

Statistical notes for County Tobacco Fact Sheets 2014

Created: July 2015

The following are statistical notes for calculations in the 2014 county tobacco fact sheets.

Number of events (numerator)

The number of events (numerator) is the estimated count of people or events (such as a hospitalization) among a specific group of people or for a specific health related setting (such as hospitalizations). The number of health events can be focused on specific populations such as a defined age range, geographic region, particular sex, or race or ethnic group.

Population at risk (denominator)

The population at risk (denominator) is the total count of people that are at risk for a disease or other condition (such as diabetes) or the total count of events of interest (such as hospitalizations). For example, when calculating the rate of people at risk for female breast cancer in Oregon, the total number of Oregon women is the denominator.

Data sets

Surveys

A survey data set contains information gathered from asking questions of randomly selected respondents. Two key surveys in Oregon are the Behavioral risk Factor Surveillance System (BRFSS) and the Oregon Healthy Teens survey (OHT). BRFSS is a telephone survey of adults, and OHT is administered to 8th and 11th grade students in their schools.

Because surveys are administered to a sample of the total population, each response is weighted to represent the entire Oregon population. Certain types of people are more likely to take surveys, so their responses *contribute less* to final calculations. Conversely, certain types of people are less likely to take surveys, so their responses *contribute more* toward final calculations.

BRFSS data collection and weighting changes

From 1988 to 2009, BRFSS called selected people on their landline telephones. The collection of data via landline telephone interviews became less accurate in the early 2000's as cell phone use began to increase rapidly. In response, the BRFSS began collecting information via cell phone interviews in 2010. Also in 2010, the BRFSS weighting method was improved. Prior to 2010, BRFSS data were weighted to account for known proportions of age, race and ethnicity, gender, geographic region, and other known characteristics of a population. The new weighting method, termed "raking", accounted for additional population characteristics including education level, marital status, and home ownership status of the respondent. For more information on raking weighting see the CDC online document *Weighting BRFSS Data* [here](#). Due to data collection and weighting changes in 2010, BRFSS estimates for 2010 and later should be compared to earlier years with caution.

Full count

Examples of full count data sets include birth and death certificates. These data sets include all observations in the population (theoretically every birth and every death), so the results do not require weighting like survey data. However, when counts are small, results can be suppressed due to concerns of confidentiality or reliability.

Rates (age-adjusted and unadjusted)

A rate is usually the numerator divided by the denominator. Sometimes a rate is stated as a percentage (multiplied by 100) or it can be stated by some other multiplier. For example, one can express the stroke rate as 40 Oregonians died from a stroke per 100,000 people. This would be calculated by taking the rate and multiplying by 100,000. There are two main types of rates, age-adjusted and unadjusted. The unadjusted rate is sometimes called the crude rate. Both rates have advantages and disadvantages.

Age-adjusted: Because health conditions are often related to age, the most common method for adjustment is age-adjustment. Age-adjusted rates remove the differences in the age composition of two or more populations so that health events in the two populations can be compared. For example, 11% of Washington county residents are 65 years of age or older, whereas in Wheeler county, 32% are 65 years of age or older. Because of these age differences you would want to adjust your rate to equalize the age to compare measures of interest in Washington and Wheeler counties. It is currently customary to use the United States 2000 census age characteristics for adjustment. This is often called the 2000 Standard Population. However, age-adjusted rates do not describe the actual burden of a disease because the rate has been adjusted.

Unadjusted (crude): Unadjusted rates describe the actual burden of a disease on a population. However, because health events are affected by many factors, you cannot compare rates to each other unless they are age adjusted.

Number of people affected

The estimated number of people with a disease, risk factor, screening, or other measure of interest (in this case cigarette smoking). The number of people is estimated by taking the unadjusted rate of the measure of interest (i.e., cigarette smoking) and multiplying by the total population under investigation (i.e., adult population for the county). For example, the number of adults who smoke cigarettes in Baker County in 2013 was estimated to be 2,500. This number was calculated by taking the rate (.17 or 17%) from 2013, multiplying by the total number of people in Baker who were age 18 or older in 2013 (13,044), and rounding to the nearest hundred. Population numbers are from the Portland State University Population Research Center [here](#).

Reliability

Rates based on a small population or number of events can fluctuate widely between different populations or from year to year for reasons other than a true difference in the underlying number of events. Therefore, rates are sometimes noted with “may be statistically unreliable and should be interpreted with caution” or are suppressed because the estimate is statistically unreliable to report.