

# Appendix C: Data Sources & Technical Notes

## Primary Data Sources

Brief descriptions of the major data systems used in this *State Health Assessment* follow. Additional information is available [here](#).

- Behavioral Risk Factor Surveillance System
- Birth Certificate System
- Cancer Registry
- Census Population Counts and Intercensal and Postcensal Estimates
- Death Certificate System
- Healthy Youth Survey

## Behavioral Risk Factor Surveillance System (BRFSS)

### Purpose

BRFSS provides indicators of health-risk behavior, preventive practices, healthcare use and access, knowledge and attitudes about health-related behaviors and practices, and prevalence of selected diseases in Washington.

### Coverage

BRFSS surveys adults ages 18 and older living in non-institutional settings in Washington.

- Since 2003, it has been offered in English and Spanish.
- From 1987–2010, BRFSS included adults living in households with landline telephones. In 2011, the survey began including a sample of cell phones. The proportion of surveys completed on cell phones has increased from 5% of calls in 2011 to 47% in 2016.
- In addition to the statewide sample, since 2003, BRFSS has oversampled small counties to allow reporting of BRFSS information by county.

### Data Reporting

To maximize the ability to generalize from the sample to Washington State residents, CDC weights respondents' answers based on probability of selection into the sample and demographic characteristics of Washington's population. With the incorporation of cell phone respondents in 2011, the weighting methods changed to a method often referred to as 'raked weighting.' Because of this change in methods, data from 2011 on are not comparable to data in 2010 and earlier. We show this discontinuity with a break in the trend line on graphs.

### Limitations

- BRFSS does not represent people who do not speak English or Spanish. Estimates for Washington residents of Asian heritage are especially likely to be biased due to language barriers.
- BRFSS does not represent people who live in institutions or other group settings, such as dormitories, group homes, hospitals, in-patient drug treatment facilities, jails or prisons.

## Birth Certificate System

### Purpose

Birth certificates establish legal rights associated with birth, paternity and adoption, and provide public health information about births and newborns.

### Coverage

The birth certificate system covers all births to Washington State residents, including those for residents who give birth in other states; the Washington State Department of Health Center for Health Statistics estimates the system to be more than 99% complete.

### Limitations

High unknowns in some fields (such as the month prenatal care began and pre-pregnancy obesity) may make patterns and trends difficult to interpret.

## Cancer Registry

### Purpose

The Washington State Cancer Registry (WSCR) monitors the incidence of cancer to understand, control and reduce the occurrence and burden of cancer in Washington (RCW 70.54.230).

### Coverage

WSCR includes information on residents of Washington, including those diagnosed and treated in other states; the Department of Health WSCR program estimates that WSCR includes more than 95% of cancer cases in Washington residents.

### Limitations

Those reporting cancer cases to WSCR record information on race and Hispanic origin from the medical record or other reliable sources available at the time. Using information from the medical record alone historically resulted in underreporting of American Indian and Alaska Native (AIAN) and Hispanic people with cancer.

## Census Population Counts and Intercensal and Postcensal Estimates

### Purpose

The U.S. Constitution mandates a count of people living in the United States (the U.S. Decennial Census) every 10 years to determine how many seats each state will have in the U.S. House of Representatives. Locally developed intercensal and postcensal estimates provide population counts for noncensus years. Department of Health uses these data as denominators for calculating rates of health events.

### Limitations

Although the Census Bureau attempts to obtain information from every known household, homeless people, undocumented people who deliberately avoided the census for fear of disclosure to the Immigration and Naturalization Service, urban poor living over commercial addresses, and others may not be counted by the census.

## Death Certificate System

### Purpose

Death certificates establish legal benefits and provide information about causes of death and characteristics of decedents.

### Coverage

The death certificate system covers all deaths in Washington and those of Washington residents who die in other states; the Washington State Department of Health Center for Health Statistics estimates that the system includes 99% of deaths to Washington residents.

### Limitations

- Reported deaths in this report use the underlying cause of death.
- Underreporting of specific race and ethnicity classifications (such as among American Indian or Alaska Natives) may underestimate death rates for these groups.
- Death rates can underestimate the magnitude of health problems for deaths that might be underreported due to social stigma (such as AIDS and suicide) and for conditions that diminish the quality of life but are not fatal (such as chronic alcoholism).

## Healthy Youth Survey (HYS)

### Purpose

The HYS provides indicators of health-related risk and protective factors and health status among youth.

### Coverage

State and county samples and county censuses include public school students in grades 6, 8, 10 and 12. The survey is offered in English and Spanish and administered in even years since 2002. The Youth Risk Behavioral Surveillance System of the Centers for Disease Control and Prevention was also used for national rates.

### Limitations

- Data are self-reported and not otherwise verified.
- Most data reported are limited to 10<sup>th</sup> graders due to sample size and survey completion rates.

## Additional Data Sources

Brief descriptions of the additional data systems used in specific sections of this *State Health Assessment* follow.

### Air Quality

#### Section

[Outdoor Air Quality](#)

#### Purpose

The Air Quality Program is a source for air quality information in Washington that tracks air quality, determines if air quality meets standards, and evaluates health impacts (Washington State Department of Ecology).

[More information](#)

### American Community Survey (ACS)

#### Section

[Healthcare Access](#)

#### Purpose

The ACS is an annual survey of population, social, economic, and housing characteristics conducted throughout the U.S. by the Census Bureau with estimates down to census tract and block group level.

[More information](#)

### Community Outcome and Risk Evaluation (CORE) Information System

#### Section

[Domestic Violence & Sexual Violence](#)

#### Purpose

The Community Risk Profiles details the risk and protection profiles for substance abuse prevention planning using the Community Outcome and Risk Evaluation (CORE) Information System. CORE obtains and integrates data annually from the Washington Association of Sheriffs and Police Chiefs (WASPC): Uniform Crime Report (UCR), National Incident-Based Reporting System (NIBRS), and Population Estimates: Washington State Office of Financial Management, Forecasting Division (Washington State Department of Social and Health Services).

[More information](#)

### County Health Rankings

#### Section

[Access to Behavioral Health Providers](#)

#### Purpose

The County Health Rankings detail factors that influence health and show that health experience varies from area to area (Robert Wood Johnson Foundation and the University of Wisconsin).

[More information](#)

# Technical Notes

Technical notes pertinent to multiple sections are described below. Technical notes that are specific to individual sections are described in those sections.

## Area-Based Measures

### Percent living in poverty and percent college students

Sections that provide data from the Death Certificate System or the Washington State Cancer Registry use area-based measures of economic resources and educational attainment because records in these systems do not contain relevant individual-level measures. We use two area-based measures in a few sections of the *State Health Assessment*, 1) the percent living in poverty and 2) the percent of college graduates among census tract residents.

The percent of the population with a given characteristic such as living in poverty or graduating college describes the general economic or educational level of people in one's nearby community. The measures describe individuals themselves to some extent because people living in neighborhoods where, for instance, a high percentage of residents are poor are more likely to be poor themselves compared to people in neighborhoods where there is less poverty (and the same with college graduates). For reference, the federal poverty level in 2016 for a single person was \$11,880 and for a family of four was \$24,300.

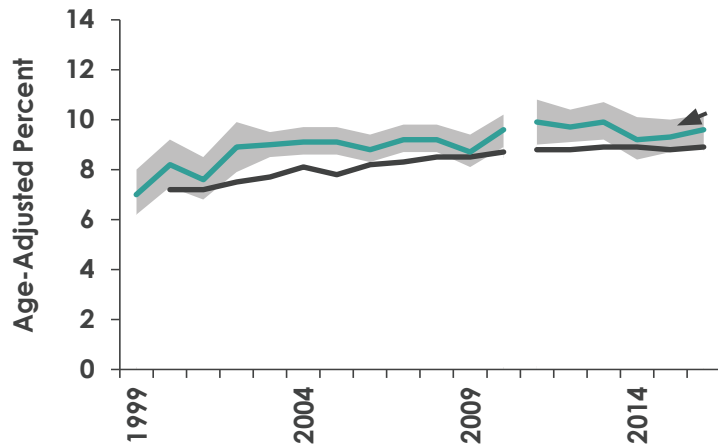
The U.S. Census Bureau uses census tracts (with 2,500–8,000 residents) to collect, tabulate and present census information. The American Community Survey (ACS), a part of the U.S. Census, provides information on poverty and educational level by census tract. We grouped census tracts into four categories for poverty (less than 5%, 5%–9.9%, 10%–19.9% and 20% or more of census tract residents living in poverty) and five categories for educational attainment (less than 15%, 15%–24.9%, 25%–34.9%, 35%–44.9% and 45% or more of census tract residents with college degree). Multiple years of ACS data were aggregated (e.g., 5 years) to produce census tract level estimates. We then assigned these values to the deaths and population to develop death rates and rates of cancer incidence by census tract category.

## Confidence Intervals

Confidence intervals provide a measure of how much a rate, percent or other estimate might vary due to random factors or chance. They are used with survey data to account for the difference between a sample from a population and the population itself. A 95% confidence interval captures the true value of the estimate in 95 out of 100 cases. Confidence intervals are generally large for small sample sizes and decrease as the sample size increases. Confidence intervals do not account for variation due to missing, incomplete, or inaccurate data.

For this report, the 95% confidence intervals are portrayed on line graphs with shading around the Washington State line, on bar and column charts with error bars, and in text as a number spread around an estimate (e.g.,  $\pm 1\%$ ) similar to the graphs on the next page.

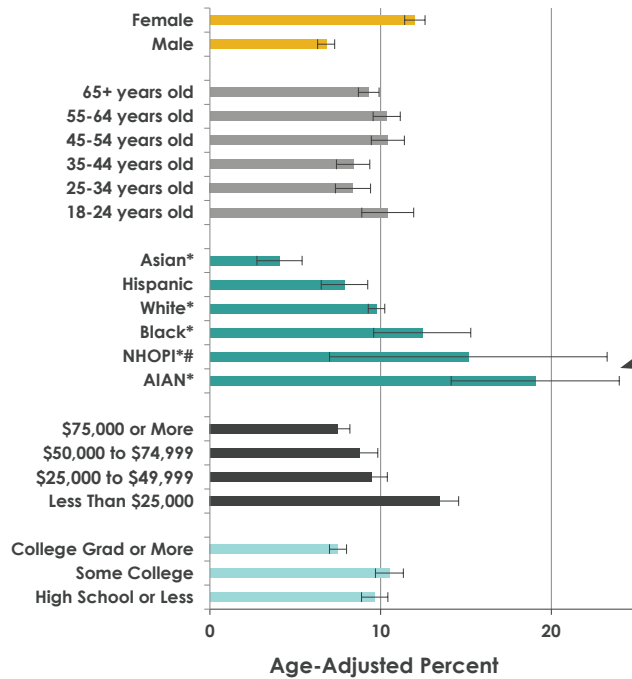
**Asthma Prevalence  
Washington State & US  
BRFSS, 1999-2016**



**95% Confidence Interval**

Graph shows 95% confidence interval for the Washington rate as grey shading. For ease of use, only the 95% confidence interval for Washington is displayed.

**Asthma  
Washington State  
BRFSS, 2014-2016**



**95% Confidence Interval**

Graph shows 95% confidence interval for the Washington rate as error bars.

## Race and Ethnicity

Race and ethnicity categories follow the [federal standards for reporting on race and ethnicity](#) and reflect self-identified race and ethnicity, with the exception of death data. In analysis, Hispanic or Latino ethnicity was considered before race. Data presented for Hispanics includes Hispanics of any race. Data presented for the five race categories: American Indian or Alaska Native (AIAN), Asian, black or African American, Native Hawaiian or Pacific Islander (NHOPI) and white includes only non-Hispanics. In addition, these race categories include people who identify with a single race only. The 4% of Washingtonians who identify with multiple races are not presented. This will have a greater impact on younger populations who are more likely to identify with multiple races. We have not included multiple races as we don't currently have denominators for all people who identify with a given race. In addition, this group represents people with a variety of different identities. A higher proportion of people identifying as AIAN and black identify with multiple races and are more impacted by this exclusion. It is also important to note the single race only categories (e.g., American Indian or Alaska Native, Asian, black, Hispanic, Native Hawaiian or Other Pacific Islander, white) presented throughout the *State Health Assessment* include aggregate groups of people and may obscure differences in health status and risk or protective behaviors of subpopulations. For example, subpopulations of Asians, such as Chinese, Filipino, Asian Indian, Vietnamese, Korean and other groups may have different health status from what is presented for Asians. Similarly, African born black populations may have different health status from U.S. born blacks and what is presented for blacks. Because people identifying with multiple races make up a larger proportion of those identifying as AIAN and black, caution should be used in interpretation. Also note that race and ethnicity categories are aggregate groupings and may obscure differing health status and risk behaviors of sub-populations.

## Relative Standard Error

The relative standard error (RSE) provides a measure of reliability (also termed 'statistical stability') for statistical estimates. When the RSE is large, the estimate is imprecise and we term such rates or proportions 'unstable' or 'not reliable.' In these instances, the data analyst needs to balance issues of the right-to-know with presenting data that might be misleading.

For this report, any data element where the RSE was 30% or greater was suppressed due to the unreliability of the estimate. Data elements where the RSE was between 25% and 29% were annotated with a flag (#) to suggest using caution with the potentially unreliable estimate.

## Rural Urban Geography Classification

The Washington State Department of Health (DOH) Rural-Urban Classification Scheme is derived from the Rural Urban Commuting Areas (RUCA) codes created for the Federal Office of Rural Health and Policy (OFRHP) based on Census 2010 data and information for all census tracts (and approximation of the RUCA codes for all ZIP codes) in the United States. The basic framework of RUCA codes is grouped into four levels based mainly on population size and patterns of primary commuting flow. The DOH Rural-Urban Classification Scheme put the basic framework of the census 2010 based RUCA codes in context and created a modified four-tier rural-urban classification scheme at the sub-county level (census tracts and ZIP codes) of geography. This modified scheme refocused on population size and population density. The four categories include: Urban core (larger populations of 50,000 or more and primary flow within the urbanized area), Suburban (moderate population of 10,000-49,999; primary flow within large urban cluster; population density over 100 per square mile), Large town (population of 2,500-9,999; primary flow with in small urban clusters; population density over 100 per square mile), and Small town/Rural (population under 2,500; primary flow outside an urbanized area/urban cluster; population density less than 100 per square mile). The DOH rural-urban classification guideline document is available from [www.doh.wa.gov/Portals/1/Documents/1500/RUCAGuide.pdf](http://www.doh.wa.gov/Portals/1/Documents/1500/RUCAGuide.pdf).