Methodology

Introduction

The intercensal estimates for 1990-2000 for the United States population are produced by converting the 1990-2000 postcensal estimates prepared previously for the U. S. to account for differences between the postcensal estimates in 2000 and census counts. The postcensal estimates for 1990 to 2000 were produced by updating the resident population enumerated in the 1990 census by the estimates of the components of population change between April 1, 1990 and April 1, 2000-- births to U.S. resident women, deaths to U.S. residents, net international migration (including legal and residual foreign born), and net movement of the U.S. armed forces and civilian citizens to the United States.

For April 1, 2000, the postcensal procedure gave a national resident population estimate of 274,608,346. For the same date, the Census 2000 enumerated a population of 281,421,906, which was 6,813,560 million higher than the postcensal estimate. The difference between the census and the postcensal estimate is known as "the error of closure." As shown in Table 1, the error of closure of 6.8 million is not distributed uniformly by age and sex. It is greater for males both in absolute number and in percentage (census exceeds the postcensal estimate by 3,764,441 or 2.73 percent) than for females (3,049,119 or 2.13 percent). With regard to age, the direction of error is not the same for all age groups; for the age groups under age 85, the census enumeration exceeds the postcensal estimate, while for the age groups ages 85 and over, the 2000 postcensal estimate exceeds the census enumeration. A large proportion of error of closure, nearly 70 percent, is concentrated in ages 5 to 34.

Methodology for Estimating Intercensal Estimates

Intercensal population estimates for 1990 to 2000 are derived from the postcensal estimates by distributing the error of closure over the decade by month. The method used for the 1990s for distributing the error of closure is the same that was used for the 1980s. The method produces an intercensal estimate as a function of time and the postcensal estimates, by the following mathematical expression:

$$P_t = Q_t \left(\frac{P_{3653}}{Q_{3653}} \right)^{(t / 3653)}$$

Where
- $t =$ time in (days) elapsed since April 1, 1990
- $P_t =$ population estimate at time t
- $Q_t =$ postcensal estimate at time t
- $P_{3653} =$ April 1, 2000 census count
- $Q_{3653} =$ April 1, 2000 postcensal estimate

Computation Steps

Production of the intercensal estimates of the total population by sex and age involved the following steps:

1. Intercensal estimates by month and by sex were first produced for the total resident population of the nation by applying the above formula to the postcensal estimates.

2. The postcensal estimates for each age separately for males and for females were converted to intercensal estimates using the same procedure.

3. Because the sum of the results of the intercensal formula by age was different from the direct estimate of the total population, the age estimates in step 2 above were proportionately adjusted, so that they would add to the intercensal estimates of the total population in step (1).

Intercensal Estimates Compared to Postcensal Estimates

Figure 1 shows the postcensal estimates and intercensal estimates, produced by the method explained above, for 1990 to 2000. As expected, the absolute difference between the postcensal estimate and intercensal estimate, which is the error of closure, increases with the elapsed time from the 1990 census. The method achieves this by changing the slope of the line but having minimum effect on the fluctuations from month to month from the overall trend of population change as depicted by the postcensal estimates.

Table 1. Population by Age and Sex: 1990 and 2000

| Age and Sex | Census | | Postcensal Estimate | Error of Closure (Estimate 2000-Census 2000) | |
	April 1, 1990	April 1, 2000	April 1, 2000	Number	Percent
All ages	248,790,925	281,421,906	274,608,346	-6,813,560	-2.42
Under 5	18,765,075	19,175,798	18,985,413	-190,385	-0.99
5 to 13 years	31,839,373	37,025,346	35,715,942	-1,309,404	-3.54
14 to 17 years	13,344,819	16,092,668	15,705,618	-387,050	-2.41
18 to 24 years	26,960,710	27,143,454	26,408,097	-735,357	-2.71
25 to 34 years	43,174,991	39,891,724	37,529,288	-2,362,436	-5.92
35 to 44 years	37,444,405	45,148,527	44,902,848	-245,679	-0.54
45 to 54 years	25,062,440	37,677,952	36,820,665	-857,287	-2.28
55 to 64 years	21,115,656	24,274,684	23,843,982	-430,702	-1.77
65 to 74 years	18,047,909	18,390,986	18,174,161	-216,825	-1.18
75 to 84 years	10,013,520	12,361,180	12,267,182	-93,998	-0.76
85 years +	3,022,027	4,239,587	4,255,150	15,563	0.37
Male	121,284,188	138,053,563	134,289,122	-3,764,441	-2.73
Female	127,506,737	143,368,343	140,319,224	-3,049,119	-2.13

Note: The error of closure is the difference between the postcensal estimate for April 1, 2000 and the Census 2000 count. The percent error of closure is the ratio of the error of closure to the Census 2000 count times 100. A negative number means that the census count is larger than the postcensal estimate.

Figure 1. Intercensal and Postcensal Population Estimates by Sex: April 1, 1990 to April 1, 2000