

Alaska BRFSS Methodology

Sampling

BRFSS data are collected through telephone interviews using random-digit-dialing (RDD). Telephone numbers are sampled using a stratified sampling (DSS) design. Alaska’s [public health regions](#) are used to define each stratum with some variations from year to year. A dual sampling frame methodology, incorporating both landline and cellular telephones, has been implemented by the CDC since 2011. Most data are now collected via cellular telephones. Only landline telephones were included before 2011. Prevalence estimates from 2011 and later should not be compared to estimates before this time. A summary of [BRFSS methodologic changes](#) in 2011 and potential effects on estimates are available.

Participants are chosen at random to ensure that the data collected is generalizable to the statewide population. Telephone numbers are selected from blocks of potential phone numbers in an area, including unlisted numbers. Separate lists of landline and cell phone numbers are used. Calls are made seven days a week during both the daytime and the evening. For each landline household contacted, one adult is randomly selected for an interview from all adults living in the household. Cellular telephone participants are considered primary users of their phone numbers and interviewed directly.

Sample Size

The number of survey interviews completed in Alaska varies each year and largely depends upon the budget available. Since 2011, the CDC requires that Alaska obtain a minimum of 2,500 completed interviews to generate reliable state-level estimates and for inclusion into the national dataset. Since 2021, Alaska aims to collect at least 5,000 interviews annually to generate reliable estimates for more regional areas and smaller demographic groups. The tables below display the Alaska BRFSS sample size by year since 2011.

Year	2024	2023	2022	2021	2020	2019	2018	2017	2016
Sample Size	5,495	5,525	5,865	5,493	3,697	2,977	2,758	3,200	2,914

Year	2015	2014	2013	2012	2011
Sample Size	3,657	4,388	4,578	4,345	3,543

Data Collection

Alaska has contracted with ICF Macro to collect BRFSS data since 2018. Approximately the same number of interviews are collected each month throughout the calendar year to reduce bias caused by seasonal variation in health behaviors and conditions. Like most states, ICF Macro uses computer-assisted telephone interviewing software (Voxco), where the questionnaire is displayed on a computer screen during each telephone interview, and the interviewer enters the responses directly into a computer. Computer-assisted telephone interviewing software programs are used for several reasons.

- Data entry errors are minimized.
- Questions not applicable to the current respondent (for example, age- or sex-specific questions) are automatically skipped.
- Responses can be automatically checked, and those that are found unacceptable (such as impossible body weight) are immediately brought to the interviewer's attention so that they can be corrected.

BRFSS interviews are “scripted” to ensure a consistent experience during each interview. The interviewers are trained and instructed to read the questions and record responses in specific ways. However, this can sometimes make the flow of the interview sound unnatural to the person being interviewed.

Response Rates

All telephone numbers dialed for BRFSS are given a final disposition code after calling attempts have been exhausted. These disposition codes are used to generate response rates and fall into four broad categories: 1) interviewed, 2) eligible but not interviewed, 3) unknown if eligible, and 4) not eligible. For more information about detailed disposition codes and data quality, the CDC BRFSS program releases [annual data quality reports](#) online for all states and territories.

Response rates are calculated using the American Association for Public Opinion Research (AAPOR) standard for response rate formula #4 which is the number of respondents who completed the survey as a proportion of all eligible and likely to be eligible people. BRFSS response rates in Alaska are higher than in most other states and territories. The table below displays the annual response rates for Alaska compared to the national median rates.

Year	Alaska Cell Phone	Alaska Landline	Alaska Combined	National Median
2024	66.9%	55.5%	63.3%	43.9%
2023	53.0%	67.1%	63.1%	44.6%
2022	51.9%	62.3%	59.6%	45.1%
2021	49.3%	64.0%	59.4%	44.0%
2020	54.0%	71.4%	63.8%	47.9%
2019	53.9%	75.1%	61.4%	49.4%
2018	60.7%	68.4%	62.7%	49.9%
2017	51.7%	68.7%	54.0%	45.9%
2016	54.6%	69.7%	57.0%	47.1%
2015	51.8%	69.6%	54.2%	47.2%
2014	51.2%	60.0%	52.5%	47.0%
2013	49.7%	62.6%	52.0%	46.4%
2012	54.7%	55.6%	54.9%	45.2%
2011	62.9%	51.9%	60.5%	49.7%

Data Weighting

Data weighting is an important statistical process that accounts for the differences between survey respondents and the population that the data should represent. Data may not include all population groups proportionately due to sample design, random chance, and other factors. For example, people with multiple phones are more likely to be called and some demographic groups may be less likely to respond to telephone surveys.

Since 2011, the CDC has used a method called iterative proportional fitting or “raking” to weight data. Raking adjusts the data so that under-represented groups can be accurately represented in the final dataset. Age, sex, categories of race and ethnicity, marital status, education level, home ownership, phone type, and geographic regions are currently used to weight BRFSS data to represent the true population of adults in Alaska. Compared to post stratification weighting, which was used prior to 2011, the use of raking has been shown to reduce error within estimates. Prevalence estimates from 2011 and later should not be compared to estimates before 2011.

Using the same weighting methods as the CDC, Alaska re-weights annual data using population estimates from the [Alaska Department of Labor and Workforce Development](#) which are more accurate. Starting in 2020, data is also weighted by smaller [behavioral health system regions](#) when the sample size is sufficient. [Public health regions](#) were used for weighting prior to 2020 with some exceptions and variations from year to year. Prevalence estimates generated using Alaska weights may differ somewhat from those generated using CDC weights.

For multi-state analyses, it is recommended that the CDC generated weights are applied to Alaska data. For Alaska-specific analyses, the Alaska generated weights are more appropriate. Please email doh.brfss.info@alaska.gov if you are interested in obtaining more information about the Alaska or CDC weighting methods.

Data Limitations

There are limitations associated with BRFSS data and various ways that error can be introduced into the data. BRFSS data are used to generate prevalence estimates. These are estimates of the true incidence of a particular condition or behavior in the population because they are based on a sample of the population, not the whole population. The reliability of each estimate is directly related to the number of survey respondents in the population sample.

BRFSS relies on information reported directly by respondents, so it may be subject to sources of error. How questions are worded may elicit responses in a certain way and can result in what is called "measurement error." Similarly, the ability to accurately recall details varies by person and how much time has passed since the event they are trying to recall, which leads to "recall bias". Some BRFSS questions are on sensitive topics and respondents may alter their answer to present a favorable impression to the interviewer or to avoid stigma. This is called “social desirability bias”. It is also possible that the people who choose to participate are different than those who do not. Interviews are only conducted in English in Alaska, which means that adults who do not speak English are not included. Households without telephones are also not contacted. Thus, BRFSS findings can only be

generalized to English speaking adults who have telephones and live in private residences. This is called “selection bias”.

There is no reason to believe that these sources of bias change significantly from year to year. This means that even if the results are not precise, they can be compared over time. This allows us to determine if the prevalence of a given condition or behavior is increasing or decreasing.

Data Analysis

Weighted data analysis is conducted using complex survey procedures to estimate the prevalence of risk factors, health conditions and behaviors among adults 18 years and older in Alaska. Most summary data are available online to the public in the interactive [Alaska BRFSS Data Center](#). Additional [analytic requests and record level dataset requests](#) are handled by Alaska BRFSS staff once a completed data request form is received. Pending approval, record level datasets are made available to researchers who sign a data use agreement. They must have experience analyzing complex survey data.

Data quality and suppression

The relative standard error (RSE), also known as the coefficient of variation (CV), is an index of how reliable (variable) an estimate is. The RSE is expressed as a percentage of how much variability there is relative to the estimate itself (i.e., the standard error of the estimate divided by the estimate itself). A higher RSE generally indicates a more variable and less precise estimate. Small sample sizes often contribute to unstable estimates.

Alaska includes data quality flags to indicate when a result is statistically unstable, meaning we have a lower level of confidence in the result as an estimate of the true percentage in the Alaska adult population. CDC considers an RSE of greater than 30% to be unstable. Alaska flags prevalence estimates as unstable when the RSE is greater than 30% up to 50%.

To protect participant anonymity and ensure high data quality, Alaska does not report estimates that are based on a small number of responses or are highly statistically unreliable. We use two standards to decide when it is necessary to suppress a result. When either or both of the following criteria are met, the prevalence estimate for an indicator is not reported.

- Any unweighted count in the denominator that is less than 50 respondents.
- The relative standard error (RSE) for an estimate is greater than 50%.

Combining two or more years of survey data or expanding the geographic boundary are two ways to increase the stability of an estimate. Both strategies increase the number of responses in the numerator and denominator and reduce the need for flagging or suppression.

Confidence intervals

Alaska generates 95% logit confidence limits, assuming complex sampling with replacement. Confidence intervals provide a measure of how much an estimate might vary due to chance. If Alaska

BRFSS conducted this survey 100 times, approximately 95 of the 100 confidence intervals calculated would contain the true population value. A good way to think about the 95% confidence interval is that it provides a range of plausible values for the condition or behavior and gives us a sense of the precision of the estimate.