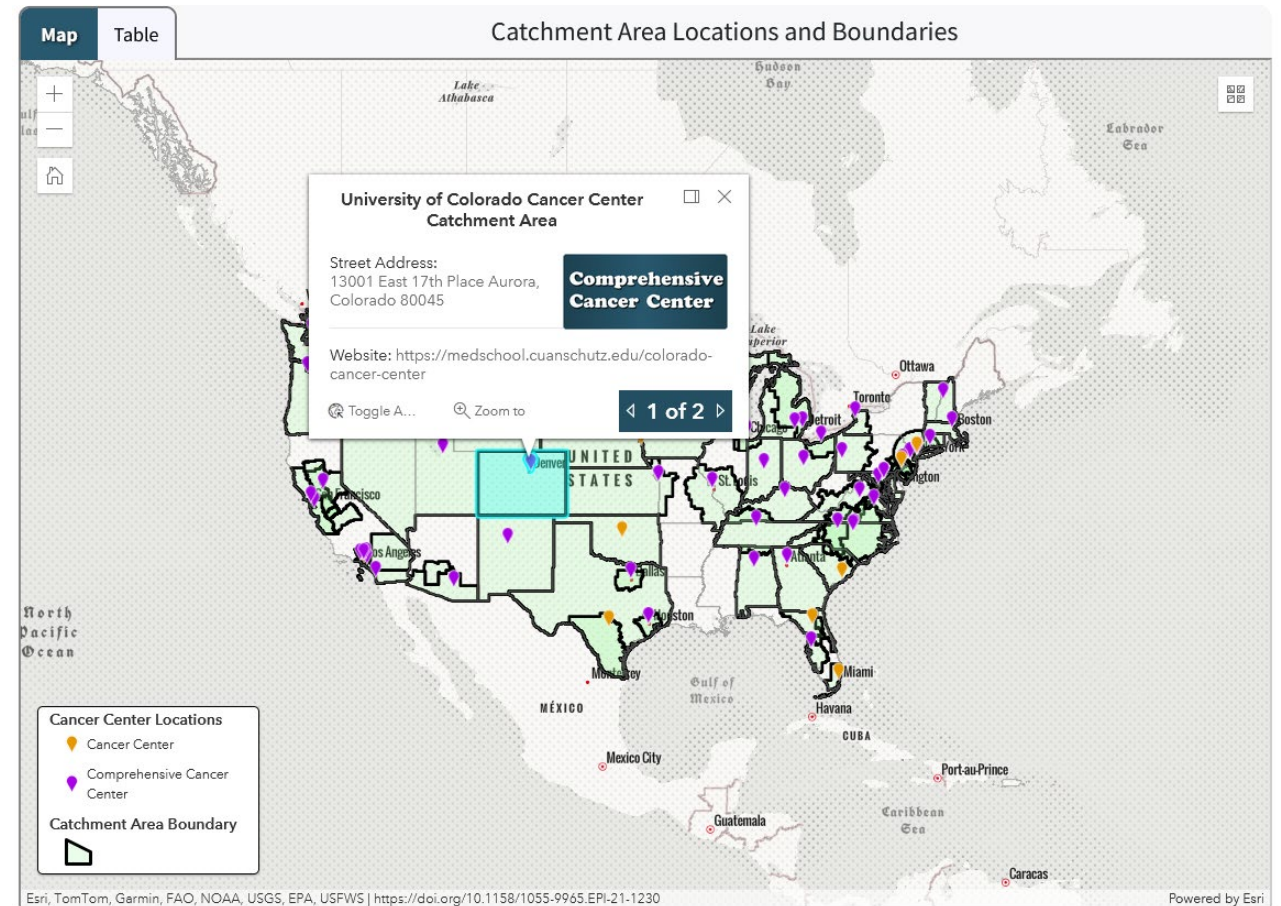


Vijay Ramesh, MSIS
Unit Dedicated Resource,
Health Data Compass



UCCC catchment area

- All National Cancer Institute (NCI) designed Cancer Centers have a catchment area
- The catchment area defines the area from which a Cancer Center draws most of their patients
- Provides the geographic scope for monitoring cancer trends, identifying pronounced socioeconomic- and health-related disparities, informing high impact translational science, and guiding the implementation of evidence-based interventions in clinical and community settings
- UCCC catchment area is the entire state



Source: <https://gis.cancer.gov/ncicatchment/>

Tools to understand UCCC catchment

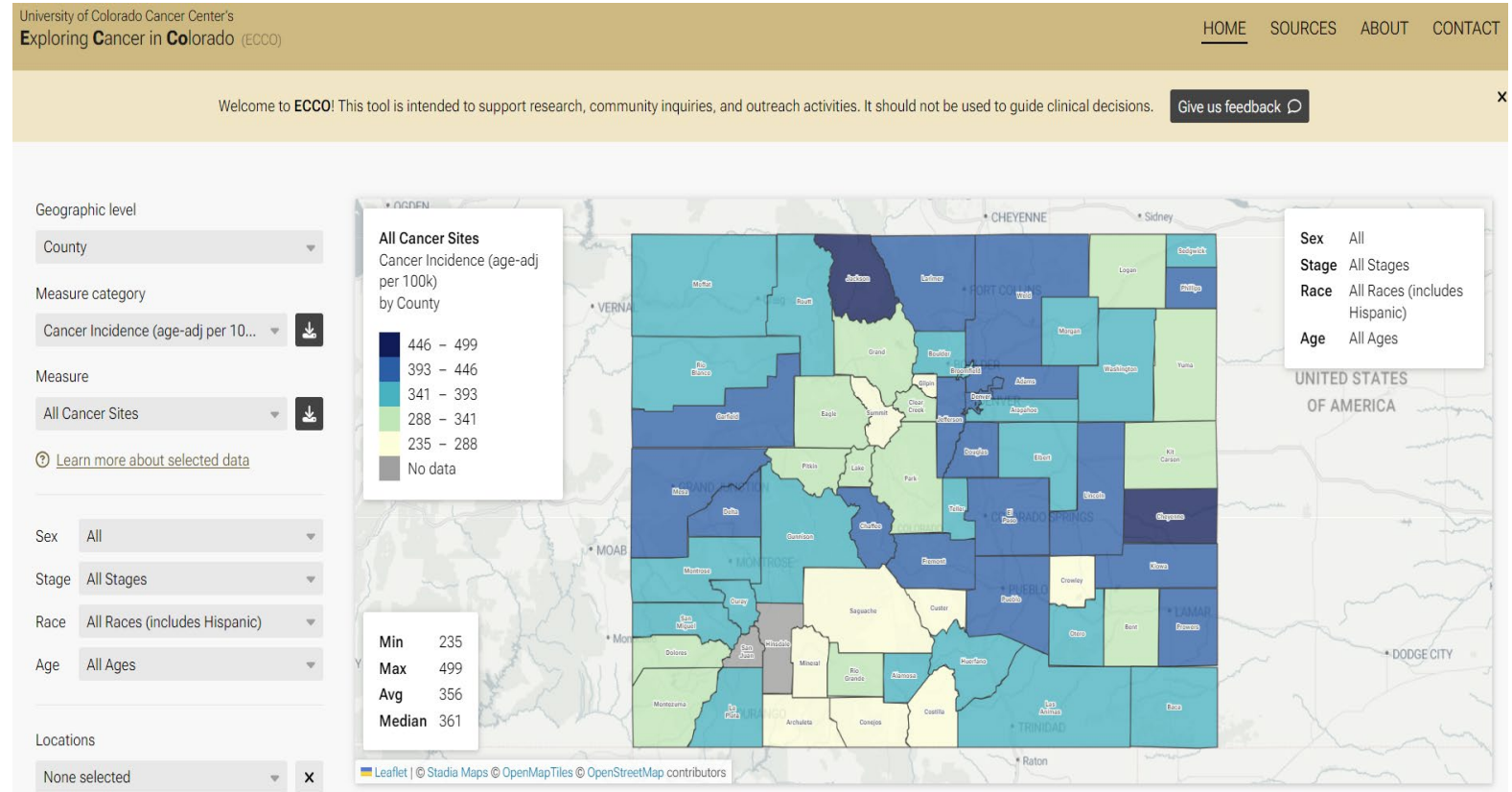
- Any public and proprietary dataset that includes information from Colorado residents is relevant to understand our catchment area
- Some datasets are cancer-specific (i.e., cancer cases) while others are about the CO population (i.e., “denominator”)
- Another classification: self-service tools versus and custom requests
 - **Self-service tools**
 - Exploring Cancer in Colorado (ECCO)
 - TriNetX (Health Data Compass)
 - **Custom PHSR requests**
 - Colorado Central Cancer Registry (CCCR)
 - Colorado's All-Payer Claims Database (APCD)
 - CCCR-APCD linkage
 - Health Data Compass (HDC)
 - Other public/private datasets



Exploring Cancer in Colorado (ECCO)

Summary

- Data Sources: State Cancer Profiles, BRFSS, ACS, EPA, and more!
- Includes data for sociodemographic, cancer burden, risk factors, disparities, behaviors, environmental exposures, and more
- Resources for cancer prevention, screening, treatment, survivorship, and overall care included



Exploring Cancer in Colorado (ECCO)

Geographic level

County

Measure category

Sociodemographics

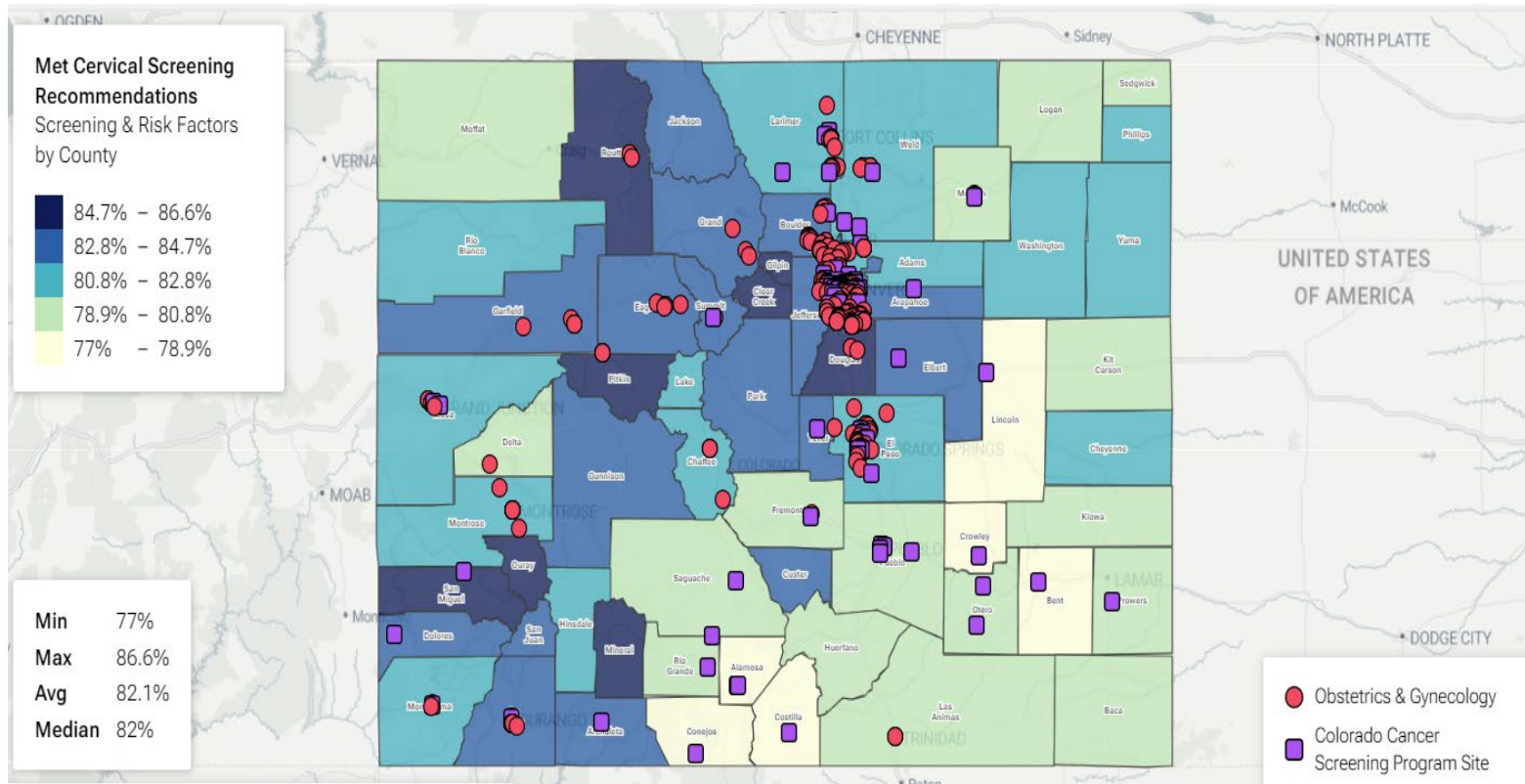
- ✓ Sociodemographics
- Economics & Insurance
- Environment
- Housing & Transportation
- Screening & Risk Factors
- Disparities
 - Cancer Disparities Index
 - Radon Exposure
- Cancer Mortality (age-adj per 100k)
- Cancer Incidence (age-adj per 100k)
- Cancer Mortality: Trends
- Cancer Incidence: Trends

Locations

None selected

Cancer Care

- Lung Cancer Screening
- Mammography
- Colon & Rectal Surgeon
- All Treatment Sites
- Medical Oncology Sites
- Surgical Oncology Sites
- Radiation Oncology Sites
- Pediatric Oncology Sites
- Clinical Trials
- Colorado Cancer Screening Program Site
- Cancer Support Groups



Why use ECCO?

- Easy access to support research and grant writing
- Learn more about your community or population of interest
- Inform outreach activities and programs around the state

Colorado Central Cancer Registry (CCCR)



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Colorado Central Cancer Registry (CCCR)

Summary

- Includes all cancer cases in Colorado from 2000 to 2021 (2-year lag)
 - Except basal and squamous cell carcinomas of the skin and cervical carcinoma in situ
 - Registrar submits data yearly per agreement with PHSR
- Stratification of health measures and demographics: age, race/ethnicity, county, mortality, initial treatment
- Can be linked to demographic characteristics by census tract, zip code, or other geographic indicators

Examples

- County & health statistic region snapshots
- Mapping and visualization
- Demographic makeup of cancer patients (including health disparities/inequities)

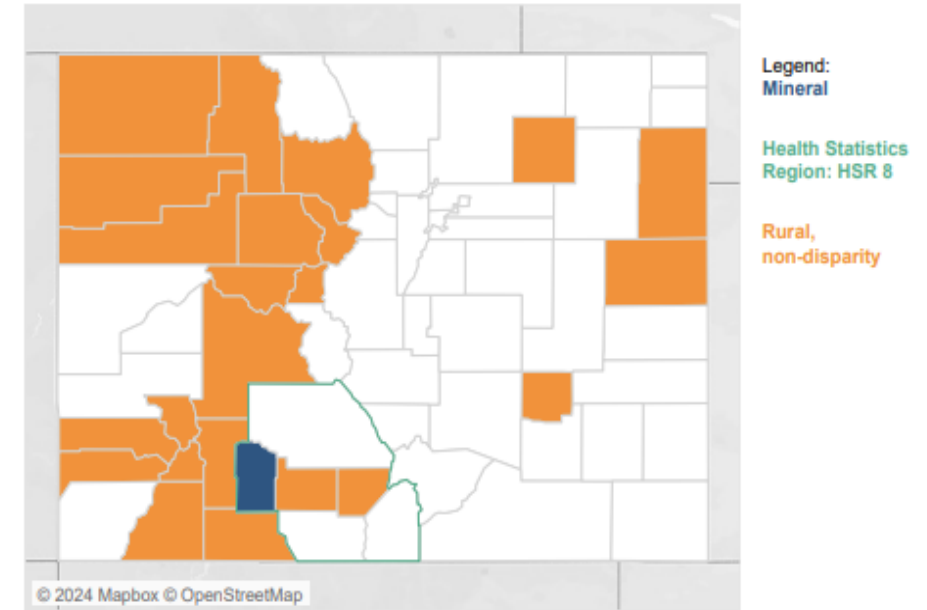


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Example: Snapshots and dashboards

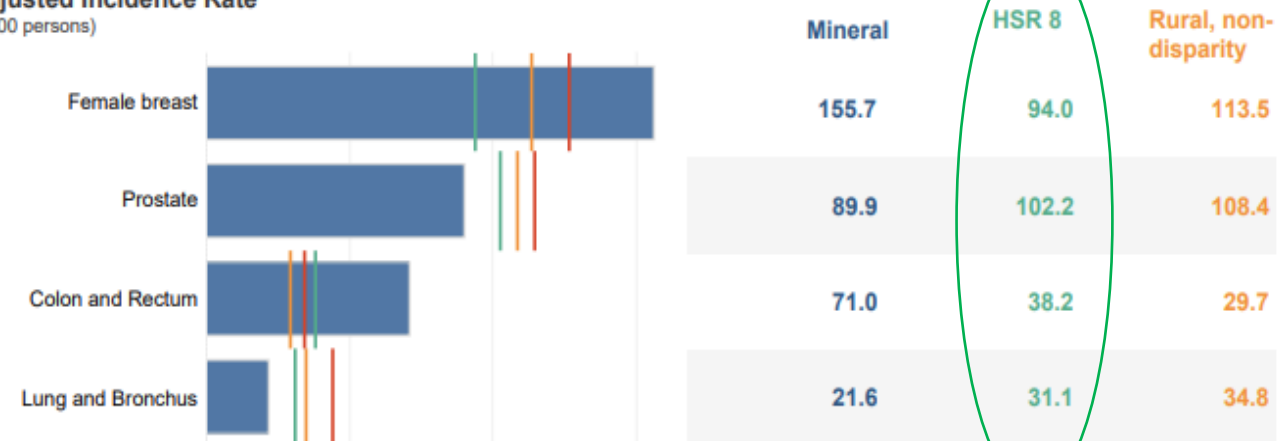
- Compare and contrast geographic levels
- Use of Tableau for visually appealing and easy to understand data
- Inform community members, local public health agencies, cancer programs and outreach, and more

Mineral Cancer Snapshot Mineral County



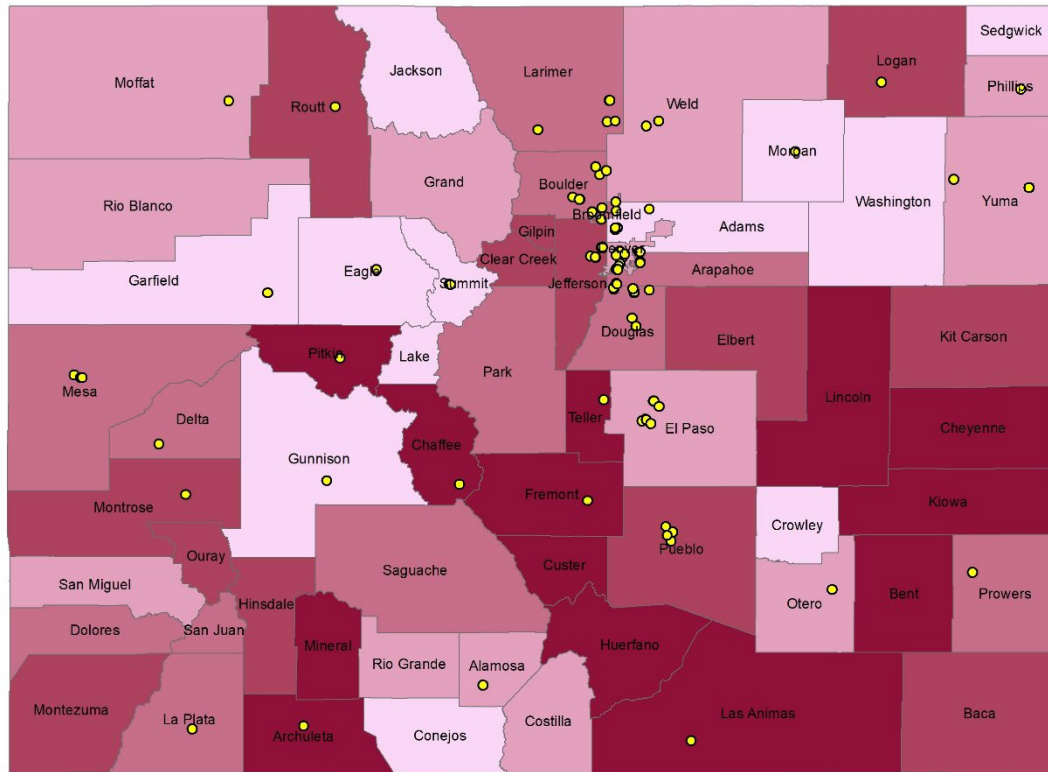
From 2007-2018 in Mineral, **54** people were diagnosed with cancer of any type. The four cancers with the highest rates of new cases are shown below.

Age-Adjusted Incidence Rate (per 100,000 persons)

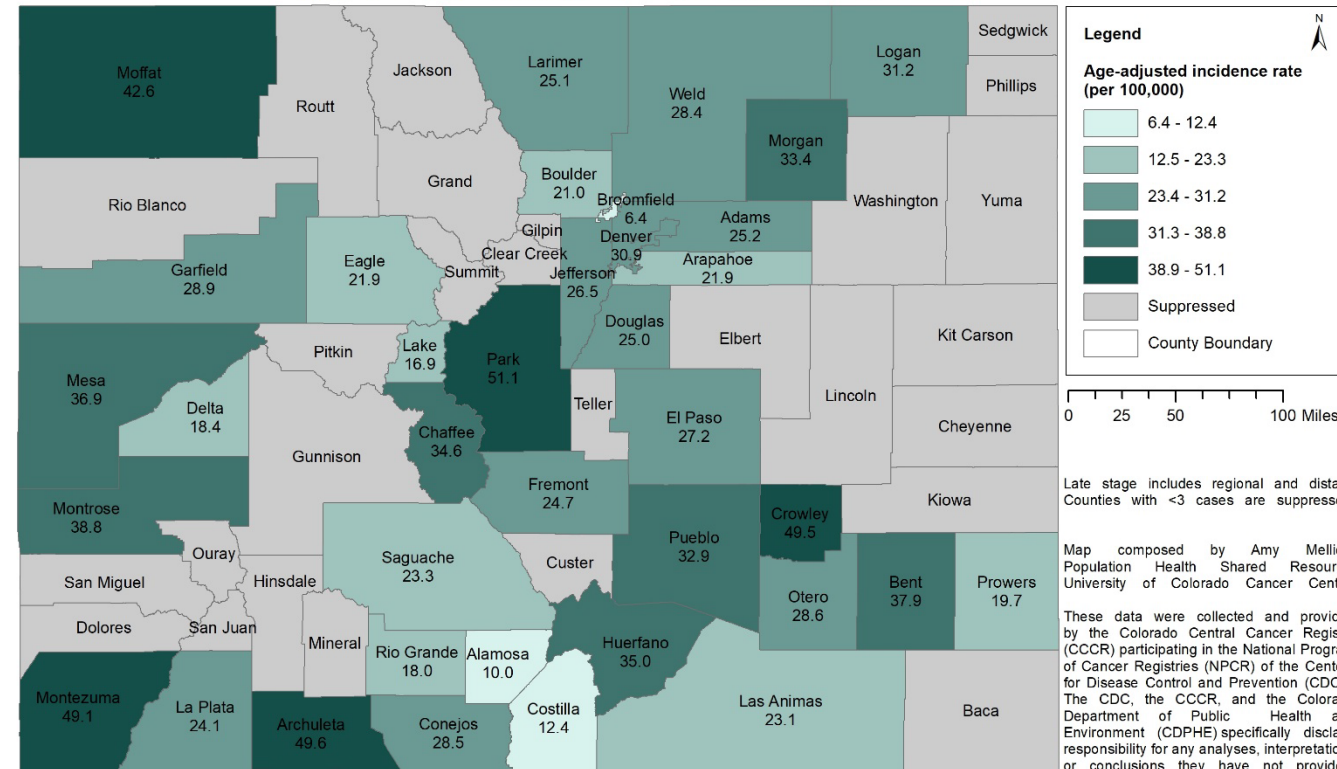


* The above red bars represent Colorado's age-adjusted incidence rates.

Example: Mapping & visualization



Incidence of late stage lung cancer, Hispanics, Colorado 2007-2016



All Payers Claims Database (APCD)



CENTER FOR IMPROVING
VALUE IN HEALTH CARE

All Payers Claims Database (APCD)

Summary

- Data from public and commercial insurers
 - Traditional and Medicare Advantage, commercial payers, duals
 - No ERISA plans, Indian Health Services, VA, Tricare
- Covers about 75% of the CO population
- Requires DUA for re-use for custom requests

Examples

- CO APCD Dashboards
- Mapping and visualization



1.1+ Billion Claims (2013-2023)



49 Commercial Payers* + Medicaid & Medicare (FFS and Advantage)



Trend information (2013-Present)



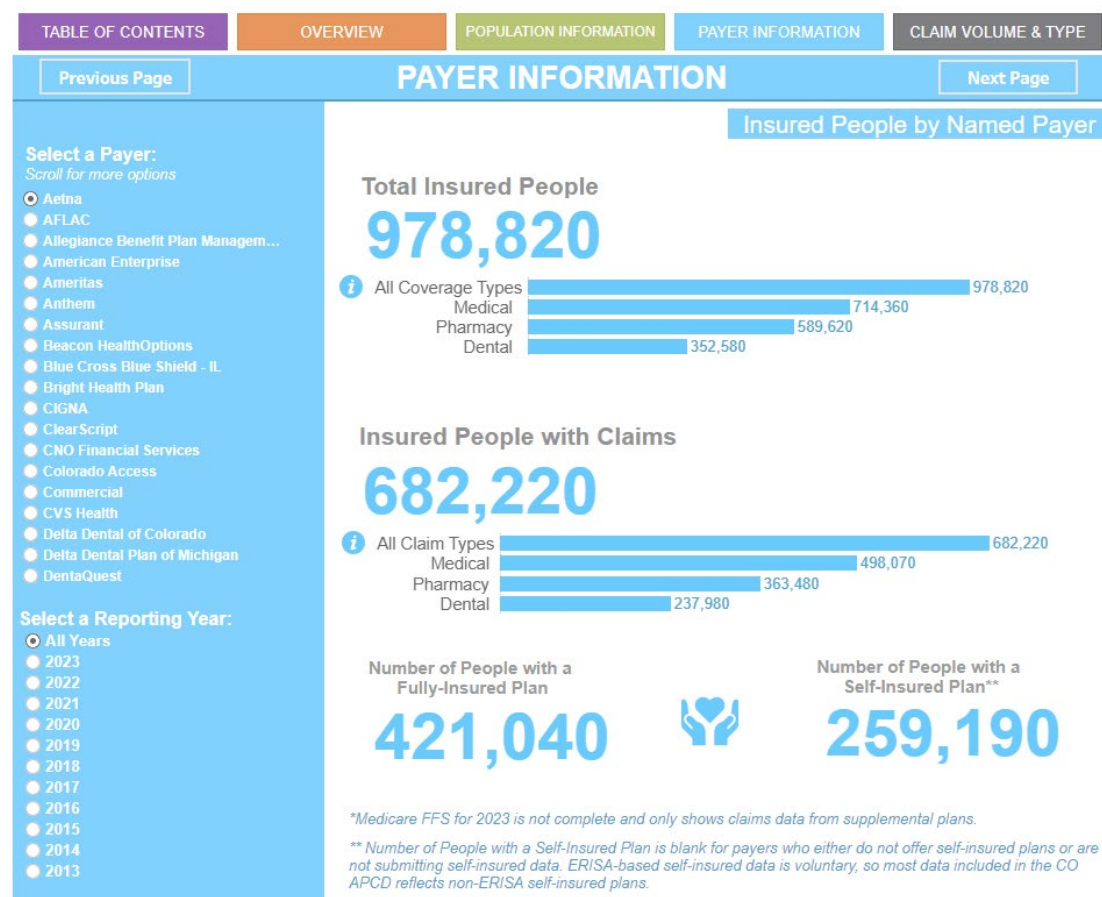
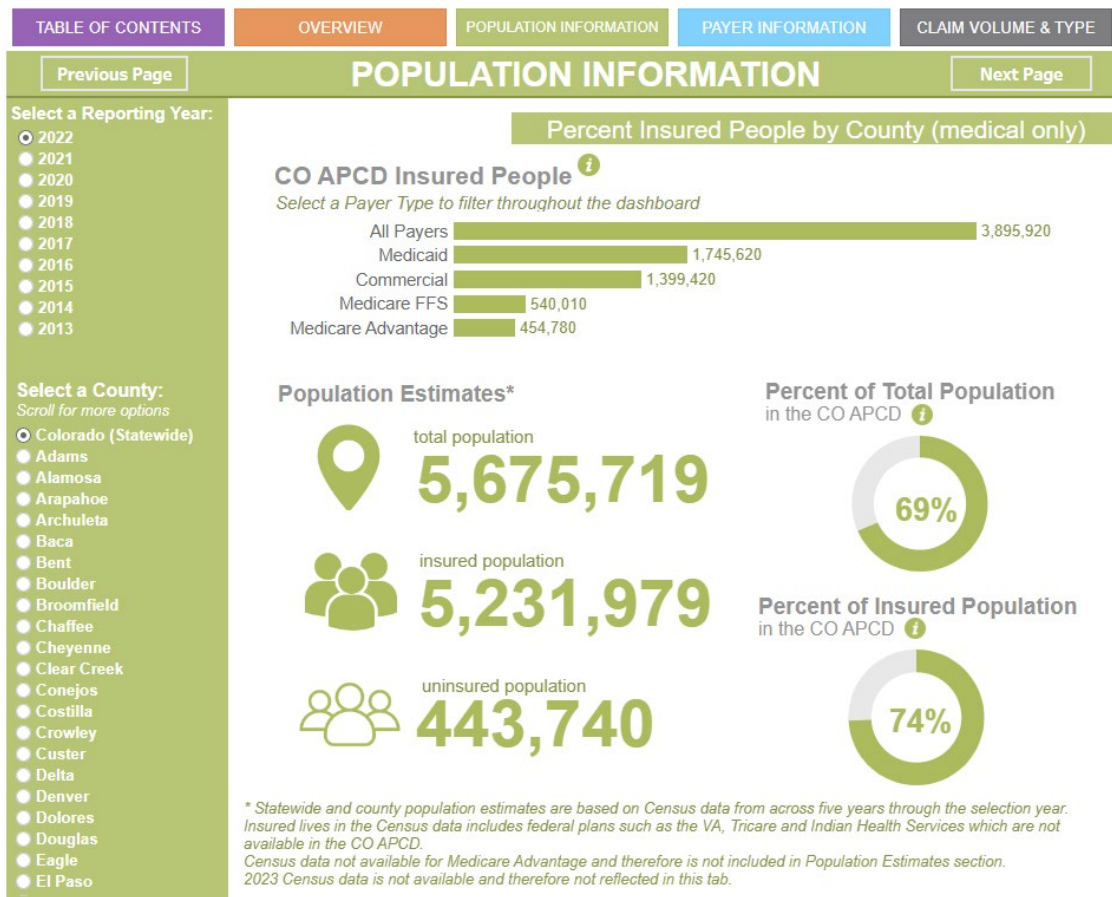
74% of Covered Lives (medical only, 2022)



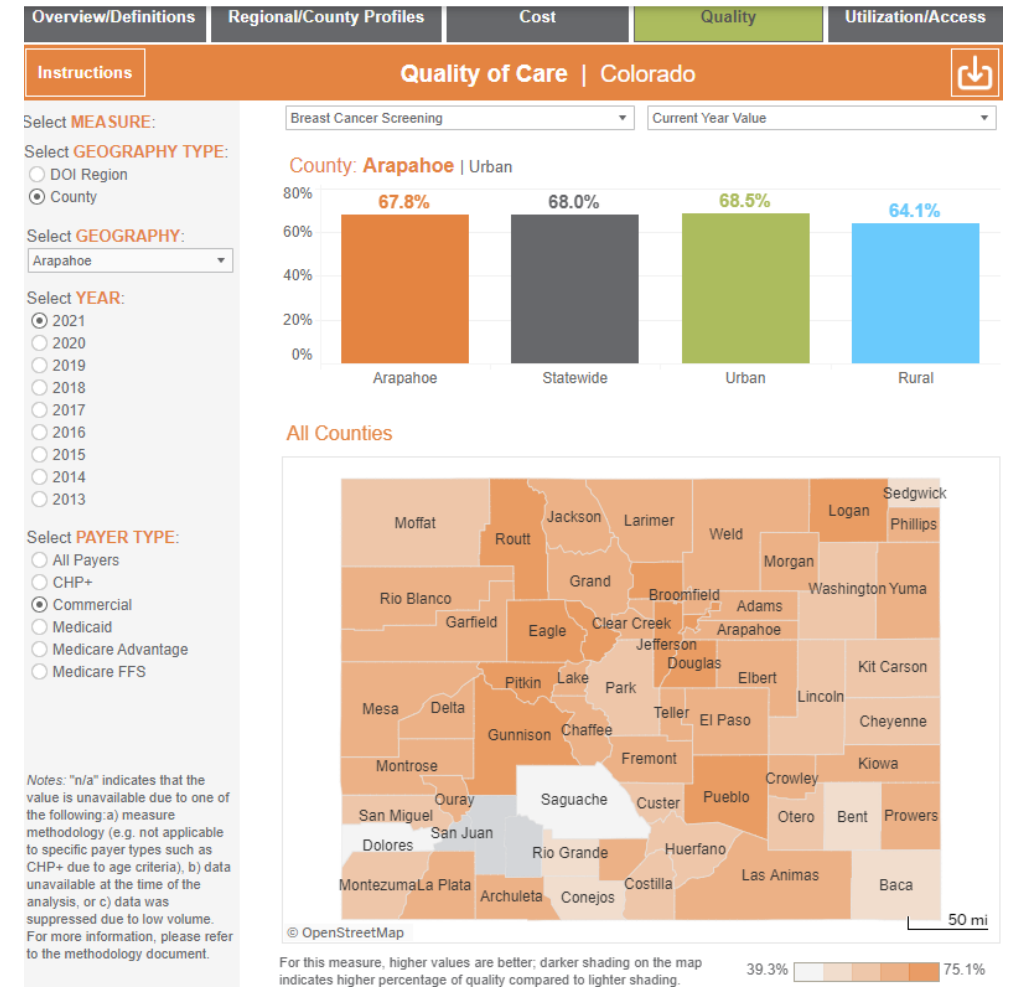
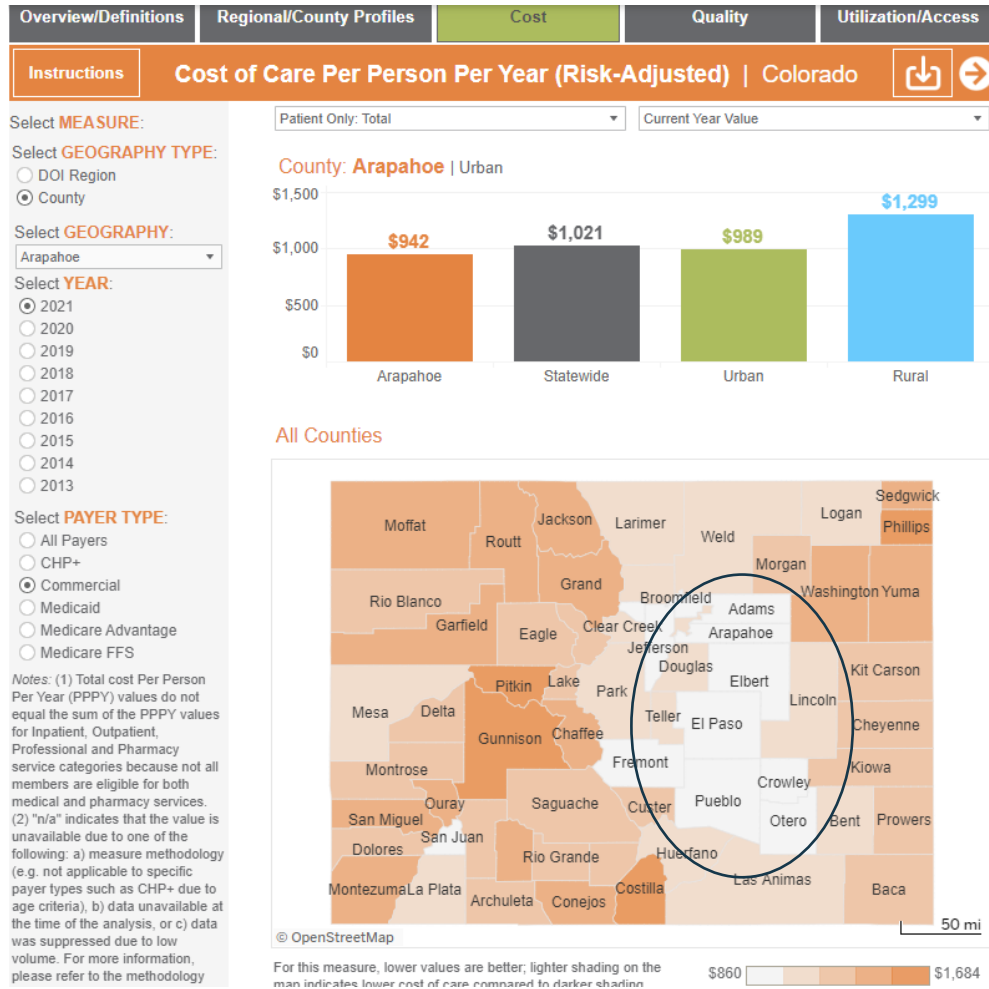
5.6+ Million Lives*, Including 1M (50%) of self-insured

**Reflects calendar year 2023 payers only*

Self-service tool: CO APCD Insights Dashboard

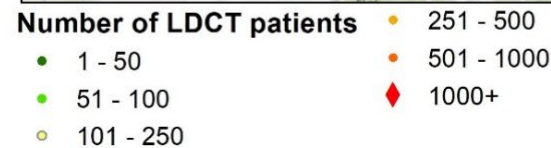
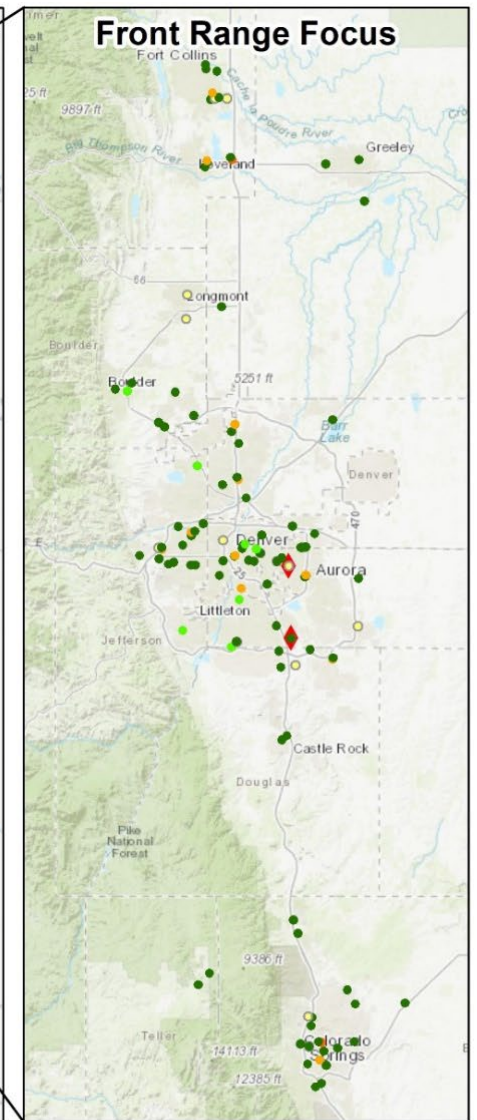
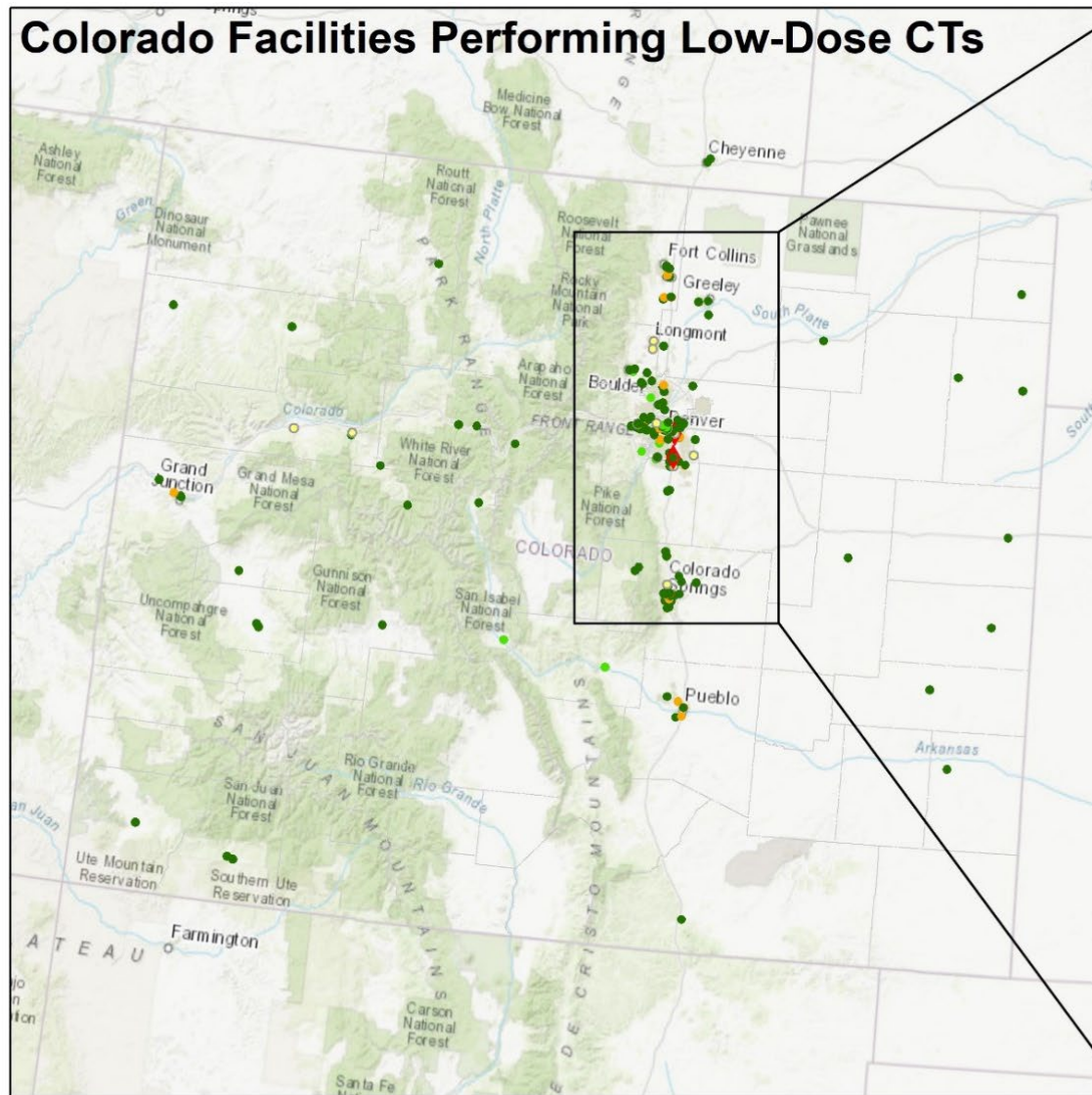


Self-service tool: CO APCD Community Dashboard



Example: Mapping and visualization

- Colorado Lung Cancer Screening Environmental Scan CDPHE Grant
- Using taxonomy codes to identify facilities of interest
- Made using ArcMap



Data: All Payers Claims Database

CCCR-APCD Linkage



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CCCR-APCD Linkage

Summary

- Tumor and patient characteristics from CCCR
- Claims and treatment data from APCD
- Using probabilistic linkage methods, achieved overall 93% linkage rate (higher for Medicaid/Medicare beneficiaries)
- Dataset created with R01 from NCI (Bradley, Perrailon) with PHSR support
 - Requires DUA for re-use for custom requests
- Linkage details:
<https://onlinelibrary.wiley.com/doi/full/10.1111/1475-6773.13901>



Example: Disparity & equity work

Journal of Palliative Medicine > Vol. 26, No. 8

Research Article | FULL ACCESS | Published Online: 7 August 2023

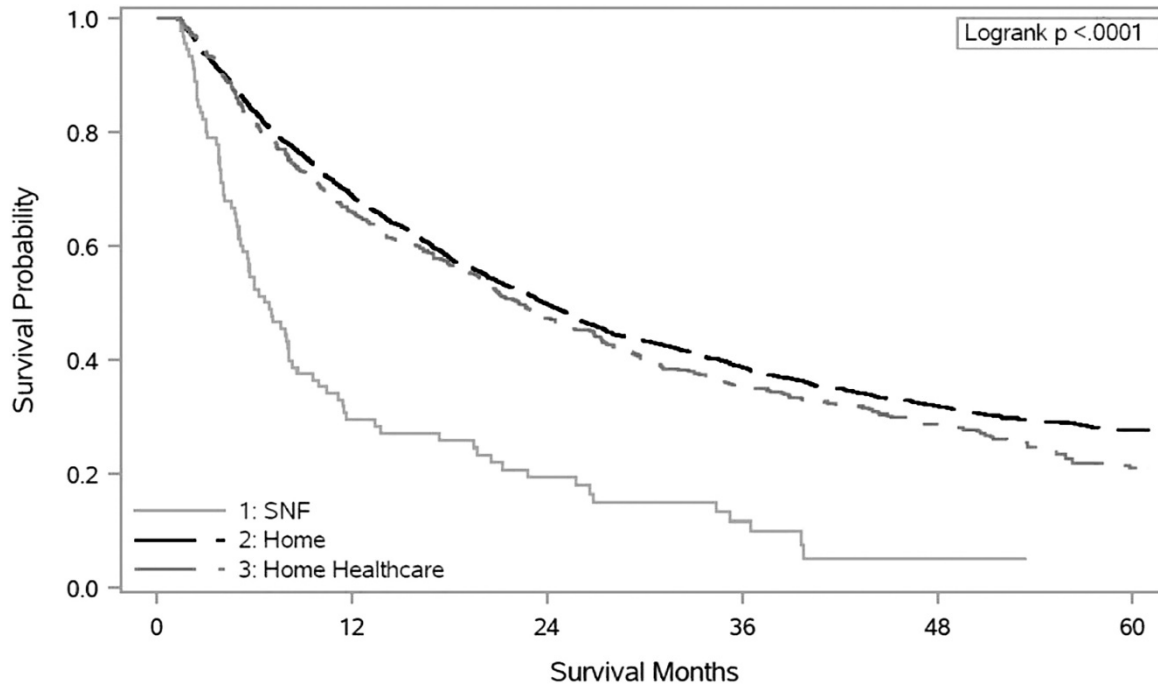
Post-Acute Care Outcomes of Cancer Patients <65 Reveal Disparities in Care Near the End of Life

Authors: Sarguni Singh, Elizabeth Molina, Marcelo Perrailon, and Stacy M. Fischer | [AUTHORS INFO & AFFILIATIONS](#)

Publication: Journal of Palliative Medicine • <https://doi.org/10.1089/jpm.2022.0190>

Objective: Describe the population and outcomes of younger adults (<65) discharged to a skilled nursing facility (SNF) and those discharged home or with home health

Findings: Young adults discharged to SNF unlikely to receive further cancer treatment, had high rates of readmission, and high mortality. Black and Hispanic patients received less radiation than White patients, regardless of discharge location

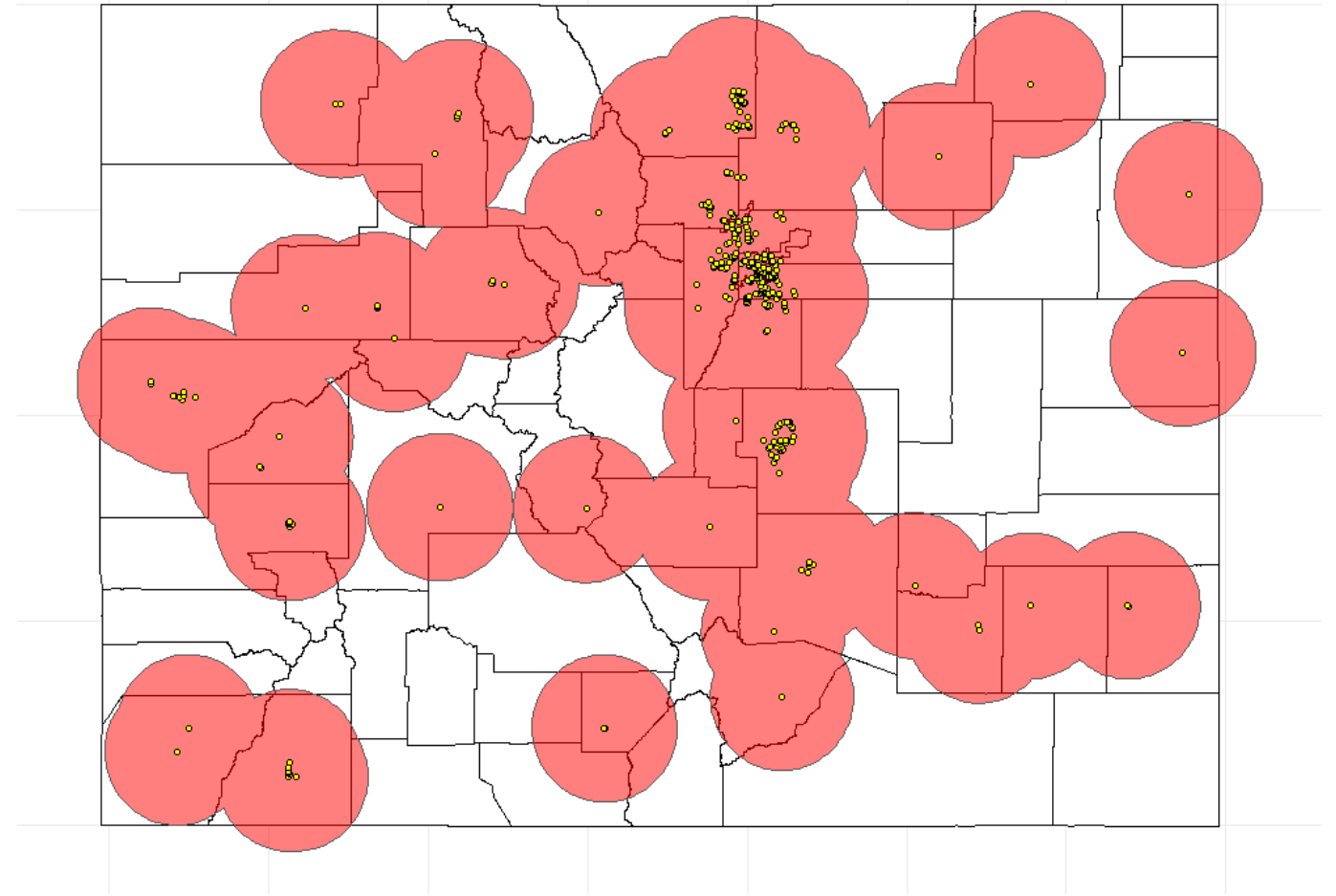


Example: Mapping and visualization



- Colorado Lung Cancer Screening Environmental Scan CDPHE Grant
- Using taxonomy codes to identify facilities of interest
- Made using ArcMap

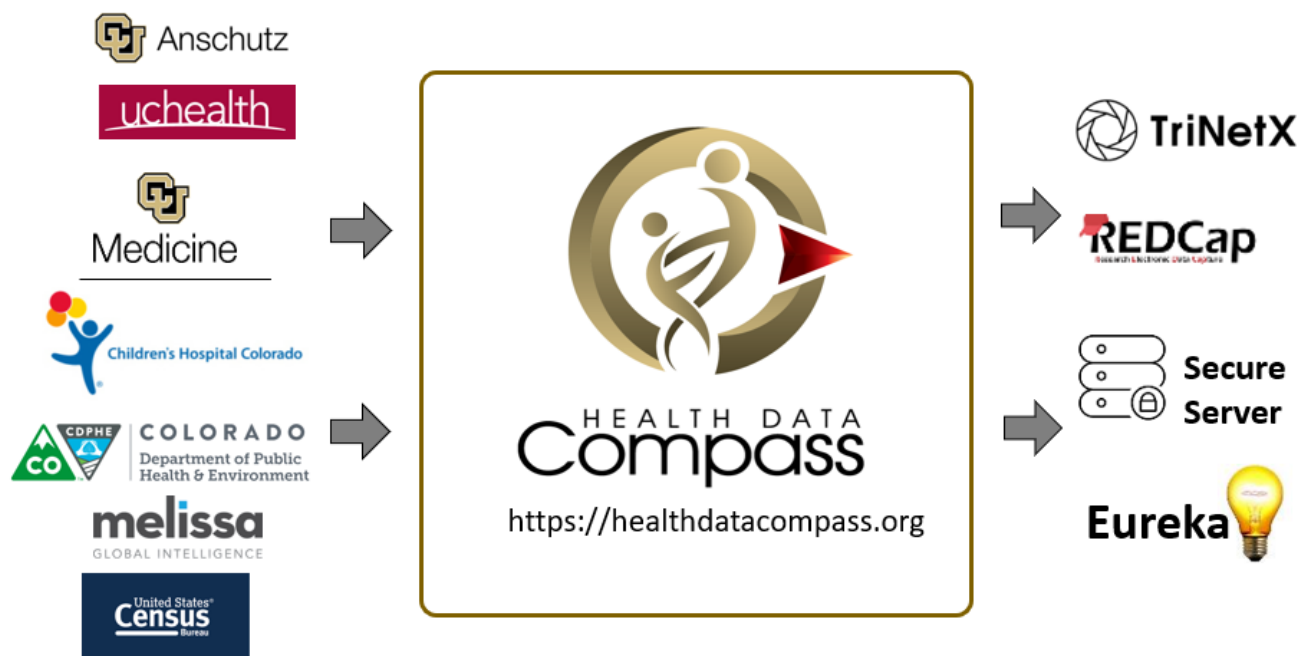
Lung Cancer Treatment Facilities Providing Radiation Therapy
25-Mile Access Range



Health Data Compass (HDC)



Health Data Compass (HDC)



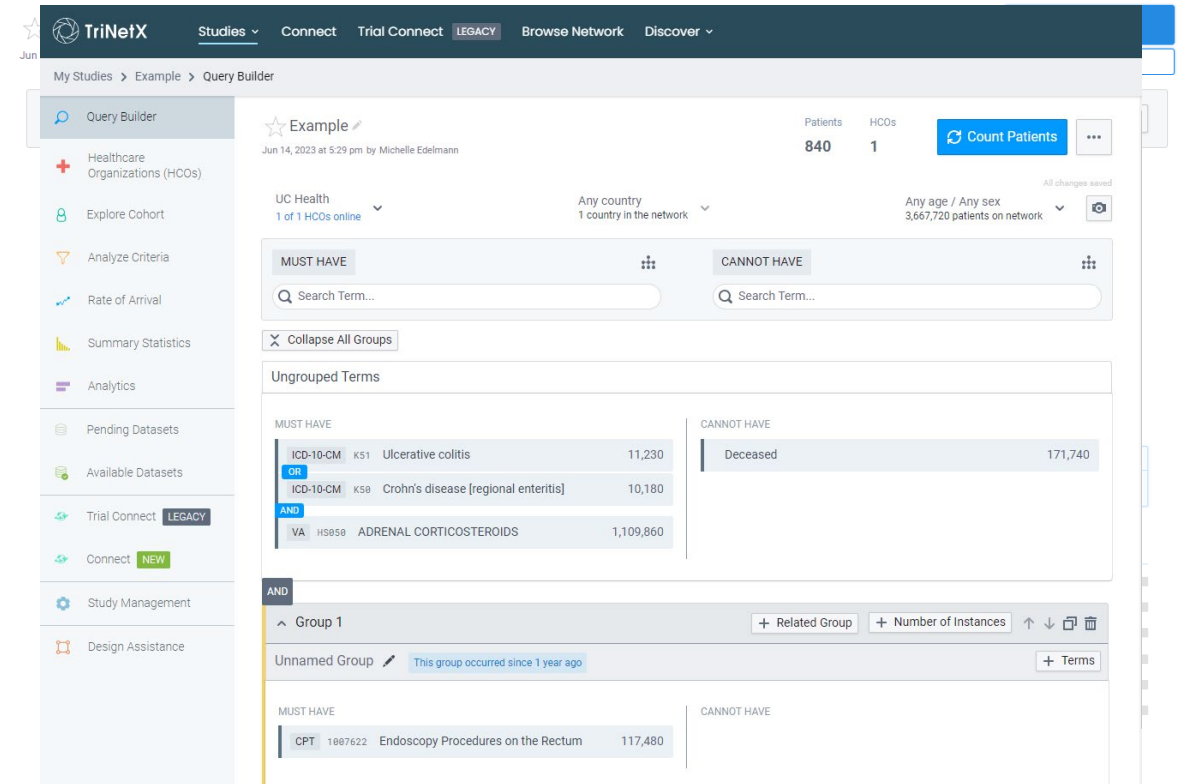
Summary

- Integrates data from multiple sources
- Includes patient EMR data, provider billing data, and –omics data
- Access through self-service platforms or custom data request
- PHSR Compass Unit Dedicated Resource (UDR)

Self-service tools: TriNetX

Summary

- Query and access high-level aggregated data from UCHealth medical records
- Ideal for data exploration and feasibility analysis
- Requester can access data on their own
- Basic visualizations
- Limited variables for stratification
 - Limited histology and treatment data

The screenshot shows the TriNetX Query Builder interface. The top navigation bar includes 'TriNetX', 'Studies', 'Connect', 'Trial Connect', 'LEGACY', 'Browse Network', and 'Discover'. The main content area is titled 'My Studies > Example > Query Builder'. On the left, a sidebar lists various tools: Query Builder, Healthcare Organizations (HCOs), Explore Cohort, Analyze Criteria, Rate of Arrival, Summary Statistics, Analytics, Pending Datasets, Available Datasets, Trial Connect (LEGACY), Connect (NEW), Study Management, and Design Assistance.

The main interface displays a query for 'Example' with the following parameters:

- Patients: 840
- HCOs: 1
- Count Patients button
- Date: Jun 14, 2023 at 5:29 pm by Michelle Edelman
- Healthcare Organization: UC Health (1 of 1 HCOs online)
- Country: Any country (1 country in the network)
- Age/Sex: Any age / Any sex (3,667,720 patients on network)

The query is structured with 'MUST HAVE' and 'CANNOT HAVE' criteria:

- MUST HAVE:**
 - ICD-10-CM K51 Ulcerative colitis (11,230)
 - OR ICD-10-CM K50 Crohn's disease [regional enteritis] (10,180)
 - AND VA H5859 ADRENAL CORTICOSTEROIDS (1,109,860)
- CANNOT HAVE:** Deceased (171,740)

The interface also shows 'Ungrouped Terms' and a 'Group 1' section with a note: 'This group occurred since 1 year ago'. The 'Group 1' section includes:

- MUST HAVE:** CPT 1007622 Endoscopy Procedures on the Rectum (117,480)
- CANNOT HAVE:** (empty)

Example: Custom data request

Summary

- Created subset of patients with treatment summary care plan
- Compared health maintenance behaviors between urban and rural settings
- Highlighted gaps in care across the health care system

Development of a novel cancer survivorship database to describe health care utilization patterns for Coloradans who have completed primary cancer treatment

Published: 23 December 2023



Carlin Callaway ¹, Elizabeth Molina Kuna ², Linda Overholser ³

Affiliations + expand

PMID: 38135830 DOI: 10.1007/s11764-023-01506-x

Abstract

Purpose: Electronic health records (EHR) and data warehouses contain large amounts of data that hold promise for understanding and improving population health management. Utilizing the Health Data Compass (HDC) warehouse, a comprehensive and novel database of adult Coloradans who have completed curative-intent cancer treatment within a health care system was created. By analyzing patient demographics and health care utilization among this group, gaps in and barriers to coordinated care post-active cancer treatment may be identified and better understood.

Methods: A survivorship database (HDC-SD) was built from the Health Data Compass (HDC) warehouse by identifying individuals with histories of cancer who received treatment summary care plans (TSCPs) through the University of Colorado Cancer Center (UCCC) between January 1, 2020, and December 31, 2021. Patient sociodemographic characteristics, disease characteristics, and health maintenance were described and compared between urban and rural settings using chi-square tests.

Results: The HDC-SD includes 1933 records representing 13 categories of cancers. The majority live in an urban setting (89.8%). Patients in HDC-SD living in urban areas had higher rates of completing recommended colorectal screening, mammography, Prostate-Specific Antigen (PSA) tests, flu shots, and COVID-19 vaccination. Additionally, emergency department visits occurred at a statistically significant higher level for those living in urban areas.

Conclusions: Creating and analyzing a comprehensive database of individuals who have completed active cancer treatment may highlight gaps in care within complex health care systems. Engaging different stakeholders to address these issues may help improve and enhance systematic population management for cancer survivors.

Implications for cancer survivors: Completed treatment summary care plans may be used to increase the completion of individual health maintenance recommendations and potentially population health maintenance recommendations.

Other datasets

PHSR has access and experience with other datasets that could be used to understand the Colorado population

- Examples
 - **American Community Survey (ACS), Current Population Survey, Decennial Survey** from US Census Bureau
 - **Behavioral Risk Factor Surveillance System (BRFSS) and Child Health Survey** from CDC
 - **Social Determinants of Health** from Agency for Healthcare Research and Quality
 - **Area Health Resources Files (AHRF), Health Professional Shortage Areas (HPSA)** from Health Resources and Services Administration
 - **National Immunization Surveys (NIS)** from CDC
- PHSR has access and experience with other datasets that could be used to understand the Colorado population.

Catchment resources summary

Self-Service Tools



- **ECCO**: great for quick statistics and visuals – lots of different data sources, more than just cancer burden
- **CO APCD Insights Dashboard**: great for feasibility analysis
- **TriNetX**: high-level exploration of UCHealth EMR

Colorado Central Cancer Registry (CCCR)



- Patient and tumor characteristics
- First course of treatment
- Ability to link data to geographic indicator

All Payers Claims Database (APCD)



- Medical, provider, pharmaceutical claims and data
- Great for understanding cost and quality of healthcare
- Requires reuse DUA

CCCR-APCD Linkage



- Links patient/tumor characteristics with medical claims data
- Great for understanding what cancer healthcare looks like in CO
- Requires reuse DUA

Health Data Compass



- Integrates patient EMR, billing data, and genomics data
- Understand cancer burden and care within the University of Colorado Health System
- Requires Intake Survey form

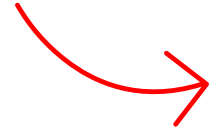
How to request data

Requests for CCCR, APCD, or linkage data:

- Submit a project request: <https://redcap.ucdenver.edu/surveys/?s=DNXYKC9MH7YENLXP>
- Or email us for more details: Elizabeth.MolinaKuna@cuanschutz.edu

Requests for Health Data Compass:

- Visit the Compass site: <https://www.healthdatacompass.org/>
- Fill out the intake survey



Request a Custom Dataset

For additional information, visit: <https://medschool.cuanschutz.edu/colorado-cancer-center/research/shared-resources/population-health>



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Questions?

Thank you!

