Appendix A: Population Estimates Error of Closure

The Error of Closure Formula:

The error of closure (EOC) adjustment closes the gap (called the error) between a census and a test estimate calculated as of the same date, by gradually reducing the error over the time period between an earlier census and the recent census. This is accomplished by adjusting each annual estimate since the earlier census. The EOC formula used in the current adjustment covers the ten years between the 2000 and 2010 censuses for most of California's cities and counties.

The error of closure formula is:

$$r_i = (t_i \times d) + e_i$$

Where: r is the revised estimate data at time *i*, t_i is the corresponding time interval stated as a fraction. It represents the number of months from the 2000 census to the date of the estimate divided by the total number of months between the two censuses. *d* is the difference (the error) between the 2010 census data and the test estimate data calculated as of the same date, and e_i is the original estimate data at time *i*.

In this report all estimate dates are as of January 1 of each year, all Census dates are as of April, 1 of their year. The formula results in the following adjustment factors used for each year between the 2000 and 2010 censuses:

2001: (0.075 x d)+ $e_{2001} = r_{2001}$	2006: (0.575 x d)+ $e_{2006} = r_{2006}$
2002: (0.175 x d)+ $e_{2002} = r_{2002}$	2007: (0.675 x d)+ $e_{2007} = r_{2007}$
2003: (0.275 x d)+ $e_{2003} = r_{2003}$	2008: (0.775 x d)+ $e_{2008} = r_{2008}$
2004: (0.375 x d)+ $e_{2004} = r_{2004}$	2009: (0.875 x d)+ $e_{2009} = r_{2009}$
2005: (0.475 x d)+ $e_{2005} = r_{2005}$	2010: (0.975 x d)+ $e_{2010} = r_{2010}$

The time interval factor (t_i) is calculated by dividing the number of months between the prior census and the estimate date by the total number of months between the censuses. Using 2001 as an example, there are nine months between the 2000 census, conducted on April 1, 2000, and the January 1, 2001 estimate date. There are 120 months between the 2000 census date and the 2010 census date. The calculation of t_i for the 2001 estimate year is 9/120 = 0.075. Each following t_i factor covers an additional twelve month increment. For January 1, 2002 a 21-month interval is used. The calculation is 21/120 = 0.175.

Developed by
Demographic Research Unit
California Department of Finance
www.dof.ca.gov/research/demographic/
916-323-4086