



# About the Behavioral Risk Factor Surveillance System (BRFSS)

## Background

By the early 1980s, scientific research clearly showed that personal health behaviors played a major role in premature morbidity and mortality. Although national estimates of health risk behaviors among U.S. adult populations had been periodically obtained through surveys conducted by the National Center for Health Statistics (NCHS), these data were not available on a state-specific basis. This deficiency was viewed as a critical obstacle to state health agencies trying to target resources to reduce behavioral risks and their consequent illnesses. National data may not be applicable to the conditions found in any given state; however, achieving national health goals required state and local agency participation.

About the same time as personal health behaviors received wider recognition in relation to chronic disease morbidity and mortality, telephone surveys emerged as an acceptable method for determining the prevalence of many health risk behaviors among populations. In addition to their cost advantages, telephone surveys were especially desirable at the state and local level, where the necessary expertise and resources for conducting area probability sampling for in-person household interviews were not likely to be available.

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.

## BRFSS History and Timeline

To determine feasibility of behavioral surveillance, initial point-in-time state surveys were conducted in 29 states from 1981–1983. In 1984, the Centers for Disease Control and Prevention (CDC) established the Behavioral Risk Factor Surveillance System (BRFSS), and 15 states participated in monthly data collection. Although the BRFSS was designed to collect state-level data, a number of states from the outset stratified their samples to allow them to estimate prevalence for regions within their respective states. CDC developed a standard core questionnaire for states to use to provide data that could be compared across states. Initial topics included smoking, alcohol use, physical inactivity, diet, hypertension, and seat belt use. Optional modules—standardized sets of questions on specific topics—were implemented in 1988.

BRFSS became a nationwide surveillance system in 1993. The questionnaire was redesigned to include rotating fixed core and rotating core questions and up to five emerging core questions. Approximately 100,000 interviews were completed in 1993.

In 2002, BRFSS held its first biannual BRFSS Expert Panel Meeting, inviting approximately 20 survey statisticians, methodologists, and operational experts to a 2-day meeting to discuss the challenges facing the field of survey research and implications for the BRFSS. Repeated in 2004, 2006, and 2009, the meetings set a goal of developing options and prioritizing recommendations for maintaining data quality in the face of societal and technological changes.

The Asthma Call-back Survey (ACBS) was piloted in 3 states in 2005 and has been conducted each year since. The ACBS is conducted approximately 2 weeks after the BRFSS. It is conducted with respondents who report ever being diagnosed with asthma. A majority of states participate in the ACBS each year.

States have used BRFSS to address urgent and emerging health issues. For example, during the 2004 – 2005 flu season, the BRFSS was used to monitor the influenza vaccine shortage. Following Hurricanes Katrina and Rita in 2005, four Gulf Coast States used the BRFSS to assess the impact of these events. During the 2009 H1N1 flu pandemic, modules related to influenza-like illness and seasonal and 2009 H1N1 vaccinations were added to the survey.

In 2007, the BRFSS added a Web-Enabled Analysis Tool (WEAT). This online application analyzes data through a variety of statistical methods. Users are able to perform cross-tabulation and logistic regression.

The BRFSS piloted the Cell Phone Survey beginning in 2008. By including cell phones in the survey, BRFSS is able to reach segments of the population that were previously inaccessible—those who have a cell phone but not a landline—and produce a more representative sample and higher quality data. Cell Phone surveys were included in the Public release data set beginning in 2011.

More than 500,000 interviews were conducted in 2011, making the BRFSS the largest telephone survey in the world. Also in 2011, new weighting methodology—raking, or iterative proportional fitting—replaced the post stratification weighting method that had been used with previous BRFSS data sets. In addition to age, gender, and race/ethnicity, raking permits more demographic variables to be included in weighting such as education attainment, marital status, tenure (property ownership), and telephone ownership. Details are provided in the June 8, 2012 issue of the Morbidity and Mortality Weekly Report (MMWR), which highlights weighting effects on trend lines ([www.cdc.gov/mmwr/preview/mmwrhtml/mm6122a3.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6122a3.htm).)

## Continuing the Legacy

BRFSS marks its 30th year in 2013 and remains the gold standard of behavioral surveillance. Currently data are collected monthly in all 50 states, the District of Columbia, American Samoa, Palau, Puerto Rico, the U.S. Virgin Islands, and Guam. CDC will continue to work closely with state and territorial partners to ensure that the BRFSS continues to provide data that are useful for public health research and practice and for state and local health policy decisions.

Public health surveillance in the future will be much more complex and involve multiple ways of collecting public health data. Although telephone surveys will likely remain the mainstay of how BRFSS data are collected, it is likely that additional modes of interviewing will also be necessary. To prepare for the future, BRFSS currently has several pilot studies and research initiatives underway. These efforts are critical for improving the quality of BRFSS data, reaching populations previously not included in the survey, and expanding the utility of the surveillance data. To find out more about BRFSS and its recent achievements, visit the BRFSS Today page.

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