Appendix A

Methods Used in Data Reporting for BRFSS Report

Appendix A

The purpose of this section is to provide the reader with a general methodological overview of the project. Persons interested in obtaining additional or more detailed information may contact:

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BRFSS Survey Background

Scientific research clearly shows that personal health behaviors play a major role in premature morbidity and mortality. Although national estimates of health risk behaviors among U.S. adult populations are periodically available through surveys conducted by the National Center for Health Statistics (NCHS), these data are not available on a state-specific basis. As a result, surveys were developed and conducted to monitor state-level prevalence of the major behavioral risks among adults associated with premature morbidity and mortality. The basic philosophy was to collect data on actual behaviors, rather than on attitudes or knowledge, that would be especially useful for planning, initiating, supporting, and evaluating health promotion and disease prevention programs.

The Centers for Disease Control and Prevention (CDC) developed the standard core questionnaire for states to use to provide data that could be compared across states. The BRFSS is an on-going data collection program administered and supported by the Division of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion, CDC. By 1994, all states, the District of Columbia, and three territories were participating in the BRFSS.

Although the BRFSS was designed to collect state-level data, Utah is one of a number of states that stratify their samples to allow for prevalence estimates for sub-state regions. In Utah, the sample is stratified so that information may be analyzed at the local health district level approximately every three years.

Sample Design

In Utah, the Mitofsky-Waksberg method (Waksberg, 1977) was used to draw the BRFSS phone number sample from 1984 through calendar year 1998. This method ensures that the telephone numbers called are representative of the populations from which they were drawn. In the case of the BRFSS survey, the sample is representative of non-institutionalized adults, age 18 and over, living in Utah households with telephones. One adult in each household is randomly-selected to be interviewed for the survey. Two-hundred-forty interviews are conducted each month, for a total of 2880 interviews each year. The sample is stratified so that, in each local health district, a minimum of 500 observations are collected every three years.

This report is based on data collected by telephone interviews from January, 1995 through December 1998. During this time, there were 11,507 interviews conducted, statewide. The number of interviews collected by local health district ranged from 677 in Davis County Health District to 3265 in Salt Lake City/County Health

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District. However, to satisfy the demand for data on many health topics, certain items on the questionnaire are asked in only alternate years. For instance, data on issues such as physical activity, blood pressure, alcohol, and seatbelt use were collected for only two years out of the four represented in this report. For such items, survey sample sizes will be smaller.

Data Collection

Interviews are conducted monthly from a central calling facility by professional interviewers employed by the Utah Department of Health (UDOH). The UDOH uses a Computer-Assisted Telephone Interviewing (CATI) system to record respondents' answers to the survey questions. Standard protocols, developed by the CDC, are used in all states collecting BRFSS survey data. These protocols specify survey systems, such as adequate call-backs to contact target households, that improve data quality and comparability across states.

Data Analysis

Weighting. The results presented in this report have been weighted to more closely reflect the actual distribution of Utahns with respect to their age, sex, number of adults in the household, the number of telephone lines in the household, and the region of the state where they reside.

Percentage Estimates. Percentage estimates were calculated using SAS data analysis software. Missing values (e.g., "don't know" and "refused to answer" categories) were excluded from the denominator before the percentages were calculated.

Population Count Estimates. Percentage estimates were applied to population counts to derive an estimate for the total number of persons in Utah to whom the behavior probably applies. For example, the survey estimate of the *percentage* of persons who smoked was applied to the total adult population of Utah to derive an estimate of the total *number* of smokers in Utah. The data source for the population count estimates used in this report was the Governor's Office of Planning and Budget, estimates published in January 1997.

Sampling Error. 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, and is expressed as the "plus or minus" term. In this report, sampling error has been expressed as *confidence interval bounds*. The 95% 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% of the time if the researcher were to calculate the statistic (e.g., a percentage) from an infinite number of samples of the same size drawn from the same base population.

Figures in this report include bars showing the estimated confidence intervals around the percentage estimates. SUDAAN statistical software (Research Triangle Institute) was used to calculate the confidence intervals. Because the BRFSS survey sample is a complex sample design, ordinary statistical software would have produced biased confidence intervals. Statistical software programs that do not take into account the complex sample design will typically produce standard errors and confidence intervals that are too small. SUDAAN takes into account the sample design and weighting variable and produces unbiased standard errors for the BRFSS survey.

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Non-Sampling Error. Non-sampling error exists in survey estimates. Sources of non-sampling error include idiosyncratic interpretation of survey questions by respondents, variations in interviewer technique, household non-response to questions, coding errors, and so forth. Every effort was made to avoid non-sampling error in the data collection and analysis process, however, no specific efforts were made to quantify the magnitude of non-sampling error in the BRFSS survey.

Comparability

Comparability with other data sources is an issue with all surveys. Differences in survey design, survey questions, estimation procedures, the socio-demographic and economic context may all affect the comparability of the BRFSS survey with other survey tools. However, the BRFSS surveys are conducted across all 50 states with the intent of comparability. As a result, comparison of the Utah BRFSS survey data with BRFSS survey data from other states is recommended and encouraged.