

Idaho Behavioral Risk Factor Surveillance System (BRFSS) Methods, 2011

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Division of Public Health
Bureau of Vital Records and Health Statistics

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For more details on this project or any of the survey results, please contact the Idaho Bureau of Vital Records and Health Statistics at (208) 332-7326.

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Introduction

The Behavioral Risk Factor Surveillance System (BRFSS) is an ongoing, state-based, cross-sectional survey of non-institutionalized adults aged 18 and older. The BRFSS is designed to estimate national, state, and sub-state prevalence of health conditions and health-related behaviors associated with the leading causes of death and disability.

The Idaho BRFSS has been conducted annually since its inception in 1984 in coordination with the Federal Centers for Disease Control and Prevention (CDC). In 2011, the BRFSS was conducted in all 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and Palau. The survey is conducted every month of the calendar year.

The BRFSS changed its methodology in 2011 from a survey of landline telephone users to a multimode survey including users of cellular telephones. In addition, a more sophisticated data weighting method was implemented to account for the change in survey design and to incorporate more detailed data regarding Idaho's demographics. Because of these changes, data from the 2011 BRFSS cannot be reliably compared with data from 2010 or earlier. Shifts in observed prevalence from 2010 to 2011 for BRFSS measures may simply reflect improved methods of measuring rather than true trends in risk-factor prevalence.

Methods

Survey Design

The 2011 Idaho BRFSS used random-digit-dialed (RDD) surveys of landline and cellular telephone users. Landline telephone numbers were sampled using disproportionately stratified sampling (DSS) with the state's seven public health districts defined as strata. Interviewers conducted a minimum of 700 landline interviews in each of Idaho's seven districts. For each landline household contacted, one adult was randomly selected for interviewing from among all adults living in the household. Cellular telephone users were sampled randomly statewide. In 2011, the cell phone survey was restricted to those adults who used a cell phone for 100% of their calls.

Survey Interviewing

The survey instrument consisted of a questionnaire comprised of three parts. The core component included questions standardized by CDC and asked in all states. An optional module component included questions standardized, edited, and evaluated by CDC and which addressed Idaho's needs. These optional questions, however, were not asked in all states. A state-added component included further questions not edited or evaluated by CDC but which addressed Idaho's needs. Landline respondents were asked the full questionnaire. Cell phone respondents were asked only the core questionnaire.

Trained interviewers used computer-assisted telephone interviewing (CATI) software to record responses. The 2011 survey included 6,077 interviews overall; 5,494 were conducted by landline phone, and 583 were conducted by cell phone.

Data Weighting

Ideally, all Idaho adults would have an equal chance of being surveyed and the sample would accurately represent the state's population. Sample design and random chance, however can affect the probability of selection. For example, people with multiple phones were more likely to be called. The sample may not include all population groups proportionately, and some demographic subgroups may have lower response rates. Known differences between the sample and the population due to sample design and population

factors can be accounted for by data weighting. A brief introduction to survey data weighting is available from the American Association of Public Opinion Research (AAPOR)¹.

In 2011, the BRFSS implemented a new weighting method known as raking or iterative proportional fitting. Raking improves the accuracy of BRFSS results by accounting for cell phone surveying and adjusting for a greater number of demographic differences between the survey sample and the statewide population. Raking replaced the previous weighting method known as post-stratification and is a primary reason why results from 2011 are not directly comparable to 2010 or earlier. The 2011 data should be considered a new baseline for future comparisons.

A summary of changes to the 2011 BRFSS methodology is available online from CDC². A more detailed report on the changes in BRFSS methodology and the effects on subsequent BRFSS estimates is presented by Pierannunzi, et al.³.

Data Analysis

Idaho used SAS[®] v9.2 software for data manipulation and risk factor creation. Idaho used SAS-callable SUDAAN[®] (Survey Data Analysis) v10.0.1 software for statistical testing and calculation of confidence limits. SUDAAN takes into account the complex sampling design of the BRFSS survey. All "don't know," "not sure," and "refused" responses were excluded from analyses.

Statistically significant bivariate comparisons were determined by comparing 95% confidence intervals. Non-overlapping 95% confidence intervals were considered statistically significant ($p < 0.05$). Statistically significant trends over time were determined using the Cochran-Mantel-Haenszel test for trend.

Reporting

Prevalence estimates are reported as percentages. Estimates with fewer than 50 respondents in the denominator were considered statistically unreliable and are suppressed. The BRFSS has adopted this standard to maintain a high degree of reliability. Suppressed estimates are indicated in data tables with an asterisk (*).

Differences between estimates are reported throughout BRFSS publications. Differences determined to be statistically significantly different are designated as such and are preceded by the words "significantly" or "statistically".

Data Limitations

Errors in estimation can result from BRFSS data being self-reported, e.g., certain behaviors may be underreported⁴. Another source of error is based on sampling, as samples may deviate somewhat from the population. Additional errors may occur due to the population from which the sample is drawn. In order to be cost effective, the sample was limited to adults aged 18 and older who were non-institutionalized, lived in a household with either a landline telephone or who used a cell phone 100% of the time, and could communicate in English or Spanish. This excluded people in prisons or housed in medical facilities, those who exclusively spoke a language other than English or Spanish, and others who could not communicate by telephone. Spanish interviewing for the Idaho BRFSS began in midyear 2004. The first complete year with Spanish interviews was 2005.

The Federal Communications Commission estimated that 96.0% of Idaho households had telephone service in 2008⁵. With ongoing changes in telephone technology, there has been an increase in households that have cellular telephones only. These households were likely underrepresented in the 2011 sampling frame for the BRFSS. Although data weighting helped account for the underrepresentation, there may be additional unknown bias as result of the small sample size⁴.

References

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