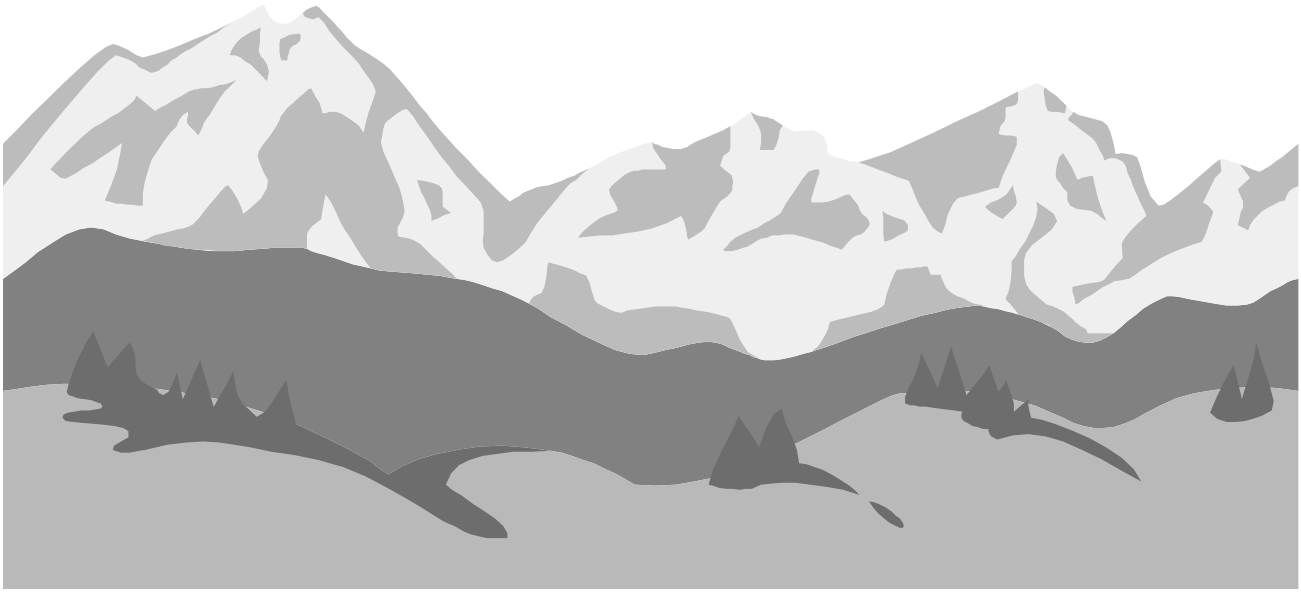
Appendix A: Methodology



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Questionnaire

The BRFSS questionnaire is modified each year by the Centers for Disease Control and Prevention (CDC) in collaboration with participating states and territories. The questionnaire has three parts. The first part is a core set of questions that is asked by all states and territories. The second part consists of a series of topical modules developed by the CDC. States have the option of adding CDC topical modules as they wish, and Utah has used several of them. The final part of the questionnaire consists of questions designed and administered by individual states to address issues of local concern.

Sampling Design

In the years 1999-2001, the Utah BRFSS telephone sample was stratified by Utah's 12 health districts. Within each health district the BRFSS used a disproportionate stratified sampling design (DSS). In the DSS design, all the telephone numbers in each health district were disproportionately stratified by telephone blocks. A block consists of 100 phone numbers that differ only by their last two digits (e.g. 801-538-1100 to 801-538-1199). "One-plus blocks" (high-density stratum) are computer-generated listings of 100 consecutive telephone numbers containing at least one published household telephone number. "Zero blocks" (low-density stratum) are listings of 100 consecutive telephone numbers containing no published household telephone numbers. To ensure total coverage, both one-plus and zero blocks were randomly sampled from each health district, but at a disproportionate rate of 4 to 1. The monthly number of telephone numbers sampled from each health district was designed to ensure a certain number of completed interviews each month in each district. Once a residence was successfully contacted, individual respondents were randomly selected from all adults ages 18 or over living in the household. The selected adult, if willing, was then interviewed in accordance with the BRFSS protocol.

Data Collection

Interviews were conducted monthly from the Utah Department of Health (UDOH) Survey Center by professional interviewers employed by the UDOH. The Survey Center uses a Computer-Assisted Telephone Interviewing (CATI) system to administer the appropriate questions and record respondent answers to the survey directly to a computerized database. The system is programmed to help ensure accurate data entry. The interviews were conducted during daytime and evening hours on weekdays and during daytime hours on Saturday to ensure that selected respondents had ample opportunity to complete the survey. Fifteen attempts were made at different times of the day and on the weekend to reach a phone number. Selected respondents were given the opportunity to schedule a time to be called in order to complete the interview. Interviews are routinely monitored to ensure adherence to strict BRFSS protocol. Monitoring is done electronically so that both the interviewer and respondent can be heard, and the computer screen can be observed to make sure responses are entered correctly without the interviewer being aware that he or she is being monitored.

Data Analysis

Weighting. Data were weighted to account for differences in the probability of selection (e.g. the number of adults in a household). Post-stratification weighting based upon population estimates of adults by age categories and sex in Utah for 1999, 2000, and 2001 was used to ensure that the results more closely reflected the adult population of Utah.

Prevalence Estimates. Respondents who indicated "Don't know/Not sure" or "Refused" were excluded from the calculation of the estimates. The SAS® statistical package with SAS-Callable SUDAAN®

computer software was used to compute prevalence estimates (both crude and age-adjusted) and associated 95 percent confidence intervals (calculated as 1.96 times the standard error of the statistic) using sample weights provided by CDC. SUDAAN software takes into account the complex BRFSS sample design in calculating unbiased standard errors for the confidence interval calculations.

Age-adjusted Data. Many of the BRFSS measures vary by age. Therefore, the data were age adjusted to the 2000 U.S. standard population to control for differences in the measures that are due to differences in the age composition of the populations being compared. This adjustment allows for comparison of rates between health districts, the state, and the U.S. It also allows comparison to the Healthy People 2010 objectives that utilize age-adjusted rates. Percentages for the local health districts were considered different from the state percentage if their 95 percent confidence intervals did not include the state percentage. In the report, these differences are represented on the map of Utah's 12 health districts for each measure. (These age-adjusted rates are useful for comparison purposes only, not to measure absolute magnitude. The actual numerical value of an age-adjusted rate is dependent on the standard population used and, therefore, has no intrinsic meaning. To compare absolute magnitude, actual numbers and crude rates should be used.)

Population Count Estimates. Crude percentage estimates were applied to population counts to derive an estimate for the total number of persons in Utah, in each of Utah's 12 health districts, and in selected demographic subgroups in Utah to whom the measure probably applied. The total population estimates for the state and the local health districts were taken from the Governor's Office of Planning and Budget (GOPB) for year 2000. The demographic subgroup estimates for race/ethnicity, income, and education were derived from the BRFSS surveys using combined 1999-2001 data also using total population estimates from the GOPB.

Sampling Error. The BRFSS data were gathered from a random sample of the Utah adult population. Sampling error refers to random variation that occurs because only a subset of the entire population is sampled and used to estimate the finding for the entire population. It is often called "margin of error" in popular use. In this report, sampling error has been expressed as **confidence interval bounds**. The 95 percent confidence interval (calculated as 1.96 times the standard error of a statistic) indicates the range of values within which the statistic would fall 95 percent of the time if the researcher were to calculate the statistic from an infinite number of samples of the same size drawn from the same base population. The bar graphs of the crude prevalence estimates in this report include a line showing the estimated confidence intervals around the percentage estimates. Confidence intervals have also been reported for all estimates presented in the tables.

Non-sampling Error. Sources of non-sampling error include idiosyncratic interpretation of survey questions by respondents, variations in interviewer technique, household non-response to questions, and coding errors. Respondents may have the tendency to under-report behaviors that are undesirable, unhealthy, or illegal (e.g. drinking and driving). They may over-report desirable behaviors. The accuracy of self-reported information also is affected by the ability of respondents to fully recall past behaviors or health screening results.

For a detailed description of BRFSS methodology, see the BRFSS Surveillance Guide, an online version of the BRFSS Users Guide at: http://www.cdc.gov/brfss/training.htm.