

Community Level Estimates and Open Data: Informing Communities



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Center for Health and Environmental Data, CDPHE

2017 COLORADO CULTURE OF DATA
CONFERENCE

Data, I think, is one of the most powerful mechanisms for telling stories. I take a huge pile of data and I try to get it to tell stories.

Steven Levitt

Benefits

Track

Map and model the spread of diseases and plan steps to combat and contain them.

Inform

Clearly communicate public health challenges and resources such as tainted well wells or evacuation centers. [\[PDF\]](#)

Manage

Combine risk factors, hazards, and demographics into a common view to get the complete picture. [\[PDF\]](#)



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Source

Colorado Department of Public Health and Environment (12)

Content Type

spatial dataset (12)

1 - 10 of 12 results

Relevance ▾

Colorado ZIP Code Tabulation Areas (ZCTA)

Shared by CDPHE_user_community

This layer contains 2010 Colorado ZIP Code Tabulation Areas assembled directly from the United States Census 2010 Tiger Census Tract shapefile. ZIP Code Tabulation Areas (ZCTAs) are generalized areal representations of United States Postal Service (USPS) ZIP Code service areas. The USPS ZIP Codes identify the individual post

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Colorado Census Block Group Boundaries

Shared by CDPHE_user_community

This layer contains 2010 Colorado Census Block Group Boundaries assembled directly from the United States Census 2010 Tiger Census Tract shapefile.

🔒 Custom License 📅 3/9/2017 📄 Spatial Dataset 📊 3,532 Rows



Colorado American Indian Area Geography

Shared by CDPHE_user_community

This layer contains 2012 Colorado American Indian Area Geography assembled directly from the United States Census 2012 Tiger Census Tract shapefile.

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Colorado Census Tract Boundaries

Shared by CDPHE_user_community

Census tracts are small, relatively permanent geographic entities within counties (or the statistical equivalents of counties) delineated by a committee of local data users. Generally, census tracts have between 2,500 and 8,000 residents and boundaries that follow visible features. When first established, census tracts are to be as

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Colorado Health Statistics Regions

Shared by CDPHE_user_community

These 21 regions are aggregations of counties developed by the Health Statistics Section in partnership with state and local public health professionals. The regions were developed using statistical and demographic criteria. More information on the 21 regions is available by contacting Alyson Shupe, Health Statistics Section,

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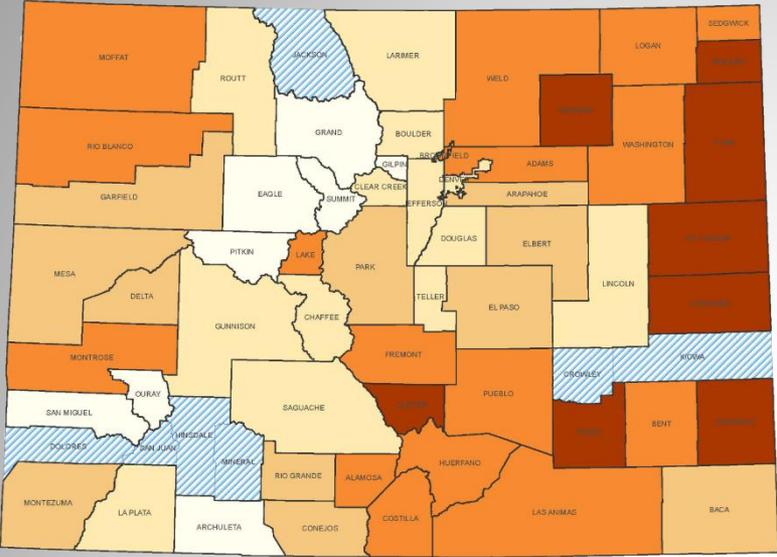
Colorado Regional Care Collaborative Boundaries

Shared by CDPHE_user_community

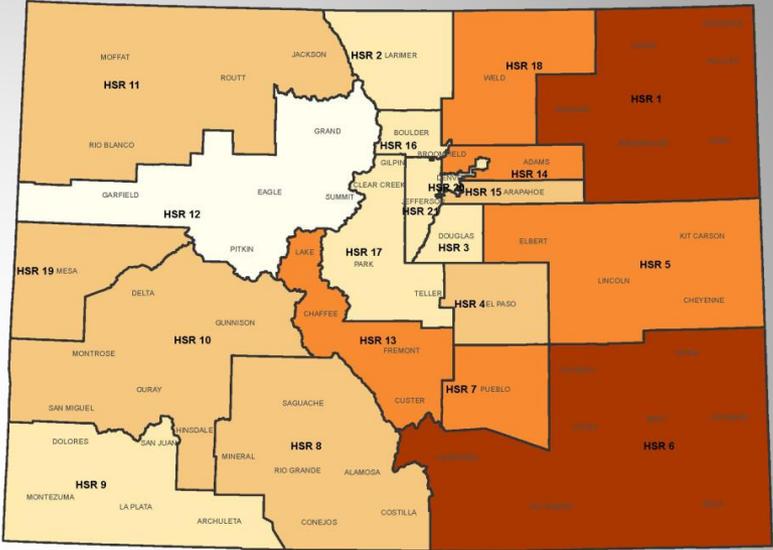
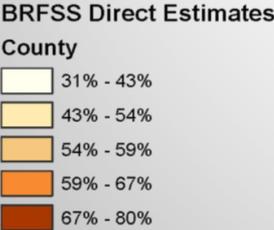
Boundary Delineations



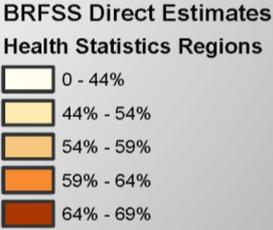
A Need for Sub-County Level Health Data



County BRFSS Direct Estimates (with gaps)



Health Statistics Region (HSR) Aggregation



Community Level Estimates



Peer Reviewed Literature

- *Hinojosa et. Al* [Environ Res.](#) 2014 Oct;134:435-52
- *Xingyou et. Al* [Am J Epidemiol](#) (2015) 182 (2): 127-137
- *D'Agnostio-McGowan et al* [Int J Environ Res Public Health.](#) 2013 Dec 27;11(1):418-28



Consulting Experts

- Xingyou Zhang, Ph.D. -Small Area Estimation Branch Chief, U.S. Census
- Shumei Yun, MD, Ph.D. - State Chronic Disease Epi, Missouri Dept. of Health
- Melody Goodman, Ph.D -Washington University of St. Louis



Existing Technology and Data

- PROC GLIMMIX in SAS
- U.S. Census Bureau - American Community Survey data
- Colorado Behavioral Risk Factor Surveillance System (BRFSS) data
- CDPHE Open Data



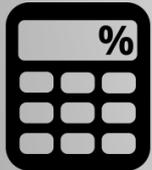
Generalized Linear Multi-Level Regression



24 Age/Race/Gender Group
Modeled Probabilities



Multiplied by 24 Age/Race/Gender Group
Census Tract Populations

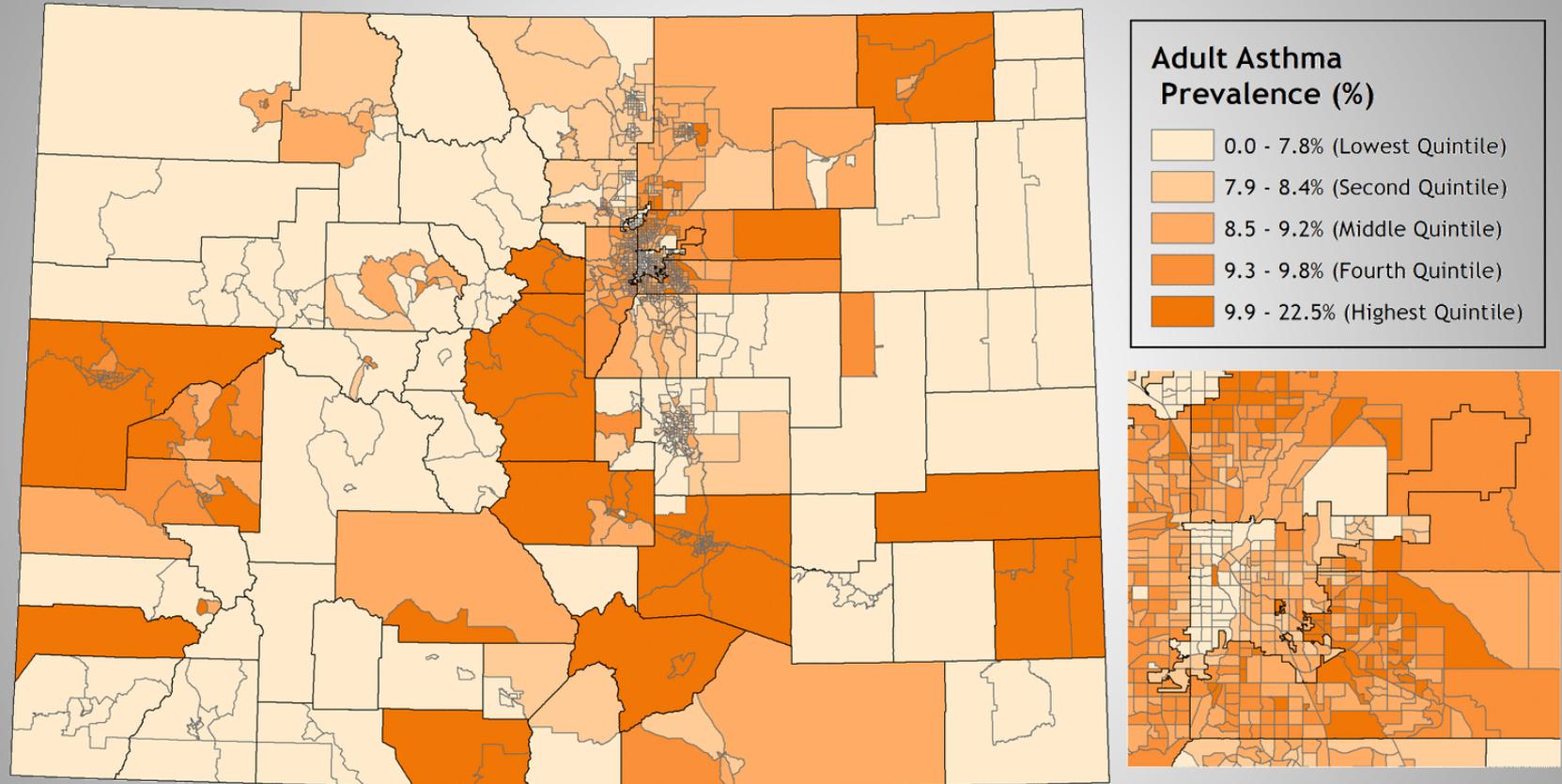


Summed 24 Age/Race/Gender Group Estimates
÷ Total Tract 18+ Population

Census Tract Level Estimate



Adult Current Asthma* Prevalence by Census Tract, Colorado



Includes persons who answered “yes” to the questions: “Has a doctor, nurse, or other health professional EVER told you that you had any of the following: (Ever told) you had asthma?” and “Do you still have asthma?”

Source: CDPHE Community Level Estimates, 2016



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14 Modeled Estimates of Health Indicators:

Unhealthy behaviors

- Binge drinking
- Smoking
- No leisure-time physical activity
- Obesity
- Overweight
- Heavy drinking

Health outcomes

- Asthma
- Coronary heart disease
- Diabetes
- Mental distress
- Physical health not good
- Self-reported health status

Prevention measures

- Routine checkup
- Delayed medical care due to cost



2013-2016 estimates will be published in September 2017!



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Limitations



The community level estimates are modeled/predicted based on demographic estimates.

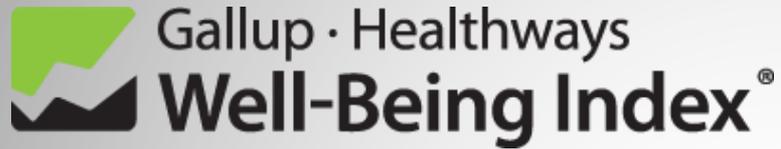
The community level estimates are based on other data sources with their own sampling biases.

The estimates do not represent the known prevalence of adults for an individual neighborhood or census tract.

No local city/neighborhood-level health outcome or risk behavior data is incorporated into the model to generate the estimates.

The community level estimates cannot be used for pre/post program evaluation.

Community Level Estimates: External Validations





CDPHE Community Level Estimates

The Colorado Department of Public Health and Environment has developed community-level estimates for a set of important health condition and risk behavior indicators. These four-year estimates (2012-2015) have been produced for each census tract in the State of Colorado based on modeled survey data collected in the Colorado Behavioral Risk Factor Surveillance System (BRFSS) and incorporating population, race, gender, and age estimates for each census tract from the American Community Survey. Click here to download a March 2016 Webinar introducing the estimates and maps. For an explanation of the overall statistical modeling process please click here, or see the Methods and Diagram section below.

What are Community Level Estimates?

CDPHE's Community Level Estimates are output from statistical models used to generate health condition and risk behavior estimates for smaller geographies than traditional surveillance systems report. The estimates are produced using a multilevel model that incorporates individual Colorado Behavioral Risk Factor Surveillance System (BRFSS) survey responses in addition to socio-demographic and contextual information from the U.S. Census (American Community Survey). The individual survey responses related to a health condition or risk behavior from the Colorado BRFSS are nested within geographic boundaries (counties) where both individual characteristics (demographic) as well as sociodemographic characteristics can be used to model the probability of having a health condition or risk behavior at the census tract geography.



Methods PDF »

Diagram of Model »

March 2016 Webinar (mp4)

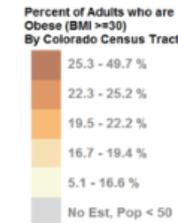
Data and Maps

- Asthma**
Percent of Adults who currently have Asthma
- Cigarette Smoking**
Percent of Adults who currently smoke Cigarettes
- Coronary Heart Disease**
Percent of Adults ever diagnosed with Angina or Coronary Heart Disease
- Delayed Medical Care (\$)**
Percent of Adults who Delayed Medical Care because of Cost
- Diabetes**
Percent of Adults ever diagnosed with Diabetes
- Binge Drinking**
Percent of Adults who are Binge Drinking
- Heavy Drinking**
Percent of Adults who are Heavy Drinking
- Health Status**
Percent of Adults with Fair or Poor Health Status
- Mental Distress**
Percent of Adults with frequent Mental Distress
- No Checkup Past 12 Months**
Percent of Adults with no routine medical checkup in the past 12 months
- Obesity**
Percent of Adults who are Obese (BMI >= 30)
- Overweight**
Percent of Adults who are Overweight or Obese (BMI >= 25)
- Physical Activity**

Data Visualization



The estimates are presented to users through a web-based searchable map and accompanying data table. Users of the web-based map can use traditional panning and zooming tools or query the map by county name, city name, zip code, or school district name using the Search tool located above the map. Data may be downloaded from each specific map in several formats including XLSX, shapefile, Google Earth KMZ, and JSON formats.



http://www.bit.ly/CDPHE_CLE

OR...





What is Open Data?

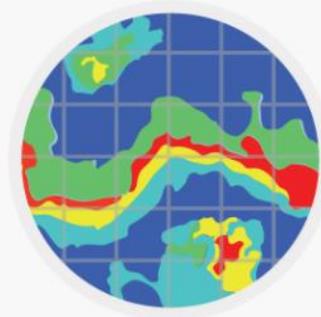


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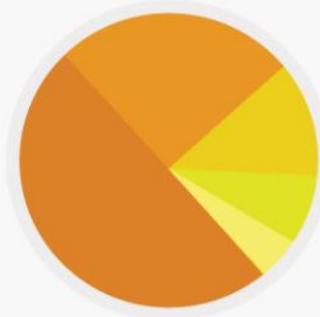
Explore

Dig into the data.



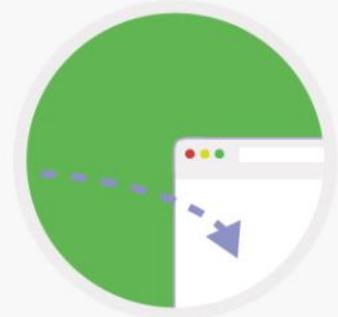
Visualize

Highlight spatial patterns.



Analyze

Discover trends by creating charts.



Share

Embed analysis on your website.

Share



Map and feature services as complete services or individual layers.



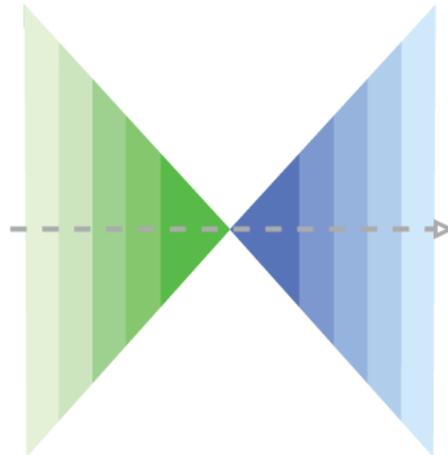
Image services.



Non-spatial data like spreadsheets, tables and CSVs.



Web maps, apps, documents, PDFs, web links, and more.



Your data will be available via:



Download - Download all of the data or a filtered subset directly from the source in multiple formats



API - Access data directly as GeoJSON or GeoServices.



DCAT - Federate your data simply by sharing a standards compliant catalog

What is Open Data?



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CDPHE Open Data

Geospatial Data and Resource Library



This site provides access to selected geospatial data sets, maps, visualization tools, and web-based mapping applications that are published by the Colorado Department of Public Health and Environment.

Explore Data Categories



All CDPHE Geospatial Data



Boundaries



Facilities



Demographics



Environment



Health Conditions

<http://data-cdphe.opendata.arcgis.com/>



Audience Overview

Jan 19, 2017 - Jun 19, 2017

Email Export Add to Dashboard Shortcut

This report is based on 100% of sessions. [Learn more](#) Greater precision

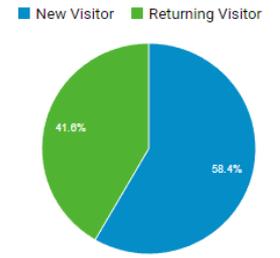
All Users
100.00% Sessions

+ Add Segment

Overview

Sessions vs. Select a metric

Hourly Day Week Month





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Tags

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- colorado (36)
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- diabetes (3)
- facilities (3)
- heart disease (3)
- alcohol (2)
- influenza (2)

Fewer ▲

Source

Colorado Department of Public Health and Environment (36)

Content Type

spatial dataset (36)

11 - 20 of 36 results

Most Recent ▼

Influenza Hospitalization Rate (Census Tracts)

Shared by CDPHE_user_community

These data contain the Age-Adjusted Colorado Census Tract Rate of Influenza-Related Hospital Discharges (2011-2015) and Inpatient Hospitalizations per 100,000 persons based on the ICD-10 Code of J10-J11. The rates are calculated using the geocoded billing address of discharged individuals found in the dataset with the

Custom License 4/7/2017 Spatial Dataset 1,249 Rows



CDPHE Composite Community Level Estimates (Census Tract)

Shared by CDPHE_user_community

The Colorado Department of Public Health and Environment has developed community-level estimates for adults in a set of 14 important health condition and risk behavior indicators. The dataset includes indicators on adult asthma prevalence, cigarette smoking prevalence, coronary heart disease prevalence, percent of

Custom License 4/7/2017 Spatial Dataset 1,249 Rows



Asthma Hospitalization Rate (Census Tracts)

Shared by CDPHE_user_community

These data contain the Age-Adjusted Colorado Census Tract Rate of Asthma-Related Hospital Discharges (2011-2015) and Inpatient Hospitalizations per 100,000 persons based on the ICD-10 Code of J45-J46. The rates are calculated using the geocoded billing address of discharged individuals found in the dataset with the

Custom License 4/7/2017 Spatial Dataset 1,249 Rows



Alcohol Consumption: Adults Who Binge Drink - CDPHE Community Level Estimates (Census Tracts)

Shared by CDPHE_user_community

These data represent the predicted (modeled) prevalence of Binge Drinking among adults for each census tract in Colorado. Binge Drinking is defined for males as having five or more drinks on one occasion and for females as having four or more drinks on one occasion within the past 30 days. The estimate for each census

Custom License 4/7/2017 Spatial Dataset 1,249 Rows



CDPHE Health Facilities

Shared by CDPHE_user_community

Point geometry feature class representing known regulated health facilities in Colorado, developed directly from address information obtained directly from the Health Facilities and Emergency Medical Services Division of the Colorado Department of Public Health and Environment in 2017. Coordinate locations

Custom License 4/7/2017 Spatial Dataset 3,160 Rows





Filter By

Tags

demographics (10)

cdphe (10)

colorado (10)

gis (10)

age (1)

disability (1)

education (1)

employment (1)

income (1)

language spoken (1)

Fewer ^

Source

Colorado Department of Public Health and Environment (10)

Content Type

spatial dataset (10)

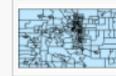
Relevance ▾

Employment (Census Tracts)

Shared by CDPHE_user_community

These data contain selected census tract level demographic indicators (estimates) from the 2011-2015 American Community Survey representing the percent of the civilian labor force population (Age 16+) that is unemployed.

Custom License 4/7/2017 Spatial Dataset 1,242 Rows



Language Isolation (Census Tracts)

Shared by CDPHE_user_community

These data contain selected census tract level demographic indicators (estimates) from the 2011-2015 American Community Survey representing the percent of the population (Age 5+) that speak English less than well.

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Income/Poverty (Census Tracts)

Shared by CDPHE_user_community

These data contain selected census tract level demographic indicators (estimates) from the 2011-2015 American Community Survey representing the percent of the population (for all persons) with annual income below the federal poverty level.

Custom License 3/9/2017 Spatial Dataset 1,242 Rows



CDPHE Composite Socio-Demographic Dataset (Census Tract)

Shared by CDPHE_user_community

This census tract geography dataset includes selected indicators (2011-2015 5-Year Averages) pertaining to population, age, race/ethnicity, language, housing, poverty/income, education, disability, health insurance, employment, and age*race*gender groups. This dataset is assembled annually from the U.S. Census American

Custom License 4/7/2017 Spatial Dataset 1,249 Rows



Disability (Census Tracts)

Shared by CDPHE_user_community

These data contain selected census tract level demographic indicators (estimates) from the 2011-2015 American Community Survey representing the percent of the non-institutionalized civilian population (Age 5+) with a disability.

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Race/Ethnicity (Census Tracts)



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- facilities (10)
- cdphe (10)
- colorado (10)
- gis (10)
- health (3)

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Source

- Colorado Department of Public Health and Environment (10)

Content Type

- spatial dataset (10)

CDHS Colorado Licensed Childcare Providers

Shared by CDPHE_user_community

This data set represents the known location of licensed Colorado Childcare Providers as provided to CDPHE by the Colorado Department of Human Services in 2017.

 Custom License  4/7/2017  Spatial Dataset  5,398 Rows



Disability Resource Providers: Colorado Community Inclusion

Shared by CDPHE_user_community

This data set represents the known locations of community resources in Colorado serving the Disability community. This map details the agency locations for the following services: Area Agencies on Aging (AAA), Aging and Disability Resources (ADRC), Alzheimer's Association (ALZHEIMERS), ARC Offices (ARC),

 Custom License  4/7/2017  Spatial Dataset  830 Rows

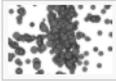


CDHS Colorado Licensed Childcare Providers 2016

Shared by CDPHE_user_community

This data set represents the known location of licensed Colorado Childcare Providers as provided to CDPHE by the Colorado Department of Human Services in 2016.

 Custom License  4/7/2017  Spatial Dataset  5,409 Rows



CDPHE Community Behavioral Health Centers

Shared by CDPHE_user_community

Point geometry feature class representing Community Behavioral Health Centers and Resource locations, developed directly from address information obtained directly from the Office of Emergency Preparedness and Response, Colorado Department of Public Health and Environment, in 2017. Coordinate locations

 Custom License  3/10/2017  Spatial Dataset  219 Rows



CDPHE CDOE School Locations and District Office Locations

Shared by CDPHE_user_community

Point geometry feature class representing Colorado public school and private school locations along with the locations of school district offices, developed directly from address information obtained from the Colorado Department of Education in 2017. Coordinate locations (latitude/longitude) were derived from the known

 Custom License  3/20/2017  Spatial Dataset  2,481 Rows



CDPHE Colorado Drug Treatment Programs and Resources

Shared by CDPHE_user_community

Point geometry feature class representing known Colorado Drug Treatment Program Resource locations



Health Facilities, Schools, Community Resources



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- [health \(3\)](#)
- [obese \(1\)](#)

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Source

- [Colorado Department of Public Health and Environment \(3\)](#)

Content Type

- [spatial dataset \(3\)](#)

CDPHE Composite Community Level Estimates (Census Tract)
 Shared by CDPHE_user_community

The Colorado Department of Public Health and Environment has developed community-level estimates for adults in a set of 14 important health condition and risk behavior indicators. The dataset includes indicators on adult asthma prevalence, cigarette smoking prevalence, coronary heart disease prevalence, percent of

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Overweight and Obese Adults - CDPHE Community Level Estimates (Census Tracts)
 Shared by CDPHE_user_community

These data represent the predicted (modeled) prevalence of being Overweight or Obese among adults for each census tract in Colorado. Overweight is defined as a BMI of 25 or greater. Obese is defined as a BMI of 30 or greater. BMI is calculated from self-reported height and weight. The estimate for each census tract

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Obesity in Adults - CDPHE Community Level Estimates (Census Tracts)
 Shared by CDPHE_user_community

These data represent the predicted (modeled) prevalence of being Obese among adults for each census tract in Colorado. Obese is defined as a BMI of 30 or greater. BMI is calculated from self-reported height and weight. The estimate for each census tract represents an average that was derived using multiple years of BRFSS survey

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Overview Data

Heart Disease Mortality Rate (Counties)

Showing 1 to 10 of 64

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OBJECTID	County Name	County FIPS Code	Age-Adjusted Heart Disease Mortality Rate Per 100,000 Persons
1	LARIMER	069	120.485
2	LAS ANIMAS	071	130.019
3	FREMONT	043	175.262
4	GUNNISON	051	112.584
5	CONEJOS	021	217.986
6	EAGLE	037	58.694
7	OTERO	089	222.513
8	LA PLATA	067	122.967
9	SUMMIT	117	95.751
10	CUSTER	027	106.573

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Legend

U.S. Fast Food Restaurants (2016)



DRCOG 2016 Bicycle Route Inventory



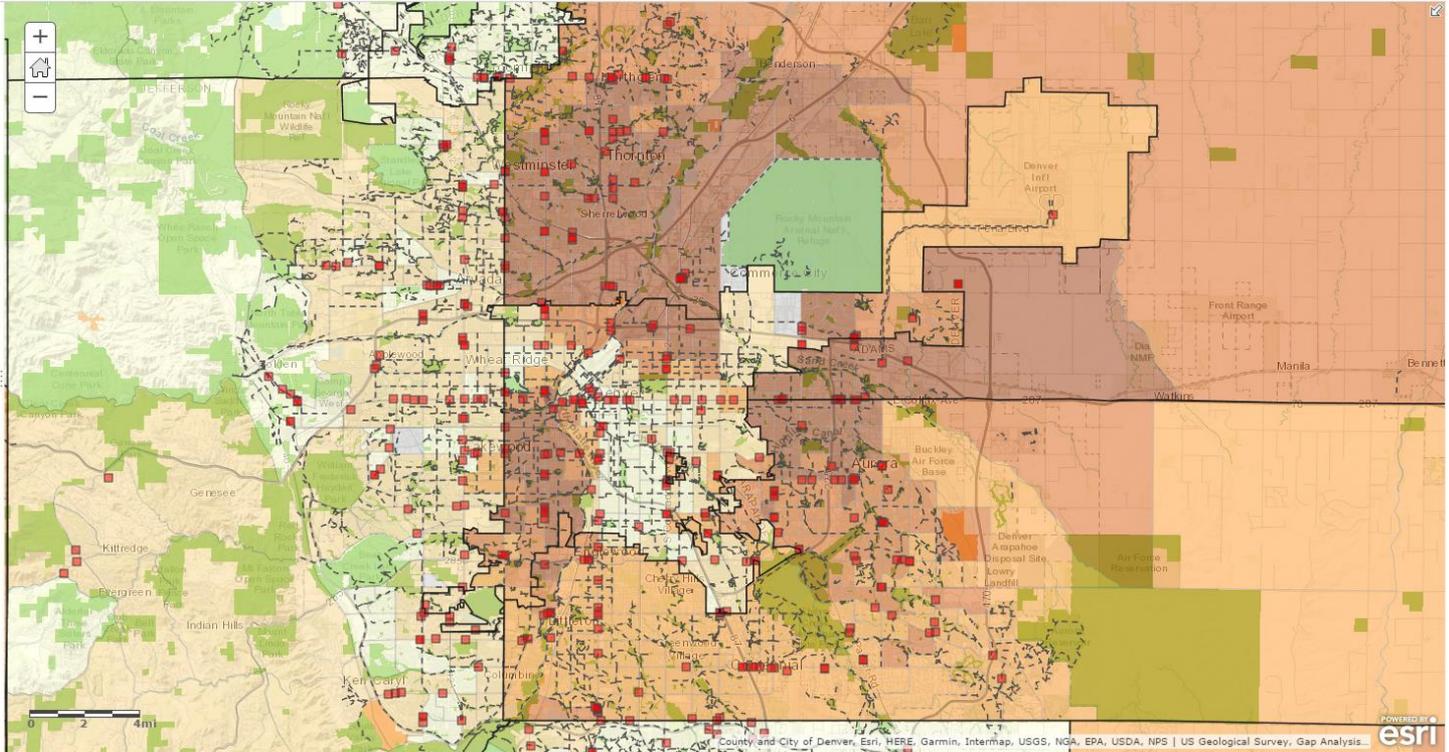
Physical InActivity: % of Adults that did not participate in Leisure-Time Physical Activity or Exercise

- Highest Quintile (21.6 - 43.0%)
- Fourth Quintile (18.2 - 21.5%)
- Middle Quintile (15.5 - 18.1%)
- Second Quintile (12.4 - 15.4%)
- Lowest Quintile (2.7 - 12.3%)
- No Estimate, Population < 50

Public and Private Open Space

Public and Private Open Space

- Public
- Private



Explore Maps on Your Own!



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We are here to help you find and utilize data

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