

APPENDIX 1: MEASURING OUR SUCCESS

Measuring our progress relies on thoughtful and deliberate tracking of key indicators. The Introduction identifies six metrics that the city is committed to measure annually. These metrics provide a snapshot of Denver each year and are a way to measure if we are headed in the right direction to realize our vision for 2040. None of the metrics work on their own and none is intended to capture everything that is relevant for a particular vision element. Instead, taken collectively, the metrics provide a helpful framework for evaluating progress over time.

This appendix provides more background on the sources and methodology behind the six metrics.

EQUITABLE, AFFORDABLE AND INCLUSIVE

Reduce the amount of cost-burdened households.

Metric

Percent of Denver households who spend more than 45% of their income on housing and transportation costs.

Sources

The H+T Index uses data from a combination of federal sources and transit data compiled by the Center for Neighborhood Technology (CNT). Data Sources include: 2011-2015 American Community Survey 5-year Estimate, US Census TIGER/Line Files, US Census Longitudinal Employment-Household Dynamics, Origin-Destination Employment Statistics, Consumer Expenditure Survey, 2015 National Transit Database, AllTransit™ and Odometer readings from The Illinois Department of Natural Resources

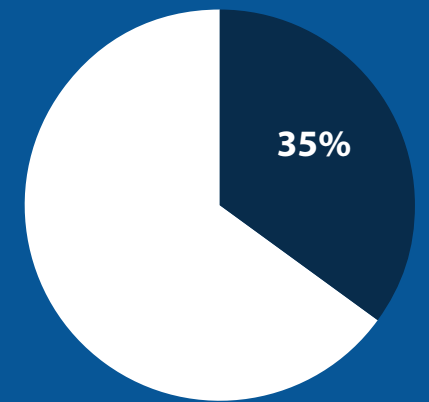
Why measure H+T costs?

The traditional measure of affordability recommends that household spend no more than 30% of household income on housing costs. Under this view, a little over half (55%) of US neighborhoods are considered “affordable” for the typical household. However, that benchmark fails to take into account transportation costs, which are typically a household’s second-largest expenditure. The H+T Index offers an expanded view of affordability, one that combines housing and transportation costs and sets the benchmark at no more than 45% of household income.

Methodology

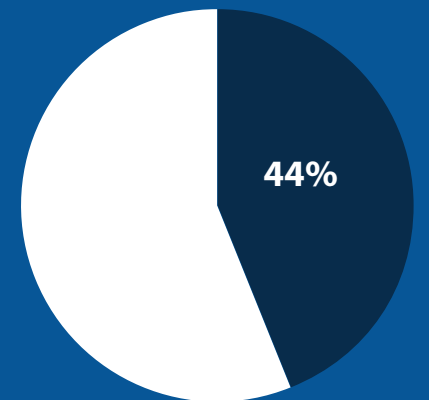
The Center for Neighborhood Technology’s Housing + Transportation (H+T®) Affordability Index (H+T Index) is an innovative tool that measures the true affordability of housing by calculating the transportation costs associated with a home’s location. The H+T Index was constructed to estimate three dependent variables (auto ownership, auto use, and transit use) as functions of 14 independent variables (median household income, average household size, average commuters per household, gross household density, regional household intensity, fraction of rental housing units, fraction of single family detached housing, employment access index, employment mix index, block density, transit connectivity index, total available transit trips per week, transit access shed and jobs within the transit access shed). To hone in on the built environment’s influence on transportation costs, the independent household variables (income, household size and commuters per household) are set at fixed values to control for any variation they might cause. By establishing and running the model for a “typical household” any variation observed in transportation costs is due to place and location, not household characteristics.

2040 Target



COST BURDENED HOUSEHOLDS
 ALL OTHER HOUSEHOLDS

2017



For more:

You can find more information about the H+T Index and the Center for Neighborhood Technology (CNT) here:

<https://htaindex.cnt.org/>

2040 Target

78

60

COMPLETE NEIGHBORHOODS

ALL NEIGHBORHOODS

2016

78

18

STRONG AND AUTHENTIC NEIGHBORHOODS

Increase the number of neighborhoods with convenient access to transit, jobs and retail.

Metric

Number of Denver neighborhoods where at least 50% of households have access to quality transit and jobs and retail within walking or rolling distance.

Sources

The data for this metric comes from the City of Denver Assessors Office, City of Denver Department of Community Planning and Development, City of Denver Technology Services, and RTD.

Why measure?

Every Denver resident should have convenient access to the goods, services, and amenities needed in daily life, in addition to access to reliable and convenient transit. These amenities and services should be within a comfortable walking or rolling distance and meet the needs of all ages and abilities of Denver residents. Given the historical built form and land use patterns of some of Denver's neighborhoods, this may be unattainable for all residents, though a majority of residents living in a majority of Denver's neighborhoods should enjoy this level of access in order for Denver to be considered a city of complete neighborhoods.

Methodology

This metric is comprised of two components: 1. access to jobs and retail and 2. access to transit.

For the retail and jobs component a dataset CPD created a dataset using the existing land use data of all parcels classified as retail or mixed use that fall within a future center or corridor as defined by *Blueprint Denver*. The land use data is updated every other year. Households within a 1/4 mile of local centers and corridors and households within a 1/2 mile of regional and community centers and corridors were selected. Rather than the perfect half circle, a modified diamond shape with a either a length of 2106 ft (1/2 mile) or 1053 ft (1/4 mile) from its center point to its vertices. This is to compensate for the fact that even in the presence of a fully built out street grid, a half-mile walking or rolling distance will be less than the "as the crow flies" distance.

For access to high quality transit, households meeting the following criteria were selected:

- 1/2-mile from high-capacity transit—currently, all rail stations in Denver—measured as a 1/2 mile radius buffer; or
- 1/4 mile—measured as a 1/4 mile buffer—from the frequent transit network, which is defined by *Denver Moves: Transit* as 15 min or less headways; 6am-10pm; 7 days per week. The bus lines that currently meet this standard are 15 (E Colfax), 16 (W Colfax) and 0 (S Broadway).

The final metric captures those households that meet both criteria: 1. access to jobs and retail and 2. access to transit.

CONNECTED, SAFE AND ACCESSIBLE PLACES

Reduce dependence on driving alone.

Metric

Percent of Denver residents who drive alone to work in a single-occupancy vehicle.

Sources

American Community (ACS) Survey 5-year estimates, US Census Bureau

Why measure mode share?

The percentage of people who drive rather than using other travel modes (often called "mode share") reflects reliance on the automobile. As Denver has a more robust multimodal transportation system that includes safe, frequent and reliable choices for transit and other modes, fewer people will drive alone to work.

Methodology

The data for this metric comes directly from the American Community Survey (ACS), administered by the US Census Bureau. It is part of the ACS 5-year estimates. The 5-year estimates contain the largest sample sizes and most reliable data of all the ACS datasets. The dataset used for the current state was released by ACS in 2016 and captures the time frame of 2012-2016.

The ACS data is exclusively for commute trips, thus this metric only measures which transportation mode people use to travel to work.

2040 Target

50%

50%

DRIVE ALONE TO WORK
ALL OTHER MODES

2016

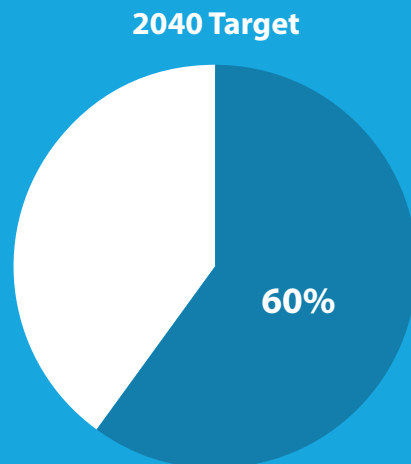
27%

73%

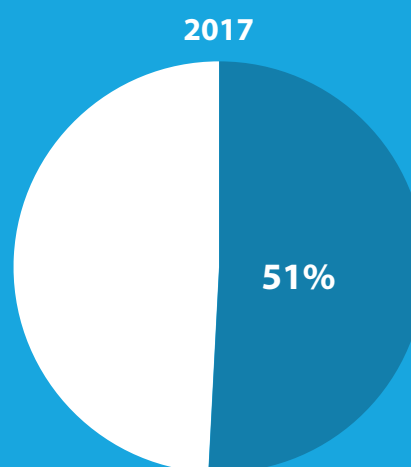
For more:

You can find more information about the American Community Survey, including the survey questionnaire with the question about how people travel to work, here:

<https://www.census.gov/programs-surveys/acs/>



■ JOBS IN DIVERSE, INNOVATIVE ECONOMIC SECTORS
■ ALL OTHER JOBS



For more:

The North American Industry Classification System (NAICS) is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. For more info:

<https://www.census.gov/eos/www/naics/>

ECONOMICALLY DIVERSE AND VIBRANT

Increase the share of jobs supporting a diverse and innovative economy

Metric

Percent of local jobs in diverse, innovative economic sectors.

Sources

Colorado Department of Labor and Employment

Why measure?

As the global and national economy continue to transform, cities are defining themselves based on how much they embrace and invest in a range of diverse jobs, particularly those in growing parts of the economy. These businesses and jobs bring income and wealth to the businesses, families, and neighborhoods of Denver.

The business clusters measured by this metric are composed of part of several industrial sectors, including but not limited to: Manufacturing Information/Communication, Finance, Professional/Business Services, and Education. Some specific business groups are Advanced Manufacturing, Technology, Finance, Art and Design, and AgriBiz/AgriTech.

The business clusters measured are likely to grow faster, creating jobs and investments in our community, leading to innovation and sustainability, and providing tax revenues leading to fiscal sustainability. The businesses are expected to create jobs across the income and education spectrum, including middle-income and middle-skill jobs, but often have specific requirements for locational proximity and amenities, education/training requirements for employees and transportation mobility.

Methodology

Utilizing data from Colorado Department of Labor and Employment, Denver’s Office of Economic Development (OED) categorizes business groups by lower level North American Industry Classification (NAICS) assignments. OED combines specific business groups representing foundational components of the economy that are likely to create new jobs and lead to innovation, including: Advanced Manufacturing, Technology, Finance, Art and Design, and AgriBiz/AgriTech. OED then measures the total employment (by establishment location) within the combined business cluster. The percentage is a strong quantifiable metric which allows for a reliable and valid estimate of the share of the Denver’s economy focused on diverse jobs in fast growing components of the economy.

ENVIRONMENTALLY RESILIENT

Reduce Denver’s impact on climate change

Metric

Percent below Denver’s 2005 carbon emissions (Metric Tons of Carbon Dioxide equivalents).

Sources

City of Denver Department of Public Health & Environment

Why measure?

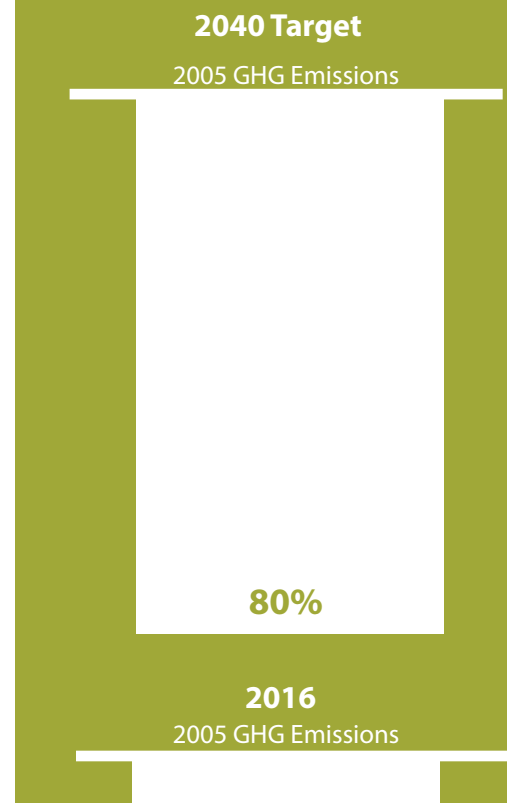
Greenhouse gas emissions from man-made sources (combustion of fossil fuels, land use changes, industrial processes) contribute to global climate change and the rise in global temperatures. Effects of climate change include extreme weather events, hotter temperatures, more rapid snowmelt in the mountains, and other impacts. Measurement of greenhouse gas emissions enables cities to identify and track specific strategies for reducing emissions. It is also a measure of a city’s contribution to global climate change.

Methodology

Denver’s annual GHG inventory, started in 2005, evaluates GHG emissions levels and progress made in emissions reduction efforts. The inventory measures the three most frequently occurring GHGs: Carbon dioxide (CO2), methane (CH4), and nitrogen oxides (NOx). The inventory categorizes emissions according to scope and sector. Inventory Scope is a determination of “where” the emissions occur relative to the City boundary, while inventory sector describes the type of emission, e.g. transportation, heating, etc.

Sources can be broken down into two distinct categories: core emissions and upstream emissions. Core or direct emissions are those that typically occur within the boundary of the city (Scope I) or are more directly controlled/influenced (Scope II), representing the greatest opportunity for action on the part of the city. These include emissions from building energy use, transportation and fuels, street lights, and waste management. Upstream or indirect emissions occur outside the boundary of the city but are demanded by people and businesses, such as refining of fuel, airline jet fuel, cement production, and food packaging and transport. GHG emissions are reported as total and per capita emissions in units of metric tons of CO2 equivalent (MtCO2e).

Denver is proud of its track record in conducting and reporting annual inventories, as well as public reporting of plans, targets and goals for climate mitigation and adaptation. A robust climate program allows for long-term trajectory analysis and forecasts. Denver will continue to produce and publicly release its annual GHG inventory to report on progress.



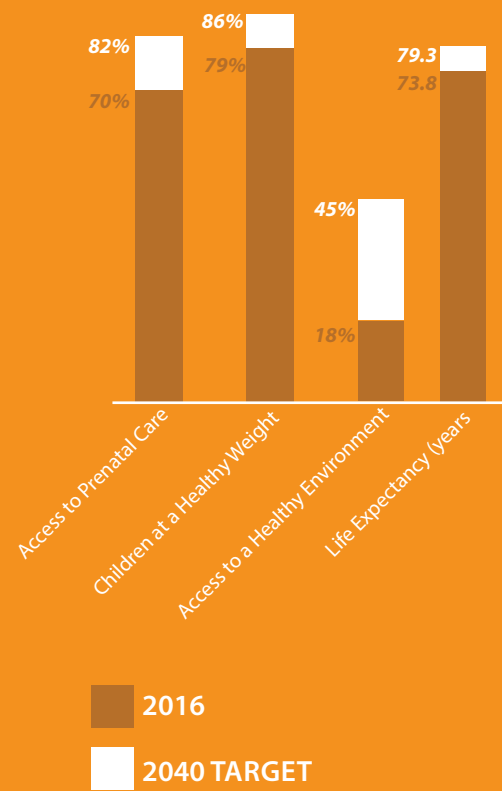
For more:

More about Denver’s commitment to reducing green house gas emissions can be found ion the 80x50 Climate Action Plan:

[80x50 Climate Action Plan](#)

HEALTHY AND ACTIVE

Reduce health inequities between Denver neighborhoods



Metric

Statistics for the lowest performing neighborhoods compared to highest performing neighborhoods in 2016 for each component of the Neighborhood Equity Index.

Sources

City and County of Denver GIS Data, Vital Statistics, Colorado BMI Surveillance System

Why measure neighborhood equity?

Inequities are created when barriers prevent individuals and communities from accessing the services and opportunities needed to attain their highest level of health. Everyone deserves a fair chance to lead a healthy life, but some are denied this chance because of social, economic, and environmental conditions.

Methodology

The data for this metric comes directly from the Neighborhood Equity Index prepared by the City of Denver Department of Public Health and Environment. The Neighborhood Equity Index is made up of five separate indicators: socioeconomic, built environment, access to care, morbidity, and mortality. For this metric, the socioeconomic indicator was not included because everyone should have access to healthy environment, be free from disease, and live a long life regardless of their income/education. Information about all of the other indicators is below:

Access to Prenatal Care- % of pregnancies without 1st trimester prenatal care using 2007-2013 Vital Statistics data.

Children at a Healthy Weight- % of children and youth under the age of 21 that are overweight or obese from Colorado BMI Surveillance System 2009-2013.

Access to a Healthy Environment- % of residents living within ¼ mile walk or roll to a full service grocery store and % of living units within ¼ mile walk or roll to a park from City and County GIS data 2015. Note: although improving access to grocery stores would require different strategies than improving access to parks, these two indicators are grouped together as a proxy for access to a healthy environment.

Life Expectancy- a measure calculated by Virginia Commonwealth University, Center on Society and Health using census population counts (2000 and 2010) and Vital Statistics Program death count data (2004-2013).

The data for each indicator was aggregated by neighborhood and grouped into quartiles in order to set the 2040 target. Each year the data will be re-aggregated, again grouped into quartiles, to track how the lowest performing quartile is performing compared to the 2040 target.

For more:

To find more information about the Denver Neighborhood Equity Index see below:

[Denver Neighborhood Equity Index](#)