

# **Methods for the Colorado State, County, Municipal and Special District Total Population and Housing Estimates**

Colorado Department of Local Affairs  
State Demography Office

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## **Overview**

The Colorado Department of Local Affairs, State Demography Office (SDO), prepares annual (July 1) estimates of population and housing for all Colorado counties and municipalities, and for special districts that are eligible for Conservation Trust Fund (lottery) monies. These estimates are used for a wide range of purposes, including planning and evaluation, the distribution of resources by public and private agencies, and the updating of population forecasts.

All of the annual population estimates that the SDO prepares begin with data from the most recent decennial census, Census 2010, to which adjustments for errors in the census, and/or subsequent changes in geography are made. For each year following the census, annual data that indicate population change, such as data on births, deaths, migration and residential construction, are added (for the latest year) or revised (for past years) to create the latest set, or “vintage” of annual, post-census population estimates. After the release of data from the next decennial census (Census 2020 for the 2010-2019 estimates), final adjustments are made for the intercensal years.

Local governments are encouraged to participate in the SDO population estimates process by annually updating data on residential construction and “group quarters” facilities (such as dormitories and barracks) through a survey that the SDO conducts each fall, and by examining the draft population and housing estimates that are provided for local governments each spring, for a review period of 30 days. During the review period, if data in the draft population and housing estimates conflict with direct and verifiable local information, local governments may “challenge” the estimates, and the SDO will review the data and information that the local government provides and make decisions on whether and how to adjust the estimates.

## **Important Dates**

November: The annual “Residential Construction and Group Quarters Survey” is sent to local governments from the SDO, for update within 30 days.

June: Draft county, municipal and special district population and housing estimates are sent to local governments, for a review period of 30 days.

August: Final county, municipal and special district estimates of population and housing are released by the SDO.

## **State and County Population Estimates Method**

The SDO applies a basic Components of Change Method to create annual (July 1) State and County Population Estimates.

For example:

July 1 2010 Population  
+ July 1 2010 to June 30 2011 Births  
– July 1 2010 to June 30 2011 Deaths  
+ July 1 2010 to June 30 2011 Net Migration and Change in Group Quarters  
July 1 2011 Population

For July 1, 2010 estimates, the process differs slightly in that the Census April 1, 2010 count is used as the base and births, deaths, net migration and changes in group quarters from April to July are added.

Birth and Death data are provided by the Colorado Department of Public Health and Environment. Net Migration tabulations are from the U.S. Census Bureau (based on IRS, Medicare and Immigration Statistics). Changes in Group Quarters facility data (such as dormitories and barracks) are provided by local governments and other agencies through the annual survey of group quarters facilities that the SDO conducts.

### **Municipal and Unincorporated Area Population Estimates Method**

The SDO applies a Housing Unit Method along with the County Population Estimates to create annual Municipality and Unincorporated Area Population Estimates.

For example:

Step 1: Split the Municipality into its parts that overlap different Counties

Step 2:  $HouseholdPopulation11_c = Population11_c - GroupQuartersPopulation11_c$

Step 3:  $InitialEstimate11_m = TotalHousingUnits11_m \times OccupancyRate11_m \times PersonsPerHousehold11_m$

Step 4:  $Proportion11_m = InitialEstimate11_m / Sum(InitialEstimate11_m)$

Step 5:  $FinalEstimate11_m = (Proportion11_m \times HouseholdPopulation11_c) + GroupQuartersPopulation11_m$

Where “c” represents a County and “m” represents a Municipality or the Unincorporated Area in that County

Annual residential construction data are used for the annual update of the Housing Unit counts. These data are provided by local governments whenever possible and the U.S. Census Bureau if there is no direct local source. Group Quarters facility data (such as dormitories and barracks) are updated by local governments and other agencies through the annual survey of group quarters facilities that the SDO conducts.

For July 1, 2010 the process is slightly different in that April 1, 2010 Census counts for housing units, occupancy rates, persons per household are used as the base.

### **Special District Population Estimates Method 1**

When reliable Housing Unit data is available, the SDO applies a Housing Unit Method along with the Municipality and Unincorporated Area Population Estimates to create annual Special District Population Estimates.

For example:

Step 1: Split the Special District into its parts that overlap different Municipalities and/or Unincorporated Areas

Step 2:  $\text{HouseholdPopulation11}_m = \text{Population11}_m - \text{GroupQuartersPopulation11}_m$

Step 3:  $\text{InitialEstimate11}_d = \text{TotalHousingUnits11}_d \times \text{OccupancyRate11}_d \times \text{PersonsPerHousehold11}_d$

Step 4:  $\text{Proportion11}_d = \text{InitialEstimate11}_d / \text{Sum}(\text{InitialEstimate11}_d)$

Step 5:  $\text{FinalEstimate11}_d = (\text{Proportion11}_d \times \text{HouseholdPopulation11}_m) + \text{GroupQuartersPopulation11}_d$

Where “*m*” represents a Municipality or Unincorporated Area, and “*d*” represents a Special District in that Municipality or Unincorporated Area

Annual residential construction data are used for the annual update of the Housing Unit counts. These data are provided by local governments whenever possible and the U.S. Census Bureau if there is no direct local source. Group Quarters facility data (such as dormitories and barracks) are updated by local governments and other agencies through the annual survey of group quarters facilities that the SDO conducts.

### **Special District Population Estimates Method 2**

In the absence of reliable Housing Unit and/or Group Quarters data (as is the case for most Special Districts), simple proportional adjustments to each of the Municipality and/or Unincorporated Area parts of the Special District are made to update the Special District Population and Household Estimates.

For example:

Step 1: Split the Special District into its parts that overlap different Municipalities and/or Unincorporated Areas

Step 2:  $\text{TotalPopulation11}_d = \text{TotalPopulation10}_d / \text{TotalPopulation10}_m \times \text{TotalPopulation11}_m$

Where “*m*” represents a Municipality or Unincorporated Area, and “*d*” represents a Special District in that Municipality or Unincorporated Area

### **Use of Alternative Data Sources, Including Data Provided for Challenges**

Local governments are encouraged to provide information to help improve the population and housing estimates. In addition to residential construction and group quarters data, local governments may provide data on housing units and/or population that they have compiled, either through surveys or regularly maintained databases (e.g. assessor databases). Such data must be high-quality, and offer a clear, direct and verifiable estimate of population and/or housing for use in the SDO population and housing estimates. While alternative data is often very useful, the SDO must review all data on a case-by-case basis, and cannot guarantee that they can be used directly in the population and housing estimates.

To ensure that alternative data sources can be reviewed for possible inclusion in the population estimates, it is important to provide them during the annual “Residential Construction and Group Quarters Survey.” Any adjustments that the SDO does make due to data provided during the challenge process will be sent to affected local governments for further review.

To include adjustments for alternative data on housing units or population, the SDO will usually, but not always, supplant alternative numbers in the overall estimates methodology. For municipalities, if the adjustment is an increase to the number of housing units, the overall number of housing units for the affected county that the municipality is a part of will generally be increased; if the adjustment is an increase to the population of a municipality, the population of the affected county will generally be held constant, and adjustments will be made to the balance of the affected county. For special districts, if the adjustment is an increase to housing units, the overall number of housing units for the affected municipality or county that the district is part of will generally be held constant, and adjustments will be made to the balance of the affected larger area; if the adjustment is an increase to the population of a district, the population of the affected area that the district is a part of will generally be held constant, and adjustments will be made to the balance of the affected larger area. Depending on the information provided, different procedures may be used.

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