

Development of the Intercensal Estimates of Population and Housing, 2010-2020 Washington State Office of Financial Management, Forecasting and Research Division

Intercensal estimates are estimates developed between census years. Intercensal estimates are considered more accurate than other types of estimates because they are bracketed on both sides by decennial census counts or state-certified special census counts.

The intercensal estimates developed by the Office of Financial Management are based on the housing unit method. The housing unit method assumes that the change in the number people varies with the change in number of housing units and counts of population living in group quarter facilities, as reported to OFM by local governments and institutions over the decade.

The basic assumptions of the model are as follows:

- The federal decennial census counts for 2010¹ and 2020^{1,2} are correct.
- State certified special census counts are assumed to be correct for any given year in the series.
- The change in household population change mirrors the pattern of housing change as reported to OFM by counties, cities and towns each year.
- The change in group quarter population⁴ mirrors the change in population counts as reported to OFM annually.

The 2010-2020 intercensal estimate series uses two interpolation techniques, simple linear interpolation and the interpolation method described in *The Methods and Materials of Demography* (Siegel & Swanson, 2004, p. 535) which utilizes the following equation:

$$P_t = Q_t \frac{[(10 - t)Q_{10} + tP_{10}]}{10Q_{10}}$$

Where t is expressed in the years since the first census, P_t is the intercensal estimate at time t , Q_t is the postcensal⁶ estimate at time t , P_{10} is the April 1, OFM adjusted 2020 federal census count, Q_{10} is the OFM April 1, 2020 postcensal estimate, and Q_0 is the OFM adjusted April 1, 2010 census count.

The basic process steps are as follows:

- Total housing units, occupied housing units, and group quarters populations were estimated by applying the above equation to decennial census and OFM county and city estimate data.
- Household size (average persons per occupied housing unit) estimates were developed using linear interpolation between decennial census points.
- Household population was estimated by multiplying estimated occupied housing units by estimated household size.
- Total population was estimated by adding household population estimates with group quarter population estimates.
- Occupancy rates were estimated by dividing estimated occupied housing units by estimated total housing units.

Notes:

1. This series uses adjusted federal census counts where applicable. The adjustments include:
 - a. Controlling for annexations occurring between January 1 and April 1 in the decennial census years to account for boundary changes related to the timing of the federal census. City boundaries were fixed as of January 1 for data collection purposes whereas the actual census date is April 1.
 - b. The substitution of state-certified special census counts in place of federal census counts.
 - c. Federal corrections to census counts.
 - d. OFM adjustments to census counts.
2. The series will be revised if the Census Bureau releases corrections resulting from the 2020 Census Count Question Resolution (CQR) Program or OFM adjustment.
3. Some changes in group quarter populations may be due to definitional changes and/or the inconsistent application of group quarter classifications between federal censuses. In a select number of cases, group quarter populations were treated as household populations to accommodate these differences.
4. Postcensal estimates are developed based on data from the most recent census count. Postcensal estimates differ from intercensal estimates which are period estimates between census points.

References:

Siegel, J. & Swanson, D. (Eds.). (2004). *The methods and materials of demography* (2nd edition). Elsevier Academic Press, London.