

Population Methodology Contents

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Executive Summary

Local population estimates have a multitude of uses and importance to policy makers, planners and the public. These estimates are used as indicators of an economic situation; for planning and evaluating many government programs and provide information regarding land development which is vital to transportation planning. Population estimates and forecasts are one of the most important inputs to travel demand forecast and land use models – two important transportation planning tools.

COMPASS develops population estimates for city and county jurisdictions in Ada and Canyon Counties. Since 1990, COMPASS has used a housing stock-based estimation model to update population estimates, referred to as the “Housing Unit” method. The Housing Unit method assumes changes in the number of occupied housing units reflect changes in the population. This method is common for small-area estimates because data are typically available, accounts for population growth through in-migration, and is the most widely accepted population estimating method.

Conversely, the Census Bureau uses a “Distributive Housing Unit Method” for sub-county areas. This method estimates housing units by distributing county populations to subareas within the county. In order to update housing unit change since the last census, the Census Bureau uses building permits, estimates of construction if building permit data are unavailable, mobile home shipments, and estimates of housing unit loss. Household population is measured by key demographic statistics. A major assumption underlying this approach is that the components of population change are closely approximated by measuring change in selected administrative data such as, vital statistics or from surveys.

A variety of other population estimating methodologies can be used. Some popular methods are the component method, ratio correlation, special census, and vital-rates. Each have their advantages and disadvantages and the use of each method should be carefully considered in formulating most accurate estimates.

Household size and occupancy rate data should be timely, localized, accurate, and target a specific type of building. Sources of local occupancy rate data include the Housing Vacancy Survey (HVS), the American Community Survey (ACS), the United States Postal Service (USPS), and the Idaho Power electrical supply database. Each data source has its own strengths and weaknesses, each may provide a different perspective of population but none perfectly meets all the criteria for an ideal source of occupancy data.

Some of these data sources have been widely used for decades, and some of them have just recently become available such as the USPS. The HVS, ACS, and USPS databases are available to the general public on the internet.

The COMPASS model for estimating populations has been an accurate method for several years. When permitted housing stock is completed at a high rate, household sizes are stable, and

minimal growth occurs in group quarters then, this methodology produces accurate estimates. However, a disruption to any of these variables could produce inaccuracies. Therefore, a variety of considerations should be considered to improve the COMPASS population forecasting method.

Introduction

Population estimates are used in funding allocations, in setting the levels of national surveys, and in monitoring recent demographic changes. Estimates are also used by policymakers and legislators as important indicators of economic situation and for planning and evaluating many government programs.

Population Estimates and Forecasts

The main differences between population estimates and population projections are time reference and derivation. Estimates are usually for the current or past; projections are for future dates. Estimates generally use existing administrative and symptomatic data, for example, births, deaths, migration which are collected from various sources. Developing population projections requires assumptions about future trends for fertility, mortality, employment, and other demographic processes. Typically population projections use the latest available estimates as base year from which to project future populations.

COMPASS Methodology

COMPASS develops population estimates for city and county jurisdictions in Ada and Canyon Counties. Since the 1990 decennial census, COMPASS has used a housing-stock-based estimation model – commonly referred to as a Housing Unit Methodology. COMPASS' population estimates rely on household size and occupancy rate information from the U.S. Census and on residential building permit data collected annually from local governments. On April 1 of each year, COMPASS produces population estimates of each city, county, city's area of impact and highway district.

Housing Unit Methodology

In Housing Unit methods, estimates are derived from calculations of housing data. The basic premise is that changes in the number of occupied housing units reflect changes in the population. This method is strong in capturing high migratory and rapidly changing populations. Its weakness is that it does not take into account underlying cohorts. For example, this method does not provide estimates with an age-sex structure.

The Housing Unit method is the most common for small-area estimates because the necessary data are readily available. The housing unit method is the most widely used estimating procedure in the United States for local governments. About 89% of the government agencies who estimate populations use the Housing Unit method. Since its inception, the population estimate program COMPASS has been used a housing-stock based estimation model.

The COMPASS methodology is Housing Unit Based, for the following reasons:

- Housing data is widely available,
- This method works well for small area estimates,
- The area has experienced a high level of population growth from in-migration,
- This method is most widely accepted.

This estimate process contains three distinct steps: housing unit estimation, geographic boundary modification, and household size estimation. The estimates are typically rounded to the ten persons therefore; the estimate does not appear as a hard count. The process is run year by year, with each new estimate using the prior year's estimate.

Housing Unit Estimation

COMPASS receives detailed building permit data from the local governments. These data are entered into a master database containing the address, number of new units and demolitions by type (single family, multi family, manufactured/mobile homes). Annually, each jurisdiction's permitted housing units are distributed inside of the current city limits. In most cases permits can be located with a high level of geographic accuracy. COMPASS' annual estimates update housing stock changes from 2000 to the current year based on the collected building and demolition permit data.

Starting in 2004, COMPASS population estimates factored in household size and occupancy rates based on housing type (single-family, multi-family, manufactured homes) by community using the 2000 Census rates. However, the 2002 and 2003 population estimates used household size and occupancy factors were based on tenancy (owner or renter occupied) by community as it was considered at the time a good indicator of household size.

The COMPASS estimates use the following three housing types:

- single family detached
- townhomes and other single attached, and other multi-family buildings
- mobile homes and manufactured housing units

Using housing type classifications in this manner improves the accuracy of the population estimates since the average number of persons per household tends to be much larger for single family units than for other structure types. The calculation of multi-family and mobile/manufactured housing stock uses the same formula specification with housing type-specific household size and tenancy rate assumptions.

Theoretically, administrative records should be reviewed and used to estimate household size. However, several drawbacks to using administrative data exist such as:

- 1) the data may not exist in the first place so proxy variables must be used,
- 2) the data may not exist at the appropriate summary level,
- 3) the data may not exist at the appropriate time interval or

- 4) The data may simply be unreliable.

Geographic Boundary

The base data for geographic boundaries comes from the 2000 census block data. The Census defines a block as smallest geographic unit for which the Census Bureau tabulates. They range in size from a subdivision to many square miles in a rural area. Geographic boundaries of cities continuously change as a result of annexations and incorporations. These changes are accounted for geographically. COMPASS tabulation areas reflect the official city boundaries provided by the county assessor. Population estimates use tabulation areas which are made up of complete census blocks; each block is entirely inside or outside city limits. COMPASS tabulation area limits are determined by spatially joining current city limit boundary files to census blocks.

After the joins are complete each census block is determined according to the city boundaries. If the newly annexed area covers a majority of the census block, then that block is considered to be part of the city and no longer included in the unincorporated county for that estimate year. Periodically, population estimates for the unincorporated area are lower in current year versus a previous year due to large annexations and limited building permit activity.

Household Population Estimate

The household population estimates are derived from calculating the household size and occupancy rate.

Household Size

Nationally, average household sizes have continued the slow, downward trend over the previous two decades. Between 1990 and 2000, the average number of persons per household (PPH) for single-family housing declined at a much slower rate compared to the prior decade, however, this was offset by larger increases in PPH for multi-unit structures, manufactured homes, and group quarters.

Consultant John Church of Idaho Economics provided a long-term population forecast to COMPASS based on an econometric model. John Church's forecast utilizes a cohort-component method, which forecasts components of population change for each cohort a five-year age grouping. Idaho Economics estimates and forecasts the following PPH changes:

| | <i>1990</i> | <i>2000</i> | <i>2007</i> | <i>2040</i> |
|----------------------|-------------|-------------|-------------|-------------|
| <i>Ada County</i> | 2.60 | 2.59 | 2.50 | 2.36 |
| <i>Canyon County</i> | 2.79 | 2.93 | 2.70 | 2.78 |

Occupancy Rates

Occupancy rates are essential to derive an accurate count of occupied housing units. Assumptions regarding occupancy rates will cause population estimates to differ, especially when comparing high to low vacancy subareas. In a normal economy, occupancy rate fluctuations are the byproduct of the housing market seeking equilibrium. The housing market often has a noticeable lag time between an increase in the demand for housing and when new housing enters the market. The lag is created by the time it takes to plan, finance, permit, and construct new housing. These fluctuations in occupancy rates may cause data to be inaccurate.

Changes in housing demand include:

- Demographic changes, such as a cohort entering household formation age,
- changes in economic growth and jobs that attract immigration,
- suburbanization of a large metropolitan area, and
- Adjustments in interest rates.

Population Estimate Equation

In reduced form, the COMPASS method determines population as follows:

Population = Base Population (2000 Census) + (Housing Units x Occupancy Rates x Household Size) + (net Geographic Boundary changes)

Oversight

The housing unit estimates and the sub-county population estimates are distributed to members of the COMPASS Demographic Advisory Committee (DAC) for review prior to public dissemination. After the DAC review, estimates are presented to the COMPASS Board in March for approval of official population estimates.

Census Bureau Methodology

The Census Bureau applies a "Distributive Housing Unit Method" for cities and towns. This method uses housing unit estimates to distribute the county population to sub-county areas within the county. The Census Bureau uses building permits, estimates of construction where building permit data are unavailable, mobile home shipments, and estimates of housing unit loss in order to update housing unit change since the last census. 2000 Census base counts of housing units are geographically updated each year to reflect legal changes reported in the Boundary and Annexation Survey (BAS), other geographic program revisions, and census corrections.

Distributive Housing Unit Method

The Census Bureau develops county population estimates with an administrative records component of population change method in which the household and group quarters population are estimated independently. This estimate process contains four distinct steps: estimating housing units, household population estimate, group quarters population estimate and geographic boundary.

Housing Units Estimation

The Census Bureau uses a simplified components-of-change approach to estimate the number of housing units in a sub-county area. The Census Bureau uses four components to estimate housing units: 2000 Census Housing Units, Estimated Residential Construction, estimated New Mobile Home Placements, and estimated Housing Loss.

The Census Bureau produce housing unit estimates for each area by the component method described below:

1. 2000 Census Housing Units: 2000 Census housing unit counts at the sub-county level reflect Boundary & Annexation Survey (BAS) updates that are legally effective as of January 1 of the year.
2. Estimated Residential Construction: Building permit data are compiled from internal data files developed by Manufacturing and Construction Division (MCD). These files include imputed permits where a jurisdiction did not report permit issuance for the entire year. Several assumptions are made such as building permits employs a six-month lag time between the issuance of permits and completion of construction, two percent of all building permits never result in the actual construction therefore a factor of 0.98 is used to estimate completed new units, and $\frac{1}{4}$ of the residential construction input data represents the three-month period from April 1 to July 1.
3. Estimated New Mobile Home Placements: In order to estimate additions of new mobile homes, the Bureau allocates statewide administrative data on mobile home shipments to sub-county areas based on their share of mobile homes as reported in 2000 Census.
4. Estimated Housing Loss: The Bureau does not collect data on permits for demolition of existing buildings. In order to estimate the loss of housing units due to demolition, disaster, structural problems or the structure being moved—the Census Bureau uses data from the American Housing Survey's national sample to create rates based on age and type of housing unit. For mobile homes one rate is created and applied to stocks of mobile homes regardless of their age. For all other housing types which includes single and multi-unit structures the rates of loss are derived based solely on vintage of the housing unit without regard for type of unit. These rates are then applied to the housing stock of a sub-county area based on characteristics reported in 2000 Census. The approach is "bottom-up," in that housing units for sub-county areas are summed to counties, which are in turn summed-up to states.

Household Population Estimate

A major assumption underlying this approach is that the components of population change are closely approximated by measuring change in selected administrative or survey data sources. Therefore, Census

Bureau demographers estimate each component of population change separately from administrative records including registered births and deaths, federal income tax returns, Medicare enrollees, and military movement. Data from the American Community Survey are also incorporated into the estimates.

Change in the non-household, or group quarters, population is measured by the net change in the population living in group quarters facilities. However, since most administrative record data sources lag the current estimate year by as much as two years, the data for the current year are projected from past years. As updated data become available, the Census Bureau revises the past year's estimates so that the current year is always based on the most recent data available.

Group Quarters Population Estimate

This component is primarily a combination of military personnel living in barracks, college students living in dormitories, persons residing in institutions, inmates of correctional facilities and persons in health care facilities.

The Census Bureau uses group-quarters population data from two sources to estimate sub-county populations:

1. 2000 Census counts of group-quarters population by facility type for each sub-county area,
2. Time series of individual group-quarters records from the Group Quarters Report (GQR). State representatives of the Federal State Cooperative Program for Population Estimates prepare the GQR.

Geographic Boundary

Similar to the COMPASS method, the Census Bureau compares 2000 census blocks to annexations. Tabulation areas are made up of complete census blocks; each block is entirely inside or outside city limits. If the newly annexed boundaries cover the majority of the area of a given census block, then that block is considered to be part of the city and not part of the unincorporated county for that estimate year.

Population Estimate Equation

In reduced form, the Census Bureau method determines population as follows:

Population = Base Population (2000 Census) + Estimated Units (imputed building permits + imputed mobile homes – estimated housing loss) + estimated change in Group Quarters x Occupancy Rates x Household Size + (net Geographic Boundary changes).

Oversight

The housing unit estimates and the sub-county population estimates are distributed to members of the Federal State Cooperative Program for Population Estimates (FSCPE) for review prior to public dissemination. Some FSCPE members provide revisions to the preliminary estimates of housing units based on information they compiled from the jurisdictions within their respective states. Submitted revisions to the housing unit estimates are reviewed and often result in changes to the final housing unit estimates developed by the Census Bureau.

Differences between COMPASS and Census Bureau Estimates

Actual population count differences between the Census and COMPASS estimates are relatively minor. Though the estimates may be compared from year to year, this is not their primary purpose, and caveats are necessary when comparing them to Census estimates. There are a number of issues that need to be addressed before in considering COMPASS and Census Bureau population estimating methods.

- COMPASS produces and releases estimates for cities and counties in the current year dated April 1, the enumerated Census date. The Census Bureau's estimates are always for the previous year and are dated July 1.
- The COMPASS method relies on local government data such as building permits, where as the Census Bureau county estimates use estimates of housing units (estimating new construction, manufactured housing, and demolition). The COMPASS methodology allows for sub-county estimates as small as the census block. The Census Bureau methodology does not allow for the development of census tract or block estimates.
- The Census Bureau makes assumptions regarding demolition of housing units based on the relationship between the age of housing and housing loss. These assumptions, based on national experience, may not be appropriate for many older cities because of the availability of land to build and increases in the density of new construction. Research on housing depreciation and loss has shown that age alone is not a good predictor, and that tenure, type of structure and housing market conditions must be included.
- COMPASS assumes a 90-day lag time between the issuance of a building permit and the creation of units ready for occupancy. The Census Bureau employs a six-month lag time between the issuance of permits and completion of construction. Determining an appropriate lag time is difficult and can vary from jurisdiction to jurisdiction or depending on the market.
- The Census Bureau updates estimates of average household size and occupancy rates, which allow for the translation of housing unit changes into population changes. With the one-year samples, the Census Bureau will produce estimates of household size and occupancy rates for geographic areas with populations of 65,000 and more.

- The Census Bureau assumes 98% of permitted buildings are completed and available for occupancy. COMPASS assumes all permitted buildings are completed and available for occupancy.

Other Methodologies

The use of a housing unit methodology is popular for their availability of data and accuracy in estimating populations. However, several other methods for estimating populations are used:

1. **Component Method:** This method uses the change in population components- births, deaths, and net migration, since the last census to estimate population). Component methods typically use reported vital statistics. About 10 percent of agencies employ this method, with state level agencies most likely to use this method.
2. **Ratio Correlation:** This method distributes an existing state level population estimate to counties. The procedure relates change in the county's share of the state population over the last decade to changes in the county's share of a set of symptomatic data over the same period. Current variables in the equation are school enrollment, voter and automobile registration, out-of-state driver's licenses, and natural increase. The Census Bureau uses a method of ratio correlation for estimating household size.
3. **Special Census:** Local governments can conduct actual enumeration of the population to improve the of population estimates. A special census can also be used for specific data collection such as household sizes or occupancy rates. However, this method can be time consuming and costly but can be done through sampling of specific areas if resources do not allow for full special census.

Data Sources

Household size and occupancy rate data should be timely, localized, accurate, and target a specific type of building. Sources of local data include the Housing Vacancy Survey (HVS), the American Community Survey (ACS), the US Postal Service (USPS), and the Idaho Power database. Each data source has its own strengths and weaknesses, but none of these sources meet all the criteria for an ideal source of occupancy data. Some of these data sources have been widely used for decades, and some of them have just recently become available. The HVS, ACS, and USPS databases are available to the general public on the internet. The data compiled by Idaho Power is not available to the public but was provided to COMPASS. Data from all sources must be analyzed prior to using it for estimating purposes such as:

- The data used to develop COMPASS estimates are prepared, reviewed and revised annually. The quality of the COMPASS estimate is directly dependent on the accuracy of the data reported by local governments.
- Estimates are generally more accurate at higher levels of geography, where errors are more likely to offset each other.
- Some additions to the housing stock may not be accompanied by a building permit. Some examples include the conversion of a fraternity house to a private home or an apartment building or an existing home converted from a one unit to a multi-unit structure.

Housing Vacancy Survey (HVS)

The Census Bureau has provided occupancy data since 1956 through the HVS. The HVS provides homeowner and rental occupancy data on a quarterly basis for the U.S. and four principal census regions. The HVS provides occupancy rates for all states, and for the 75 largest metropolitan areas. The greatest advantage of the HVS is its extended historic coverage, having access to such long time-series allows for analysis of trends and conditions. The Census

Bureau provides access to the HVS data free of charge and tabulated to specific geographies.

The disadvantages of HVS data are the following:

- Wide geographic areas make the data less suitable for distinction among cities or subareas.
- The survey methodologies used cause the accuracy to be questionable the estimates' margins of errors become rather large for lower levels of geography.
- Only the largest metropolitan areas are surveyed and unfortunately, the Boise Metropolitan Statistical Area is not included.

American Community Survey (ACS)

The American Community Survey (ACS) provides both household size and occupancy rate data. This survey is designed to replace the decennial census long-form and provide equivalent data on a timelier basis. It was implemented for the first time in 2001 for a limited number of areas. Currently, it is the largest household survey in the U.S., covering about 3 million addresses per year. The Census Bureau provides access to the ACS data free of charge.

The disadvantages of the ACS data are the following:

- The ACS data does not show patterns over time yet because it was not implemented on a wide geographic scale until 2005. .
- The estimates' margins of errors become rather large for lower levels of geography just like any other survey-based data set, including the HVS.
- Differences in residence rules between 2006 ACS and 2000 Census exist. ACS uses "two-month" residence rule whereas the 2000 Census used a "usual-residence" rule.¹
- Data for only those cities above 65,000 in population are available at this time. Places with more than 20,000 in population will be available by August 2009 which will

¹ Two Month Rule: This rule states that if a person is staying in a sample unit at the time of survey contact, and is staying there for more than two months, he or she is a current resident of that unit whether or not the unit is also the person's usual residence under census rules. If a person who usually lives in the unit is away for more than two months at the time of survey contact, he or she is not a current resident of that unit. Anyone staying in the unit at the time of survey contact who has no other place where they usually stay is considered a resident of the unit. The time of survey contact is defined to be when the respondent completes the survey questionnaire, or when the unit is reached by telephone or through a personal visit during the follow up for mail nonresponse.

provide a 2010 estimate. Data for places with fewer than 20,000 total population by August 2011.

United States Postal Service Records (USPS)

A newer source of occupancy data comes from the US Postal Services via the Department of Housing and Urban Development (HUD). HUD recently entered into an agreement with the USPS to aggregate and publicly release Postal Service data on vacant addresses on a quarterly basis. The USPS data potentially covers all addresses in the United States and issues timely, "census-like" data on occupancy rates. This data is provided at detailed levels of geography, including states, counties and census tracts. The USPS data are available to the public free of charge at HUD's website.

Postal delivery data are considered less accurate than geo-coded data because delivery statistics are available by the postal-carrier-route level which can cover many square miles in rural areas. A few other features make the USPS data less attractive:

- Postal carrier routes can change drastically over time and can be large in rural areas causing possible data inconsistencies.
- The USPS dataset does not separate residential and commercial properties. The inclusion of commercial vacancies may cause unreliable population estimates. The USPS employs an unusual definition of occupancy which is quite different from those in long-established survey-based data sources such as HVS and ACS.
- USPS data has only been available for a limited time therefore, an evaluation of how USPS rates compare to accepted rates is still forthcoming. The postal data may understate vacancies when compared to Census Bureau occupancy rate data due to how they define "occupancy".
- USPS data does not account for post office boxes. Potential differences in rates between housing unit and post office boxes could create inaccuracies.
- Some studies have shown that postal and census occupancy rates correspond much more closely in metropolitan counties. One study concluded that among metropolitan counties the difference was 2 percentage points. However, in non-metropolitan counties the difference was 12 to 13 percentage points.
- The USPS provides raw data which are not tabulate. Additional steps are required before the data can be loaded into Excel, GIS, or any other statistical package.
- Occupancy rates by tracts do not match city limits creating additional work and room for error.

Idaho Power

Idaho Power has provided electric-load data to COMPASS for the purposes of identifying occupancy rates by location and housing type. Currently, Idaho Power selects premises that used less than or equal to 100 kWh's per billing month which is similar to leaving a 100 watt light bulb on continuously for an entire month.

The disadvantages of using the Idaho Power data are the following:

- Is the 100kWh criterion an appropriate level to determine occupancy for use in developing COMPASS' population estimate? This method does not adjust for seasonal occupancy of housing units. Is electrical use a good measure of occupancy? It is possible that unoccupied homes on market may use more than 100 kWh to show homes or that certain occupied homes use less than that amount of power.

Considerations for Improvement

The COMPASS method for estimating population has been an accurate method for several years. When permitted housing stock is completed at a high rate, household sizes are stable, and minimal growth in group quarters occurs then the methodology produces accurate estimates with minimal workload.

However, a disruption to any of these variables could produce inaccuracies. Consider the following as suggestions to improving the population forecasting method:

- Adjust the lag time assumed from building permit to occupancy. The COMPASS methodology assumes residential units to be built within 90 days. The Census Bureau employs a six-month lag time.
- Use the data provided from the HVS, ACS, USPS, and Idaho Power for estimating changes in PPH and occupancy rates. These are two critical components of the housing unit method and a few symptomatic indicators suggest they have changed since the previous census.
- Blend various approaches to even out flaws and biases. For example, Current USPS address occupancy rates for a local area (but without housing type segmentation) are given 50% weight; adjusted Census occupancy rates are also given 50% weight.
- Adjust the average household size which has significantly decreased in owner-occupied housing. Therefore, a demographic shift is occurring in the nation's age composition and mix of household types. This demographic shift is far more apparent in the owner-occupied housing market than the rental market. As described earlier, it may be desirable in the future to use *local-level* American Community Survey data in place of adjusted 2000 Census data. For now, small area detail from the ACS has not been published by Census Bureau. Region-level change in average household size is available and judged statistically reliable. This is used for adjustments by estimating the number of households, segmented by housing type and by tenure (owner or renter) then, multiplied by type-and-tenure-specific persons per household (PPH) factors.
- Update the group quarters estimates. These include population in correctional institutions, juvenile facilities, nursing homes, other institutional facilities, university dormitories, military barracks, and other non-institutional facilities and have not been updated since last census enumeration. The Census Bureau updates group quarters using a top-down component method based on changes in demographic data. The ability to estimate group quarters with reliable and quantifiable data may improve population estimates.
- Obtain data from local jurisdictions regarding the amount of permitted units which are never completed. The Census Bureau assumes 98% of permitted buildings are completed and available for occupancy. COMPASS assumes all permitted buildings are completed and available for occupancy. Additional data, such as occupancy permits, may improve estimating, but could be time consuming.

- Receive data from providers of proprietary and socioeconomic data exist. Some of these data series are attempts to add value to federal and other secondary data through manipulation (e.g., reorganization, modeling) but others are the result of the independent collection and publication of primary data. However, the use of proprietary data can be relatively costly.

Conclusion

COMPASS has developed population estimates for city and county jurisdictions in Ada and Canyon Counties since 1990 using a housing stock-based estimation method. Research and history suggests the housing unit method seems most appropriate due to the available data and has proven to be reliable for several years. However, COMPASS is committed to making improvements and adding sophistication to the development of population estimates. One place to start is to obtain data on occupancy rates and household sizes from a variety of sources. A variety of other systemic changes could also be implemented in an effort to improve population estimating.

Appendix

2008 Population Estimates

The demographic data used in developing population estimates can have a significant effect on the final figures. Higher or lower occupancy rates, household sizes, lag time for housing construction all affect estimates as previously discussed. Six population estimates have been developed using various techniques shown in the following tables. These estimates are for comparative purposes and are not official estimates.

Table 1: Comparison of the COMPASS and Census Bureau estimate methods to indicate differences in populations based on methodology and time series. Please note that changes in the GIS-based selection of 2000 Census blocks for city limits has changed 2000 Population figures for several municipalities.

Estimate 1: Population estimate using the traditional COMPASS housing unit method. This estimate shows an increase in Ada County of 5,000 persons from 2007 and an increase in Canyon Country of 2,000 persons from 2007.

Estimate 2: Population estimate using COMPASS housing unit method with modifications for using 2006 American Community Survey (ACS) data for occupancy rates and household sizes. For estimates based on a different PPH or occupancy rate than used in the 2000 Census, households were estimated by comparing 2000 populations, PPH, and occupancy rates, and changes were applied to existing households as well as those constructed since the 2000 Census. According to the 2006 ACS, Ada County had a PPH of 2.49 and an occupancy rate of 94.5%; Canyon County had a PPH of 2.84 and an occupancy rate of 93.4%. Due to high vacancy rates and smaller household sizes, this estimate shows the lowest population for the region, only 552,517. Both Greenleaf and Wilder indicate a reduction in population due to a county-wide occupancy rate and household size.

Estimate 3: Population estimate using COMPASS housing unit method with modifications for using 2006 American Community Survey (ACS) data for occupancy rates and household sizes. In Estimate 2, ACS data was applied county-wide to estimate populations, in this approach differences between decennial census data and ACS data was applied to each municipality for occupancy rates and household sizes. In Ada County, the decennial census estimated 2.59 PPH; ACS estimated 2.49 PPH. Therefore -0.1 PPH difference would be applied to each municipality in Ada County. In Canyon County the degree of change is less but the application would be similar. In Canyon County, the decennial census estimated 2.85 PPH; ACS estimated 2.84 PPH, a -0.01 PPH difference would be applied to each municipality in Canyon County. This method also shows a smaller population than the traditional methods, although no jurisdiction shows negative growth.

Estimate 4: Population estimate using COMPASS housing unit method with modifications for using United States Postal Service (USPS) data for occupancy rates. This method has the highest population estimates with 406,634 in Ada County and 194,159 in Canyon County.

Estimate 5: Population estimate using COMPASS housing unit method with modifications for using Idaho Power data for occupancy rates. This method shows a comparable estimate to the traditional method with 4,298 person differential.

Table 2: Population Comparison Graph indicating estimates of COMPASS historical method compared to data from the American Community Survey, United States Postal Service, and Idaho Power.

Table 3: Ada County Population estimate from 2000 to current.

Table 4: Canyon County Population estimate from 2000 to current.

Table 5: Regional Population estimate from 2000 to current.

Table 1

| Comparison of Population Estimates | | | | | | | | | |
|------------------------------------|-------------|---------|---------|------------|---------|---------|---------|------------|---------|
| | | 2005 | | | | 2006 | | | |
| Area | 2000 Census | COMPASS | Census | Difference | Percent | COMPASS | Census | Difference | Percent |
| | 432,345 | 528,625 | 510,399 | 18,226 | 3.57% | 559,095 | 532,337 | 26,758 | 5.02% |

Summary Table

| Comparison of Population Estimate Results, Various Methods | | | | | | |
|--|-------------|----------------|---------|---------|---------|-------------|
| | | 2008 Estimates | | | | |
| Area | 2000 Census | COMPASS | ACS | ACS2 | USPS | Idaho Power |
| | 432,345 | 591,851 | 590,040 | 578,448 | 600,793 | 587,553 |

Population Estimate FAQ

Why does COMPASS publish population estimates?

COMPASS publishes them as a service to its members. The estimates are useful in understanding current socioeconomic conditions and in planning for municipal services. COMPASS membership dues are based on municipal populations.

What are the estimates based on?

These population estimates are based, in large part, on the community's housing stock. Information on new construction, including residential building permits, is collected directly from each community and used to update its housing base. Demographic factors and trends, such as occupancy rates and changes in household size, are then applied to the data to produce the population estimates.

What method of population estimating technique does COMPASS use?

Housing Unit. The estimate process is broken into three distinct processes: housing unit estimation, geographic boundary modification and household population estimation. The estimates are rounded so the estimate is not assumed to be a hard count. The process is run year by year, with each new estimate building off the prior year's estimate.

Why does COMPASS use this technique?

- Housing data is widely available,
- This method works well for small area estimates,
- The area has experienced a high level of population growth from in-migration and
- This method is most widely accepted.

What community revenues are based on population?

Many federal, state, and local programs use population estimates produced by other agencies as part of their funding mechanisms. For example, federal programs such as HUD's Community Development Block Grant Program, the Home Investment Partnership Program and U.S. Department of Education Title I funding (commonly referred to as the Improving America's Schools Act) use population estimates to help allocate funds to communities. The State of Michigan revenue sharing uses population as a basis for distributing revenue, state-imposed minimum population counts is required for cities to charge utility and income taxes, and joint police or fire districts use population as a means for cost sharing.

What are the differences between how COMPASS and the Census Bureau estimate populations?

COMPASS uses a Housing Unit method. The basic premise is that changes in the number of occupied housing units reflect changes in the population. This method is strong in capturing high migratory and rapidly changing populations. Population estimates are based on calculated housing units, geographic boundary changes, household sizes, and occupancy rates.

For cities and towns the Census Bureau uses a "Distributive Housing Unit Method" which uses housing unit estimates to distribute the county population to sub-county areas within the county. The Census Bureau uses building permits, estimates of construction where building permit data are unavailable, mobile home shipments, and estimates of housing unit loss to update housing unit change since the last census.

Other differences between COMPASS and Census Bureau estimates include:

- COMPASS produces and releases estimates for Cities and Counties in the current year dated April 1, the enumerated Census date. The Census Bureau's estimates are always for the previous year and are dated July 1.
- The COMPASS method relies on building permit data provided by the local governments, where as the Census Bureau's county estimates use estimates of housing units (estimating new construction, manufactured housing, and demolition). The COMPASS methodology allows for sub-county estimates down to the census block level. The Census methodology does not allow for the development of census tract or block level estimates.
- The Census Bureau makes assumptions regarding demolition of housing units based on the relationship between the age of housing and housing loss. These assumptions may not be appropriate for many older cities because of the availability of land to build and an increase in the density of new construction. Research on housing depreciation and loss has shown that age alone is not a good predictor, and that tenure, type of structure and housing market conditions must be included.
- COMPASS assumes a 90-day lag time between the issuance of a building permit and the creation of units ready for occupancy. The Census Bureau employs a six-month lag time between the issuance of permits and completion of construction. Determining an

appropriate lag-time is difficult because lag times can vary from jurisdiction to jurisdiction or depending on the market.

- The Census Bureau updates estimates of average household size and occupancy rates, which allow for the translation of housing unit changes into population changes. With the one-year samples, the Census Bureau produces estimates of household size and occupancy rates for geographic areas with populations of 65,000 and more.
- The Census Bureau assumes 98% of permitted buildings are completed and available for occupancy. COMPASS assumes all permitted buildings are completed and available for occupancy.

When will there be a new census performed?

Every 10 years the United States Census Bureau conducts its decennial survey. For the 2010 Census, the Census Bureau has invited local governments to participate in developing its address file. For more information about how COMPASS and local governments are participating in the decennial census please review <http://www.compassidaho.org/prodserv/luca.htm>.