Understanding the Data

To get the most out of this report, it is important to understand the measures used and what each can tell you about the health issues it describes. This report uses totals, percents, prevalence and several different kinds of rates.

Totals

Totals provide us with numbers and counts. Depending on the topic, the totals might be labeled deaths, cases, number or children. Totals refer to the number of people experiencing the health issue and give us an idea about the scope of the problem. Knowing the total number affected can help with decisions about how to allocate appropriate resources for treatment and prevention. Looking at the totals for different groups tells us which group has the most cases but not which group is at greatest risk. We expect to get larger totals for bigger groups but that doesn't mean they are at greatest risk.

Example: There were 3,465 heart disease deaths among whites in Contra Costa from 2005–2007. There were 538 heart disease deaths among African Americans during the same period. Even though there were more deaths among whites, it does not mean they were at greater risk.

Percents

Percents tell us how the totals are distributed across groups. They are a familiar way to compare proportions and they tell us what part of the total number of cases is attributed to each group. Percents tell us which group has the greatest share of cases but not which group is at greatest risk. We expect groups that make up a larger part of the total population to have a larger percent of cases but that does not mean they are at greatest risk.

Example: There were a total of 1,218 lung cancer deaths in Contra Costa between 2005 and 2007. Whites accounted for 944 of these deaths while African Americans accounted for 120 of the deaths. The percent of deaths among whites was 77.5% = (944/1,218)*100% and the percent of deaths among African Americans was 9.9% = (120/1,218)*100%. Since there are more whites in the county we would expect that more of the county's lung cancer deaths were among whites but this does not mean whites are at greatest risk.

Prevalence

Prevalence tells us what percentage of the population is affected by the health problem. Prevalence is a measure of risk and can be used to compare one group to another. If a higher percentage of people in one group are affected by a problem compared to another the group, the group with the higher percentage is said to have a higher prevalence and be at greater risk. Although percent and prevalence are both reported as a percentage in this report, the percent is the number of cases in a group divided by the number of cases in the total population while the prevalence is the total cases in a group divided by the population of that group. In order to calculate prevalence, we must know the total population. In many cases prevalence is calculated using the number of people surveyed as the total population and the number who reported they had experienced the health problem or been diagnosed with the disease as the number affected.

Example: The California Health Interview surveyed 1,157 Contra Costa adults in 2007 about various health outcomes. Of those surveyed 75 reported ever being diagnosed with diabetes. The prevalence for Contra Costa was calculated to be 6.5% = (75/1,157)*100%. Because they made a similar calculation for everyone surveyed in California we can compare the prevalence in California (7.8%) to Contra Costa's prevalence even though the number of people living in California (and the number of people surveyed in California) is much larger than those living (and surveyed) in Contra Costa.

Rates

Rates are the best way to compare risk between groups. The most basic rate is calculated by dividing the number of deaths or cases by the total population at risk. The result is then multiplied by a number that is standardized by topic area for reporting (typically 1,000 or 100,000 depending on the rarity of the outcome). Because the rate takes into account the total population at risk, it is a legitimate way to compare groups of different size.

Example: There were 129 unintentional injury deaths among Hispanics in Contra Costa from 2005 to 2007 and 121 unintentional injury deaths among African Americans in the same period. Although the total number of deaths is very similar, the number of Hispanics in the county during that period (their population at risk) is much higher (658,438) than the total number of African Americans in the county during that period (280,355), so the Hispanic rate of 19.6 per 100,000 residents = (129/658,438)*100,000 is lower than the African American rate of 43.2 per 100,000 residents = (121/280,355)*100,000.

The rate calculated above is the most basic kind of rate and is called a crude rate. It is the easiest to calculate and does not take into consideration differences in the age distribution of each population. **Crude rates** are used for things like injuries and infectious diseases where there is not consistent relationship between age and risk.

Age-specific rates are crude rates calculated for particular age groups. In this case we divide the number of cases that occur in a particular age group by the total number of people in that age group. Sometimes we use these rates to show how risk of a particular outcome changes throughout the life course by comparing one age group's age-specific rate to that of another age group. Other times the health outcome we are measuring only makes sense for a particular age group and we use age-specific rates to compare that outcome across multiple groups.

Example 1: There were 229 cases of gonorrhea among Contra Costa residents aged 30-34 years and 265 cases among residents aged 35-44 years old. Although the older group had more cases it also covered more ages. There were just 189,660 residents aged 30-34 years and 486,802 residents aged 35-44 years, so the age specific rate for 30-34 year olds120.7 per 100,000 population = (229/189,660)*100,000 was higher than the age-specific rate for 35–44 year olds 54.4 per 100,000 population = (265/486,802)*100,000.

Example 2: There were 1,544 births to Hispanic girls aged 15-19 years old from 2005 to 2007 and 390 births to white girls aged 15-19 years old in the same period. This shows that there were almost four times as many births to Hispanic teens as white teens, but when you consider that there were just 28,913 Hispanic girls aged 15-19 years and 54,432 white girls the same age you see that the teen birth

rate for Hispanics 53.4 per 1,000 teen girls = (1,544/28,913)*1,000 is more than seven times the teen birth rate for whites 7.2 per 1,000 teen girls = (390/54,432)*1,000.

Age-adjusted rates are used to compare rates of health outcomes that vary consistently with age between groups that might have a different age distribution. We use age-adjusted rates when comparing rates for chronic diseases because the risk of these diseases increases strictly with age. If we did not adjust for age, a group that had a greater number of older people would look like they were at greater risk than a group with more young people. Age-adjusted rates require a complex calculation that combines multiple age-specific rates for a group, weighing each age group according to its proportion in another population chosen as the standard. The resulting rate does not reflect an actual risk in any group but it does allow us to make a meaningful comparison between groups.

In our county, the Hispanic population tends to be younger than the white population and the male population tends to be younger than the female population. We can see these effects when we compare certain age-adjusted rates.

Example: There were 1,436 cases of lung cancer among Contra Costa women from 2003 to 2007 and 1,268 cases of among men in the same period. Although there were more cases in women, the age-adjusted rate was higher for men 59.7 per 100,000 residents than women 52.6 per 100,000 cases because women are an older population in Contra Costa.

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