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## Bureau of Health Information and Policy

### Annual Population Estimates for Wisconsin Counties: Methods

The Bureau of Health Information and Policy (BHIP) produces population estimates by sex and age group for Wisconsin counties and the state in non-Census years. BHIP also produces bridged race and Hispanic ethnicity estimates that are adjusted to the county, sex and age group totals. The reference date for each set of annual estimates is July 1.

#### **County estimates by sex and age group**

The estimates are produced through iterative proportional fitting, or “raking”. The procedure adjusts a matrix of cells in an iterative fashion until the matrix converges with a separate set of marginal totals. The process continues until the internal cells converge with the totals for all dimensions (in this case, age group and sex) simultaneously. The term “raking” roughly describes how the matrix cells are distributed along each dimension until the matrix fits the marginal totals.

The data used to produce the estimates come from the U.S. Census Bureau and the Wisconsin Department of Administration. The Census Bureau’s state age-by-sex estimates are used along with county total estimates and county estimates by sex by five-year age group projections from the Wisconsin Department of Administration’s Demographic Services Center.

#### **County estimates by sex, age group, race and Hispanic ethnicity**

The estimates are based on bridged race estimates produced by the U.S. Census Bureau in conjunction with the National Center for Health Statistics (NCHS). BHIP adjusts the NCHS estimates so they conform to the county estimates by sex and age group that are described above.

The adjustment process is done in multiple steps. The first step divides the NCHS estimates in individual cells by the NCHS total county population. This generates a set of proportions that correspond to the distributions found in the NCHS bridged race file. These proportions are then applied to the BHIP total county population, which results in a set of “raw” or unadjusted estimates. In the next step the BHIP estimates are divided by the sum of the raw estimates for each corresponding county, sex and age group. This yields a set of adjustment factors. The raw estimates are then multiplied by the corresponding adjustment factor. This final step produces the BHIP estimates by county, age group, sex, race, and Hispanic ethnicity.

This procedure results in bridged race estimates that are adjusted so they equal the BHIP population estimates at the state, county, sex and age-group levels.

#### **Revisions**

The NCHS bridged race estimates are [revised](#) each year when a new “vintage” is released. Those revisions are incorporated into the BHIP race/Hispanic ethnicity estimates. This means that rates based on race and/or Hispanic ethnicity using these estimates as denominators may change from previous years as each new vintage is incorporated.

However, BHIP’s county-by-sex-by-age-group estimates are not revised, so rates using these denominators at the county, sex and age-group levels will remain constant compared to previous vintages.