2023 Data Analysis & Technical Assistance Manual

Sponsoring Washington State Agencies:
Health Care Authority - Division of Behavioral Health and Recovery
Department of Health
Office of Superintendent of Public Instruction
Liquor and Cannabis Board

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Washington State Healthy Youth Survey 2023

Data Analysis & Technical Assistance Manual

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The Healthy Youth Survey was administered by the Washington State Health Care Authority Division of Behavioral Health and Recovery, the Department of Health, the Office of the Superintendent of Public Instruction, and the Liquor and Cannabis Board. The Healthy Youth Survey Planning Committee includes members of these state agencies and oversaw the implementation of the 2023 survey.

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Contents

Introduction

Purpose

- Establish standard methods for simple frequency and crosstab analysis of Healthy Youth Survey (HYS) data.
- Support STATA programming of HYS analysis. These concepts can be translated into other software languages by users.
- This manual will focus on STATA, Version 16.

Audience

People who conduct or request analysis of HYS data:

- Department of Health (DOH) epidemiology/research staff
- Health Care Authority (HCA)/Division of Behavioral and Health Recovery (DBHR) or other state agency research
- Tribal Epidemiology Centers
- Local health jurisdiction staff
- Other community partners
- Researchers and graduate students

Uses

This manual was developed to be used by a variety of people:

- Experienced or novice STATA users new to the HYS
- People familiar with the HYS but new to STATA
- Those seeking to understand HYS data analysis best practices more broadly

While this manual provides basic information about analyzing the HYS, it is by no means exhaustive. Nor does it present the only way or the best way to run analyses. As STATA users know, there are multiple ways to program to achieve the same results.

Manual Layout

This manual is accompanied by examples of STATA coding and tables and charts. In the manual STATA coding and output are formatted as:

STATA coding is highlighted in grey STATA results are in STATA output format

This manual includes references to other sections of this document and to outside websites. References to outside websites do not imply endorsement by the state agencies involved in HYS.

The manual is divided up into the following sections:

1. HYS Overview
    - Provides a brief overview of the survey, its history and goals
2. Getting Access to HYS Data
    - Describes our data sharing agreements and terms of use
3. Getting to Know your Data
    - Describes common HYS variables including demographic, 30-day and lifetime substance use, calculated and computed variables, and risk and protective factors
    - Provides computed variable coding
4. Getting to Know STATA
    - A table with commonly used STATA commands
5. HYS Data Analysis in STATA
    - Describes how to set up STATA for different types of data, how to explore your data, transform it and run some simple analyses
    - Includes a "do file" in the appendix with coding
6. HYS Data Analysis – Quick Examples
    - Provides an example of how to run crosstab analyses in STATA using state data, county sample, census or mixed data, and ESD data
    - Includes a "do file" in the appendix with coding
7. Comparing State and Local Data
    - Describes how to combine state and local data and compare local data to the rest of the state sample
8. Comparing Years of Data
    - Describes how to combine years of data and compare one year to another
9. Combining Grade Levels
    - Describes how to combine grades and create "high school" estimates for comparison with other surveys
10. Adding Additional Data
    - Describes how to add additional data to your HYS dataset by merging.
11. Checking Findings and Significance Online
    - Describes the information available on the www.AskHYS.net website and how to use it to verify your analysis results
12. Displaying Results
    - Provides some tools to help you display the results of your STATA analysis
    - Includes a "do file" in the appendix on graphing in STATA
13. Web Resources

Special Considerations for HYS 2023, Methodologic Changes and the COVID-19 Pandemic

Due to the unexpected shift to primarily remote learning in 2020 as a result of the COVID-19 pandemic, the HYS was not administered in fall 2020 as it was originally intended. Instead, the HYS Planning Committee determined it would be best to delay the survey to fall 2021, thereby switching to an odd-year administration. The decision was made to expand e-survey/online survey administration across the state and in 2023, the survey was fully online.

Changes to the survey years (even to odd), the shift to an online survey, and other methodologic changes in 2023 influence how we interpret data trends over time. Delaying the survey by a year changed the cohort of students being surveyed. HYS has historically been offered in Fall of even years to students in grades 6, 8, 10 and 12, So, roughly the same cohort of students were ultimately being surveyed every two years as they advanced. For 2021 and 2023 this cohort shifted. It is too soon to determine if this has had a measurable impact on the results and how this potential impact might interact with other survey and contextual changes.

The Planning Committee chose to halt plans for a more extensive evaluation of the online survey mode compared to paper that was scheduled for HYS 2020. Instead, the shift to an online survey mode without the in-depth comparison makes it more difficult to determine whether the survey mode (paper vs e-survey) has an effect on how students answer questions. Only a very small number of schools elected to do the survey on paper in 2021 and the survey was fully online in 2023, so the robust comparison will not be conducted at this time.

Schools were allowed to administer HYS remotely in Fall 2021 to accommodate students who may be doing hybrid or fully distanced learning. The vast majority of students took the survey in-person at school, though a small number did take the survey remotely. In 2023, online/virtual schools were permitted to administer the survey remotely if it could be administered synchronously, but again, the vast majority of students took the survey in person. The potential impact of having students complete the survey remotely is still being assessed and will take additional years of data to fully understand. For now, the number of students doing the survey is small enough that we do not believe it will have a meaningful impact on analyses.

The pandemic itself has led to massive changes in the lives of Washington youth. Changes in HYS 2021 and 2023 data may be more a reflection of the pandemic and its effect on the lives of youth than changes that would have happened if the pandemic had not occurred. This means that trend data from before the pandemic and during/after the height of the pandemic should be interpreted with tremendous caution. For example, a large decrease in one particular risk behavior on school property may be explained by a new school education campaign or program or it may be explained by the fact that students are doing more remote learning.

While HYS 2021 was a particularly unique survey year, HYS 2023 is the beginning of a new survey era. Several methodologic changes have been put into place, including skip and display logic, a new survey platform, randomization, and more languages. As a result, the survey is becoming both more accessible to all students and the data it produces are more useful. However, the potential impact of these changes will take time to assess, and a single year of

data is likely not enough to fully distinguish between true data trends and changes resulting from the methodology. As more data are collected, the Planning Committee will continue to evaluate and share recommendations on interpreting results.

Due to concerns about the impacts of survey administration changes in 2021/2023 and COVID-19, we recommend using caution when analyzing changes from previous HYS administrations and trends.

Other Issues in Analyzing Healthy Youth Survey Data

The Healthy Youth Survey is a large-scale effort and involves a number of complexities which affect data analysis. These issues are discussed throughout this manual and are also summarized below. They include:

- Complex sampling designs and survey designs that vary between geographic areas
- Comparisons of state and county data
- Elementary and Secondary versions of the questionnaire
- Surveying particular grades
- Response rates and valid survey rates, which are estimated based on available data before final enrollments become available
- Cell size or small numbers considerations

Sampling Designs and Accounting for them in Analyses

The Healthy Youth Survey is intended to provide information about students in public schools at a variety of geographic levels: state, county, Educational Service District (ESD), district, and school (or in the case of small schools, groups of schools). The design for these different geographic levels varies. For schools, school districts, and most counties, a census design is used in which all students in that area are asked to participate. For large counties and statewide, in order to increase efficiency, we use a complex sampling design in which we select random samples of schools and then recruit all students in the grades of interest in participating schools. In the absence of drawing a sample, we assume a census design for the purpose of analysis.

State level

At the state level, in order to efficiently provide information that is representative of students in public schools statewide, we select three simple random samples of public schools in the state containing grades 6, 8, and 10/12. Sampling status is not used as part of recruitment. All schools are recruited the same way. Beginning in 2021, Tribal schools and charter schools were also included the state sampling frame. All of the students in these sampled schools in the surveyed grades are asked to participate. This "clustered" sampling design reduces student to student variability because students in the same school may tend to answer survey questions in similar ways; that is, the data are correlated within schools. We adjust for the clustered design by using a statistical program developed to analyze data from complex sampling designs. Since the sample is drawn by randomly selecting schools within grades, the grade/school combination (schgrd) is the primary sampling unit (PSU). (On non-identified datasets, schgrd is replaced by a

sequential variable called "psu" that is converted from schgrd to remove identifying information.)

Using a statistical analysis that incorporates the design used and designating the PSU is necessary in order to obtain correct standard errors, confidence intervals, and significance tests. Using an analysis that adjusts for the clustered sampling design compensates for the reduced variability due to intra-correlation within schools and provides error estimates that should approximate what would have been obtained with a simple random sample. Not accounting for PSUs will generally underestimate the variability in the sample and give you lower standard errors and narrower confidence intervals.

Local levels

To produce local results, schools not selected for the state sample are also invited to participate in the survey. Most local data assume a census design, in which all students in the grades of interest in that area would ideally participate. In order to use these data to generalize beyond the particular students surveyed (e.g., to intervening years or to students who may have not been surveyed) these data can be analyzed, and confidence intervals obtained by using a random sample design. In these cases, the PSU is the individual student so you do not need to set a PSU and you can use any statistical program.

In large counties, where there will be a gain in efficiency by drawing a sample instead of a census design, county-level samples are drawn. The criteria for drawing a sample at a particular grade in a county is that there need to be at least 30 schools in the county containing that grade. County samples are drawn by beginning with schools selected for the state sample in that county and adding an additional random sample of schools. When analyzing counties with county samples, the school building is designated as the PSU to compensate for the clustering effect (as in the state sample).

Combined local levels.

In order to combine data from geographic areas that used different sampling designs (such as ESDs which can include both sampled and census counties, or comparisons between a census county and the state sample) more complicated approaches may be necessary. Also, although the individual samples are designed to be self-weighting, combining data using different designs may require weighting the data. Depending on your data and analysis goals, there are multiple ways to weight your data. See the instructions below for setting up your data for analysis and how to designate the PSU depending on your specific data.

NOTE: For more information on sampling design see the Sampling section. For more information on data analysis depending on your sampling design see the General Set Up for Survey Analysis section.

Comparisons of County and State Data.

Schools in the state sample are also in the county, and so there is overlap between county and state data. Thus, when comparing a county to the state, there are two ways to do the comparison:

1. Compare the county to the *entire* state sample, including schools in the state sample that are also in the county.
2. Compare the county to the *rest of* the state sample with all of the schools from the county removed from the state sample.

For most counties, the number of schools that are in the state sample is generally too small to raise a concern and both options will give similar results. But technically, to conduct statistical comparisons, it is necessary to have the county and state respondents independent of each other. Thus, we recommend the following when conducting comparisons between the county and the state:

- To determine statistically significant differences, remove the county schools from the state sample dataset prior to comparing.
- To report state point estimates and confidence intervals, use the full state sample (not the results with the county schools removed). This way your results will not contradict the previously published state results.

NOTE: For more information see the Comparing State and Local Data section.

Multiple Forms of the Questionnaire

From 2002 through 2021, there were three versions of survey questionnaires: one version for grade 6 (C), and two versions (A and B) for grades 8, 10, and 12. The two versions A and B were randomly distributed. Thus, questions from those survey years that are only on one version cannot be crossed with questions that are only on another version. For 2023, there were two versions of survey questionnaires, one for 6th grade (Elementary) and one for grades 8, 10, and 12 (Secondary). The Secondary question was redesigned in 2023 so that all questions can be crossed.

Some items on the questionnaires are removable questions that schools could remove prior to administration (2002-2008 and 2016-2021), enhanced versions of the surveys that schools could request upon registration (in 2012 and 2014), or questions that schools could request exemptions for (in 2021 and 2023). These removable or enhanced items have much smaller numbers of responses than other items. These factors also mean that while there are a relatively large number of participants in the HYS, the number available for detailed breakdowns for certain questions may be much smaller. For some analyses, it may be necessary to combine data from two or more years or across grades to obtain adequate numbers.

NOTE: More detail on these issues is provided in the Survey Questionnaire section.

Surveying Particular Grades

The Healthy Youth Survey is conducted in grades 6, 8, 10 and 12. It is highly recommended that analysis be limited to a single grade. However, there are situations in which combining grades may be desirable, for example when comparing to the high school estimates from the Youth Risk Behavior Surveillance System (YRBSS), or if there are very small numbers that cannot be reported.

NOTE: More detail on this is provided in the Stratified Analysis and Subpopulations section.

Starting in 2014, schools from small districts could also survey additional grades – 7th, 9th, and 11th. School districts were considered small if they had fewer than 150 students enrolled in one of the surveyed grades 6, 8, 10, or 12. If schools surveyed these grades, they could get individual grade level results and combined grade results for Middle School (grades 6, 7, and 8 combined) and for High School (grades 9, 10, 11, and 12 combined).

Combined grade results are weighted so that each grade contributes equally, using the "smallschoolstateweight", "smallschoolcountyweight", "smallschooldistrictweight" or "smallschoolschoolweight" variables.

Survey Participation

Participation rates for the Healthy Youth Survey are calculated by the number of valid surveys returned divided by the total enrollment for region (i.e., the school, district, county, ESD, or state). Adequate participation rates are necessary to help ensure that the results are representative of the larger region.

There are a number of factors that may influence participation rates, including non-participating schools, participating schools not surveying all students in the grade, students' absences, students opting out of taking the survey, and the loss of surveys during the data cleaning process.

NOTE: More information about the response rates and about analyses conducted to examine possible sources of bias in the data are available in the Participation Rates section. Additional details on potential participation related bias is shared in the 2023 Bias Analysis report: https://www.askhys.net/SurveyResults/OtherStateReports.

Cell Size for Crosstabulations

To report results, you must have at least **5 observations per cell** when running crosstabulations of state level data, or at least **10 observations per cell** when running sub-state level cross tabulations. There are no cell size requirements for running results for a single question.

HYS Overview

This section provides a brief overview of the survey, its history and goals.

Survey History

The first "Healthy Youth Survey" to assess student risk/protective factors and health behaviors was administered to Washington students in October 2002 and was scheduled for administration every two years, in the Fall of even-numbered years. This document provides a brief description of the survey's purpose and implementation, to help provide a common understanding for community and school stakeholders.

Nationally, trends in youth behaviors and risk/protective factors have been measured using federally developed school-based surveys such as the Monitoring the Future Survey (MTF), and the Centers for Disease Control and Prevention's Youth Risk Behavior Surveillance Survey (YRBSS) and Youth Tobacco Survey (YTS).

State agencies have organized eighteen statewide youth surveys between 1988 and 2023. After survey was delayed for a year due to COVID-19, HYS is now back on a two-year cycle and administered during the fall of odd-numbered years. The most recent survey in 2023 was taken by about 217,000 students in 871 schools, in 212 school districts, and in all 39 of Washington's counties. The next survey will be administered in October 2025.

The implementation and content of Washington youth surveys have changed over time. For example, prior to HYS, four of the previous seven surveys were given to youth during fall months, and three were given during spring months. The surveys in 1988, 1990, and 1999 had a health-risk focus, whereas surveys in 1992 and 1998 were centered on risk and protective factors. More recent versions of the survey—1995, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, and 2018—are a combination of both. The years of administration were also not systematic (that is, there was no pattern for which years the surveys were given). The lack of consistent survey attributes meant that surveys were not necessarily comparable to each other over time and school personnel being asked to participate in each state survey had to learn what was uniquely expected or included in each survey process.

In the late 1990's, interest in youth surveys and need for data for planning and evaluation of science-based programs to support youth both increased. School administration and staff were receiving requests to participate in the various state surveys, national surveys, research studies, and community-generated or school system-generated surveys.

Simultaneously, beginning in 1997, Washington began to implement required student achievement testing as part of evaluating educational systems. The Washington Assessment of Student Learning (WASL) test was required for administration to students in grades 4, 7, and 10. Implementation of this test disrupted several days of instruction for schools in the spring of each year. The names for these achievement tests have changed over time but take several days and occur in the spring. The 2021, achievement testing occurred during the fall, since the testing was cancelled for 2020 due to COVID-19.

State Superintendent of Public Instruction Terry Bergeson determined in 1998 that state agencies must cooperate to administer only one survey of youth behaviors every two years in the fall. In response, staff from OSPI, DBHR, DOH, the Department of Commerce (CTED) and the Governor's Family Policy Council formed the Joint Survey Planning Committee (JSPC). In 2014, the committee was renamed the Healthy Youth Survey Planning Committee (HYSPC) and included OSPI, DBHR, DOH and the Liquor and Cannabis Board.

Common Goals

The HYSPC first identified issues of interest to each agency and to local constituents. These included:

- Describing school, community, family, and peer-individual risk and protective factors (similar to the "Communities that Care" model developed by the University of Washington Social Development Research Group – including Dr. Hawkins and Dr. Catalano)
- Describing youth health habits, risks, and outcomes
- Gathering state-level data in a consistent way (with predictable timing and using comparable measures over time)
- Supporting local-level data collection and use for planning/assessment and evaluation of programs to serve youth

Agreement about Survey Features

After agreeing on common goals, agencies negotiated specific features of the survey – to be called the "Healthy Youth Survey"—necessary to achieve these goals. Although some specifics, such as the modality of administration, organization of survey forms, and specific years administered have shifted to accommodate technological advancement and improvements in efficiency, the spirit of these common goals remains.

The original agreed-upon features of the survey are as follows:

1. Only one statewide school-based survey of youth will be administered, supported by all state agencies. State agencies in the planning committee agreed to not conduct independent surveys of schools to gather youth data. This agreement should increase efficiency of surveys that are conducted and reduce the burden on schools for surveys. Agencies understood that this would mean challenges in coming to agreement on content for a unified survey.
2. A simple random sample of schools will be recruited at the state level, and county samples will be provided (as appropriate). Methods used to identify a sample of schools to be included in state surveys had changed over time. These changes can have some impact on results, and also complicate year-to-year comparisons of data. Identification of a simple sampling plan makes the survey easier to manage and analyze. The disadvantage of this method is that few schools in any particular area would be included in the state sample, but the planning committee agreed that local schools would be

provided some way to "piggyback" (voluntarily participate) to gather local-level data, and county samples could be drawn for counties that are large enough to do so.

3. The survey will be consistently administered in Fall every two years. This predictable timeline will avoid conflict with student achievement testing, to allow schools and communities to have data available for spring grant writing/needs assessment activities and help school administrators to plan ahead for participation.
4. Gathering of data in the fall does make comparison to some national surveys (YRBS, YTS) more difficult, because those surveys are conducted in spring months, when youth are older and more likely to engage in risky behaviors.
5. The survey will mainly be given to 6th, 8th, 10th, and 12th graders. Data collection of these grades on a two-year cycle will enable communities and state agencies to watch "cohorts" of youth over time. In other words, the 6th graders who take the Fall 2014 survey will participate as 8th graders in the Fall 2016 survey, and so on. In comparison to national surveys such as the YRBS and YTS, which are given to 9-12th graders, this method will collect more data from younger youth, which is important for early prevention efforts.
6. To manage the length of the survey with the breadth of information desired by agencies and partners, different techniques will be used to maximize questions asked while minimizing student survey burden. Historical use of multiple survey forms and contemporary use of online survey methods will achieve this.

HYS 2023 Survey Questionnaires

The HYS includes two different survey questionnaires – a Secondary version for students in 8th, 10th, and 12th grade and an Elementary version for students in 6th grade.

For details about which questions are on a specific version in 2023 and over time, see the Data Dictionary and Crosswalk on the AskHYS Data Resources page: https://www.askhys.net/Resources/Data.

You can also view the Elementary and Secondary 2023 survey questionnaires along with older surveys on the Survey Questionnaires page: https://www.askhys.net/Resources/SurveyQuestionnaires

For details on the changes to the survey forms and exempt/removable questions see the Content Changes Over Time section of the manual. For details about specific changes for each survey administration, see the Questions on the survey have changed over time section on the Survey Questionnaires page: https://www.askhys.net/Resources/SurveyQuestionnaires

Secondary Survey

Prior to 2023, HYS used two questionnaires for grades 8-12: Forms A and B. The 2023 HYS switched from using Forms A and B to a single Secondary survey that employed a Core/Bank model for grades 8-12. To manage the length of the survey with the breadth of information desired by partners, only a subset of "core" questions was asked of all students in grades 8-12. The remaining "bank" questions were randomized so that each student received about half of the questions. In 2023, the Secondary Survey included 75 core questions and 183 bank

questions. Some the questions used skip/display logic and were asked if students answered a "gate" question in a specific way. Twenty-six core questions and 18 bank questions utilized skip/display logic. Schools could request exemptions for four bank questions on sexual behavior and two bank questions on sexual violence.

In 2023, schools could request an exemption if they did not want to ask the 6 questions on sexual behavior and violence. This was a different process from earlier years when schools could indicate that they did not want to ask these questions at registration, or they could physically tear off the questions from the back page of the paper survey forms.

Elementary Survey

Questions on the Elementary survey are mostly consistent with the questions on the Secondary survey but includes fewer questions and some questions have been simplified. These differences are because 6th grade youth do not have reading skills to complete a longer survey, because some questions applicable to older youth are not appropriate for younger youth, and because there are more small buildings for 6th graders than for older grades where giving results would be affected by having only half the youth take a particular version. In 2023, there were 116 questions on the Elementary survey.

In 2023, schools could register to ask an additional question on gender identity on the Elementary survey.

HYS 2023 Implementation Schedule

- **January 2023:** state and county samples identified by the Department of Health and approved by the WA State Institutional Review Board
- **March 2023:** survey content finalized; recruitment letters sent to Washington school administrators
- **March 2023-September 25, 2023:** recruitment of schools to participate
- **June 30, 2023:** last day for schools to sign up for the survey
- **September 2023:** Survey coordinators complete an online training, work with school IT support staff to prepare for the survey, notify parents and students about the survey, and train classroom teachers to administer the survey
- **October 9-27, 2023:** schools administer survey to youth
- **March 2024:** reports of results and fact sheets for schools, districts, counties, ESDs and the state will be posted on www.AskHYS.net.

HYS 2023 Administration

There were three major differences in the 2023 HYS administration from previous surveys.

The 2023 survey was only offered as an online survey instead of a paper and pencil survey (all surveys from 2002 through 2018 and a small number of surveys in 2021 were paper and pencil).

Schools without traditional classroom settings had the option to administer the survey in a remote setting but were required to administer the survey synchronously and in a classroom type of environment (students were not allowed to take HYS on their own time).

There was only one version of the survey for students in grades 8, 10, and 12. From 2002 through 2021 there were two versions of the survey for students in those grades. The 2023 version of the survey included skip/display logic that had not been included in previous survey years.

State and County Sampling

Most public schools in Washington State with grades 6, 8, 10, and 12 are eligible to participate in HYS, including charter schools and tribal schools. Some schools that don't have typical classrooms where students can take the survey, including online schools, parent support/home school programs, and special education, aren't automatically included as eligible for HYS, but can request to take HYS as long as they can ensure student anonymity. Institutions and correctional facilities are not eligible for HYS.

A simple random sample of eligible public schools with at least 15 students per grade is drawn (based on the most recent enrollment figures from OSPI). Among the sampled schools that choose to participate, schools can invite all students in the surveyed grades to participate.

- Three samples are drawn: one for 6th grade schools, one for 8th grade schools, and one 10th and 12th grade schools combined (since the grades are often in the same school).
- Non-sampled schools are also invited to participate in the survey; participation allows these schools to obtain their own school results and to contribute to district-, county-, and ESD-level results.
- County samples are drawn for counties with more than 30 schools in a grade. In 2021, King, Pierce, and Snohomish (grades 6, 8 ,10 and 12), and Spokane (grades 6 and 8) had county samples drawn. The responses from these sampled schools were used to produce county-level estimates.
- For all other counties, the responses from all schools are used to produce the county-level estimates, whether they are in the state sample or not.
- There are no differences in the way sampled and non-sampled schools are recruited to participate.
- Sampled schools that do not participate are not included in the results. However, to understand the differences between those that did and did not participate a Bias Analysis is developed examining school level factors available from the Office of Superintendent of Public Instruction.

For the 2023 and prior HYS administrations, funds were available to support non-sampled schools to register for the survey at no cost. This funding is not guaranteed for future HYS administrations. The combination of schools in the state sample and schools that participate that are not in the sample are considered the statewide census.

Survey Participation Rates

Calculating response rates for the Healthy Youth Survey is complicated by a number of factors:

Loss of data to non-response and during cleaning.

Reasons for data being unavailable included 1) refusals to participate by some schools, 2) students being absent, parents opting out their students, students opting out, or students being away from their school during survey administration, and 3) cases discarded during cleaning based on an algorithm that includes the amount of missing, inconsistent , and improbable responses, responses to a question asking about fictitious drug use, and responses to a question asking about honesty of responding.

Levels of aggregation.

Response rates for local data were calculated by dividing the number of valid surveys in the sampled schools by the total enrollment in schools selected for the sample. Although issues affecting data lost to non-participation and data discarded during cleaning may be different, the vast majority of unavailable data was due to non-participation in the survey, and only about 2% of data collected is discarded during cleaning. Thus, these figures (actually the valid survey rates) provide estimates of the response rates.

In 2023, state and sampled county response rates were calculated by dividing the number of participants in the sampled schools by the total enrollment in schools selected for the sample. Valid survey rates were calculated by dividing the number of valid surveys in the sampled schools by the total enrollment in schools selected in the sample.

Non-sampled county, school district, and school building response rates were calculated by dividing the number of participants in all relevant schools by the total enrollment in those schools. Valid survey rates were calculated by dividing the number of valid surveys in those schools by the total enrollment in those schools.

2023 response rates were calculated using fall 2023 OSPI enrollment data.

See Tables below for information about the state response rates and participation from HYS administrations.

HYS Student Response Rates for State Sample by Year

Grade	2002	2004	2006	2008	2010	2012	2014	2016	2018	2021	2023
Grade 6	61%	68%	78%	76%	16%	76%	79%	27%	76%	72%	73%
Grade 8	65%	73%	70%	77%	77%	77%	79%	80%	76%	71%	74%
Grade 10	44%	58%	63%	60%	60%	60%	67%	69%	66%	70%	64%
Grade 12	40%	49%	51%	50%	50%	50%	50%	49%	46%	44%	40%
Total	50%	61%	65%	66%	66%	66%	68%	69%	66%	64%	63%

Number of HYS Participants (with Valid Surveys) by Year, State Sample and Census Schools

Grade	2002 Sampled	2002 Not Sampled	2004 Sampled	2004 Not Sampled	2006 Sampled	2006 Not Sampled
Grade 6	7,928	32,588	7,862	46,178	8,825	46,031
Grade 8	7,424	32,788	8,466	45,942	8,912	47,970
Grade 10	5,127	26,847	8,059	36,564	8,514	41,458
Grade 12	4,133	20,299	5,876	26,024	6,280	30,308
Total	24,612	112,522	30,263	154,708	32,531	165,767
Census*		137,134		184,971		198,298

Grade	2008 Sampled	2008 Not Sampled	2010 Sampled	2010 Not Sampled	2012 Sampled	2012 Not Sampled
Grade 6	9,068	48,566	11,549	45,756	8,229	48,654
Grade 8	8,730	50,687	9,723	48,119	10,202	46,966
Grade 10	6,907	46,181	6,889	45,997	8,372	42,779
Grade 12	5,641	35,071	5,908	37,390	6,467	32,521
Total	30,346	180,505	34,069	177,262	33,270	170,920
Census*		210,851		211,331		204,190

Grade	2014 Sampled	2014 Not Sampled	2016 Sampled	2016 Not Sampled	2018 Sampled	2018 Not Sampled
Grade 6	9,129	50,250	9,722	53,614	9,604	55,910
Grade 8	10,673	48,944	8,662	53,812	8,895	53,224
Grade 10	8,821	45,296	10,835	44,766	8,096	47,665
Grade 12	6,639	33,479	7,590	31,392	5,676	33,459
Total	35,262	177,969	36,809	183,584	32,271	190,258
Census*		213,231		220,393		222,529

Grade	2021 Sampled	2021 Not Sampled	2023 Sampled	2023 Not Sampled
Grade 6	8,426	43,903	9,696	48,949
Grade 8	7,691	50,230	8,148	50,844
Grade 10	9,378	40,613	7,105	46,038
Grade 12	5,672	27,664	4,160	29,561
Total	31,167	162,410	29,109	175,392
Census*		193,577		204,501

*Census does not include 7th, 9th, and 11th grade respondents that took the survey in 2014 through 2023. Total also does not include respondents who answered the wrong form and students from private schools.

Availability of Enrollment Figures

The denominators used for calculating response rates and valid survey rates are drawn from OSPI October enrollment figures (available online at the OSPI website: https://ospi.k12.wa.us/data-reporting/data-portal). The enrollment figures are reported by schools and compiled by OSPI, and prior to the 2012 administration final results had not been available when the Healthy Youth Survey results were reported in the spring of the following year. In order to provide the "best available" estimates of response rates with the reports, these are calculated using the previous year's enrollment figures. Starting in 2014, fall enrollment figures were available in time to calculate response rates. In previous years, state sample response rates were re-calculated but local response rates were not.

Importance of Participation Rates

Participation or response rates are determined by the number of valid surveys returned divided by the total enrollment (or estimated enrollment before final enrollment figures become available). In general, the following guidance may be used when using county- level Healthy Youth Survey data. If the response rates are:

- 70% or greater: The HYS results are probably representative.
- 40-69%: The HYS results may be representative of students but further examination of other data (by school or district) to identify any important differences between participants and non-participants should be completed before generalizing results to the county.
- Less than 40%: Response rates less than 40% are quite low, and these HYS results should not be interpreted as representative of the county.

Data for grades with less than a 70% response rate should be interpreted cautiously. If certain groups of students did not take the survey, there may be limitations even if there is a high response rate.

NOTE: For information on participation rates, Past Participation: https://www.askhys.net/SurveyResults/PastParticipation

Validity, Reliability and Generalizability

Validity is the degree to which the results are likely to be true, believable, and free of bias to enable generalizing to a larger population. A survey item is valid if it accurately measures the concept it is intended to measure. A number of methods are used to help ensure validity, including:

- Sampling
- Using items from established youth surveys such as the YRBS and YTS
- Piloting new, untested questions with youth
- Data cleaning

Only "valid" surveys are included in the final dataset. The contractor uses a series of quality controls to remove data that were incomplete, obviously inaccurate, or internally inconsistent. For 2023, about 230,000 surveys made it through the pre-processing cleaning steps (removing surveys that were submitted not during school hours/administration window, that were incomplete or duplicate responses). Quality control checks identified about 10,000 surveys that were culled to being mostly blank. Then about 4,500 surveys were culled for the following reasons (about 2%):

- Inconsistent answers
- Evidence of faking high level of substance use
- Selecting more than 20 different race/ethnicities (new check for 2023)
- Dishonesty

Reliability is the extent to which a survey measure, procedure or instrument yields the same result on repeated trials. A survey item is reliable if it consistently produces the same results under the same circumstances. HYS ensures reliability by:

- Using standardized administration procedures (e.g., coordinator training, teacher training, written instructions, teacher stays in room but at desk, single class period to avoid discussion, absent students do not make up).
- Providing a safe and confidential environment
- Informing students about the importance of survey
- Keeping student responses confidential (no collection of student name or other identifying information)

Confidence Intervals

Confidence intervals are used with the survey data to give an estimate of how accurately you can generalize from samples, such as the state sample, to a larger population, such as students in public schools in Washington, assuming that the data are not biased.

Specifically, the 95% confidence interval gives the range that should contain the true population value 95% of the time.

Bias Analysis

Survey responses are often used to estimate the frequency of behaviors or other characteristics in a population larger than those who actually completed the survey. Thus, while only a portion of students in the state took the Healthy Youth Survey in 2023, we would like to use their responses to characterize all 6th, 8th, 10th, and 12th graders in Washington. This is only possible if those who participated in the Healthy Youth Survey are not different in their behaviors from those who did not participate. If they are different, we say that the survey is biased, and we are then limited in our ability to generalize the results to all students. Bias represents systematic error and is different from the random fluctuation that is measured by confidence intervals.

Comparisons could be done using information from sources such as the census, school achievement test results, or other demographic information.

A bias analysis of the 2023 HYS will be available in July 2024 at: https://www.askhys.net/SurveyResults/OtherStateReports

Bias analysis of previous HYS administrations have found the HYS may not represent smaller geographic areas and may be subject to bias due to non-participating schools and students. Results may underrepresent students in small schools, alternative schools, schools with lower percent minority enrollment, and secondary schools with higher free/reduced lunch rates and lower on- time graduation rates. They may also underrepresent alternative schools and appeared to be due to the fact that alternative schools were less likely to participate in the Healthy Youth Survey, compared to non-alternative schools.

For past HYS administration, caution was recommended when using questions at the end of the non-removable portion of the questionnaires because younger students were increasingly likely to "drop off" in completing the survey (likely due to slower reading). Results for questions at the end of the survey questionnaires may have also underrepresent students getting lower grades, with low socio-economic status, who live in non-English speaking homes, who are Hispanic. For the 2021 and 2023 HYS, blocks of survey questions were randomized, so students did not answer questions in a specific order.

Getting Access to HYS Data

This section describes HYS data sharing agreements and terms of use.

Data Sharing and Human Research Review Requirements

The ability to share and report data that contains information about geographic levels lower than statewide is limited by protections of confidentiality for participants and by issues of identifiability for schools and school districts. Data sharing agreements provide information about these requirements, as well as other issues important to data users. This information is explained below, and a data sharing agreement is available on request.

Protections of Confidentiality for Participants

Importance of anonymity. Prior to participation, all survey participants are informed "Your answers to these questions are *anonymous*. This means that no one will know how you answered. There are no codes or information to match a survey to a student." Thus, data sharing procedures are designed to assure anonymity. These procedures are part of the human research review process and are included in the approval by the Washington State Institutional Review Board (WSIRB).

Availability of data with geographic identifiers. Outside of the state agencies participating in the HYS, access to data files containing individual level data (e.g., SAS or STATA files) and geographic identifiers is very limited. Because local health jurisdictions (LHJs) have a long history of ability to handle confidential data and of sharing data with DOH, they have access to the data with a data sharing agreement. Other local organizations wishing information about that geographic area are referred first to the LHJ; DOH acts as backup to the LHJ. Researchers who wish access to the individual-level data with geographic identifiers must submit an Exempt Determination Request to the WSIRB. Although educational institutions such as schools and school districts are important participants in the HYS, educational institutions that might have access to students and information about students drawn from student records do not have easy access to identifiable data because information from the HYS, in combination with additional information available to the educational institutions, might make the students identifiable.

Availability of data without geographic identifiers. Statewide data that does not contain geographic identifiers (i.e., school, school district, ESD, or county identifiers) cannot be used to identify individual students. Thus, a non-identified dataset (from which all geographic identifiers have been removed) is available to legitimate researchers with a data sharing agreement. Interactive access to aggregate frequencies and crosstab survey results for 2002-2023 are available on www.AskHYS.net. The website includes frequency reports, topic specific fact sheets, and a data query system. HYS data are available at the state, county, and ESD level and with permission from the district superintendents, at the district or school level.

Reporting data while retaining anonymity. LHJs and researchers, prior to receiving HYS data, must sign a data sharing agreement stating that they will comply with procedures approved by the

WSIRB. These include reporting requirements to protect individual identifiability. **These requirements state that for data identified by a geographic level less than statewide, frequencies will only be reported where there are at least 15 valid surveys and crosstabs other than grade level will only be reported where there are at least 10 cases per cell**. At the state level, frequencies in crosstabs can be reported if there are at least 5 cases per cell. They also agree to comply with reporting requirements regarding identifiability of schools, described below.

Identifiability of Schools and School Districts

School and school district level information. The HYS planning committee considers that schools and school districts are the "owners" of their data reports, subject to any state and federal laws pertaining to public access to information. Consistent with this, at the time of registering for participation, schools may "opt out" from receiving a school-level report of results, in which case the report will not be generated. Individuals desiring reports of school or school district results are referred to the school or school district.

Reporting data identifiable by school or school district. If a data user wishes to report data in such a way that the results are identifiable by school or school district, they must obtain written permission from the superintendent. Otherwise, data from at least three schools and three school districts must be combined for reporting purposes. Data Sharing Agreements

Data sharing agreement. Prior to receiving individual-level data, data users must sign a data sharing agreement, which includes the data sharing agreement *per se* and an Appendix A. The agreement must be signed by the individual with authority to sign for the organization. Appendix A must be signed by each of the data users working with the data.

Statutory authority for this data sharing is based on Interlocal Cooperation Act, RCW 39.34, which allows agencies to jointly share their powers and contract with one another, provided the use of the data is for a legally authorized activity and not used in a manner that exceeds the requesting department's jurisdiction. In the data sharing agreement, the receiving agency agrees to (1) not release the data file without the agreement of the agency providing the data, (2) not use the data to identify individual students or report the data in a way that individual students can be identified, and (3) not report the data in ways that identify schools or school districts, unless schools agree in writing and students cannot be identified. It also includes provisions for receiving, storing and destroying the data file. A sample data sharing agreement is available on request.

Receiving the data. Data are sent by secure file transfer site and are available in SAS, STATA, R, or other formats.

More information about data sharing requirements is available by contacting the HYS Principal Investigator at the Washington State Department of Health, healthy.youth@doh.wa.gov or call (877) HYS-7111.

More information about the WSIRB is available at http://www.dshs.wa.gov/rda/hrrs/

Getting to Know Your HYS Data

This section describes common variables in the 2023 Healthy Youth Survey dataset. It includes information on:

- Demographic variables
- Current (past 30-day) and lifetime substance use variables
- Calculated and computed variables, including how to code them in STATA
- Risk and protective factors

Most variables consist of a letter such as c, d, f, h, etc. followed by a number. The letter prefixes give you an idea about the variable topic:

C – school climate
D – alcohol, tobacco and other drugs
F – family risk and protective factors
G – demographics
H – health
L – hope
M – community risk and protective factors
P – peer and individual risk and protective factors
S – school risk and protective factors
V – COVID 19

Computed variables are usually acronyms such as bmi, hopescale, currentasthma, disable, aceflag4, problematicinternet, etc. Computed risk and protective factor scales consist of the word risk followed by a number.

NOTE: For a detailed description of HYS variables since 2002, see the most current version of the HYS Data Dictionary and Crosswalk (XLS) on the AskHYS Data Resources page: https://www.askhys.net/Resources/Data

Demographic Variables

staterec

Staterec is used to describe the state sampling status, 1=sampled, 0=census.

coname, conum, cogrd, and corec

Depending on the type of dataset you have, you may or may not have these variables. Each county can be identified with either of the two variables coname and conum.

Coname is a string variable that identifies the county name, e.g., "Adams County." Conum is a unique two-digit numeric code that represents each of the 39 counties in alphabetical order starting with Adams (conum==1) and ending with Yakima (conum==39).

Adams=1, Asotin=2, Benton=3, Chelan=4, Clallam=5, Clark=6, Columbia=7, Cowlitz=8, Douglas=9, Ferry=10, Franklin=11, Garfield=12, Grant=13, Grays Harbor=14, Island=15, Jefferson=16, King=17, Kitsap=18, Kittitas=19, Klickitat=20, Lewis=21, Lincoln=22, Mason=23, Okanogan=24, Pacific=25, Pend Oreille=26, Pierce=27, San Juan=28, Skagit=29, Skamania=30, Snohomish=31, Spokane=32, Stevens=33, Thurston=34, Wahkiakum=35, Walla Walla=36, Whatcom=37, Whitman=38, Yakima=39.

Conum 999 and coname "Not associated with a district" are used for any schools that are not associated with a specific county, e.g. statewide schools, Tribal schools, charter schools, and private schools.

Cogrd is a four-digit numeric code that combines both the county code and the grade level of the respondent.

Corec is used to describe the county sampling status, 1=sampled, 0=census.

distname, distnum, codis, distgrd, and distrec

Depending on the type of dataset you have, you may or may not have these variables. District level data should never be analyzed or distributed unless you have the written approval from the school district.

Distname is a string variable that identifies the school district name, e.g., "Almira School District." Distnum is a three-digit numeric code for the district. These codes are developed by OSPI (information is available on the OSPI website). The distnum variable is only unique within a county. Codis is a unique five-digit numeric variable for each county – district combination. Codis should be used instead of distnum unless you only have data from a single county.

Codis 99998 and distname "Tribal Schools and Charter Schools" are used for any schools that are not associated with a specific district, e.g. statewide schools, Tribal schools, charter schools, and private schools.

Distgrd is a seven-digit numeric code that combines both codis (county-district code) and the grade level of the respondent.

Distrec is used to designate schools that should be included in district-level analysis. Statewide schools or schools that serve multiple districts are distrec=0.

schname, schnum, schgrd, and psu

Again, depending on your dataset you may or may not have these variables. School building data should only be analyzed and distributed with written permission from the school district superintendent.

Schname is a string variable that identifies the school building name. Schnum is a unique four-digit numeric code for the school building. These codes are also developed by OSPI. Most schools have codes between 1500 and 4999. Private schools have numbers between 8000 and 8999. Numbers between 9000 and 9999 are special cases and are not official OSPI codes.

School codes are associated with physical school buildings. Buildings may open, close, move, or change their grade levels over time, making it is important to verify that your school numbers, grades, and names match when comparing data over time.

Schgrd is a six-digit numeric code that combines both the school building code and the grade level of the respondent. In some 2023 datasets, the schgrd variable is deidentified and replace with the variable "psu". In previous years, the deidentified schgrd variable was called schgnoid.

esdname, esdnum, esdgrd, esdrec, esdpsu, and esdwt

Depending on the type of dataset you have, you may or may not have these variables. Each Educational Service District (ESD) can be identified with either of the two variables esdname (string) and esdnum (numeric). Esdgrd is a five-digit numeric code that combines both the ESD number and the grade level of the respondent.

Esdrec, esdpsu, and esdwt are variables need to run ESD level analysis. Esdrec is used to designate schools that should be included in ESD-level analysis. Statewide schools are esdrec=0. Esdpsu and esdwt are needed to account for that some counties within an ESD are sampled and others are not.

Small School Variables

Starting in 2014, school districts with less than 150 students in grades 6, 8, 10, or 12 were allowed to survey additional grade levels – 9th, 11th and 12th grades. Surveying the extra grades allowed the districts and schools in those districts to receive combined grade reports for middle school (grades 6, 7, and 8) and high school (grades 9, 10, 11, and 12). To run small school results, use the following:

Small Results Statewide

```
keep if reportsmallschool==1 svyset[pweight=smallschoolstateweight]
gen middle=1 if grade==6 | grade==7 | grade==8
gen high=1 if grade==9 | grade==10 | grade==11 | grade==12
svy:tab d21use grade, subpop(middle) col se obs per
svy:tab d21use grade, subpop(high) col se obs per
```

Small Results District-Level

```
keep if reportsmallschool==1
keep if codis==X
svyset[pweight=smallschooldistricteweight]
gen middle=1 if grade==6 | grade==7 | grade==8
gen high=1 if grade==9 | grade==10 | grade==11 | grade==12
svy:tab d21use grade, subpop(middle) col se obs per
svy:tab d21use grade, subpop(high) col se obs per
```

Small Results School

```
keep if reportsmallschool==1
keep if schnum==X
```

```
svyset[pweight= smallschoolschooleweight
gen middle=1 if grade==6 | grade==7 | grade==8
gen high=1 if grade==9 | grade==10 | grade==11 | grade==12
svy:tab d21use grade, subpop(middle) col se obs per
```

Form Type

The 2023 HYS had two survey forms, "E" for the Elementary survey for 6th graders and "S" for the Secondary survey for 8th, 10th, and 12th graders, formtype.

For previous HYS administrations, there were three main survey forms A, B, and C. All 6th graders take Form C. About half of 8th, 10th and 12th graders took Form A and about half took Form B.

In 2021, most schools administered the electronic version of the survey, and a few schools administered a paper and pencil version of the survey. Electronic form types are proceeded by an "E" – AE, BE, and CE. Paper form types are proceeded by a "P" – AP, BP, and CP. During the first week of the survey administration, there was an issue with the form A and B randomization and about 1,400 students received both survey forms. The form type of the responses from students who took both forms A and B is AB. See the Content Changes Over Time section for details on survey form changes.

For HYS data from 2002 through 2021, some variables cannot be cross-tabulated because they are on different survey forms (i.e., one variable is on Form A and the other is on Form B). If you run a crosstab and STATA says there are "no observations" it could mean that you are trying to cross variables on different surveys. If you are analyzing older HYS data, formtype can be useful if you want to investigate which Form your variable is on or if you want to restrict your analysis to include only respondents from one of the Forms. For 2023, all variables can be cross-tabulated due to changes in survey methodology.

Survey Location

For the 2023 HYS, schools administered the survey at school in supervised classrooms. Exceptions were made for schools who were unable to administer the survey in-person like Alternative Learning Experiences, online learning, and virtual schools. For all students, the first question on the 2023 survey asked "Where are you taking this survey?" (g28). The response options were "On school property" and "Not on school property". Students who responded that they were not on school property were asked additional questions to determine if they were in an environment where they could answer the HYS safely and honestly.

Age

In the HYS dataset there are two different variables for age. Variable g01 is asked on Forms A and B for 8th, 10th and 12th graders, while g02 has less response options and is asked on Form C for 6th graders. There is an additional age variable, agems, that is computed from both g01 and g02 with the responses 10 or younger, 11, 12, 13, 14, and 15 or older.

Sex Assigned at Birth

In 2018, the question "Are you female or male" was changed to ask, "What sex/gender were you at birth, even if you are not that gender today?" It was shortened in 2023 to ask "What sex were you assigned at birth?", g05_18.

Gender Identity

A question about gender identity was added in 2018. The question was updated in 2023 and expanded to include additional options for transgender:

- Below is a list of terms that people may use to describe their gender identity. Choose all that apply.
  - g26_23a Boy/Man
  - g26_23b Girl/Woman
  - g26_23g Transgender boy/man
  - g26_23h Transgender girl/woman
  - g26_23d Questioning/not sure of my gender identity
  - g26_23e Something else fits better
  - g26_23f I do not know what this question is asking

The question is "choose all that apply" so there is an individual variable for each specific gender identity response that includes students who selected the response alone or in combination (AOIC) with any other gender identities.

A combined variable was also computed to include the results for the responses in which only a single selection was made with a "More than one response selected" option, g26_23.

In 2018, gender identity was asked on the removable sections of both Forms A and B. In 2021, it was included as part of the main survey on both Forms A and B, but a few schools requested an exemption to not ask the question. In 2023, gender identity was a core question on the Secondary survey.

An optional question about gender identity was added to the Elementary survey in 2023, g44. Schools were asked if they wanted to include this question on their registration form.

Race/Ethnicity

From 2002 through 2021, there was a single "select all that apply" question about race/ethnicity on HYS for all students. In 2023, the option to select Hispanic was removed and a separate question was added to specifically ask about Hispanic, Latino/a, Spanish origin, g31:

How do you describe yourself?

1. Of Hispanic/Latino/ Spanish Origin
2. Not of Hispanic/Latino/Latina/Spanish Origin
3. Not sure

If students selected "Of Hispanic/Latino/Spanish origin", they were asked a follow up question about their ethnicity, "If you describe yourself as being of Hispanic, Latino or Spanish origin, which groups best describe you? Choose all that apply.", g32a-ee.

Then students were asked about race by asking, g06_23. A new response was also added for race in 2023, "Middle Eastern or North African":

How do you describe yourself? Choose all that apply.

g06_23b	American Indian or Alaskan Native
g06_23a	Asian or Asian American
g06_23c	Black or African-American
g06_23i	Middle Eastern or North African
g06_23e	Native Hawaiian or other Pacific Islander
g06_23f	White or Caucasian
g06_23g	Other

The question is "choose all that apply" so there is an individual variable for each specific race/ethnicity response that includes students who selected the response alone or in combination (AOIC) with any other race/ethnicities.

Choose an individual race variable (g06_23a-g06_23i) if you are looking at one particular race and need to capture all of the youth who checked a certain race alone or in combination (AOIC). If a respondent only selected "Asian" and "Black" they would be included in both variables any "Asian" responses in g06_23a and any "Black" response in g06_23c.

There is a race/ethnicity variable, **g06_23**, that includes mutually exclusive responses for each individual race/ethnicity category if a student only one race/ethnicity and a computed response for "More than one race/ethnicity marked" if a student selected two or more responses. For example, if a respondent only selected "Asian" then they are counted as "Asian," but if they selected "Asian" and "Black" they would be counted as "More than one race/ethnicity."

Here's an example of the differences between g06_23 and g06_23a-i. In 2023 in the state sample 10th grade, looking at variable g06_23b, a total of 416 youth checked American Indian or Alaska Native as a response option. In the rolled up g06_23 variable, there are only 130 American Indian youth listed. That is because 286 of those American Indian youth also checked another race and are included as "More than one race/ethnicity marked" in g06_23.

There is also a hybrid computed Hispanic/non-Hispanic variable, **raceeth,** that includes mutually exclusive responses for the race/ethnicity categories if a student only one race/ethnicity for Asian or Asian American, American Indian or Alaskan Native, Black or African-American, Middle Eastern or North African, Native Hawaiian or other Pacific Islander, White or Caucasian, or Other and a response for students who select Hispanic or Latino/Latina alone or in combination with any other race. Use raceeth if you want to present race as Hispanic AOIC, non-Hispanic White, non-Hispanic Black, non- Hispanic American Indian or Alaskan Native, non-Hispanic Asian or Pacific Islander, non-Hispanic Other, or non-Hispanic multiple races.

Depending on which responses students selected for race, they were also asked follow up questions about their racial background:

- Students who selected "Asian or Asian American" were asked "If you describe yourself as being of Asian background, which groups best describe you? Choose all that apply."
- Students who selected "Black or African-American" were asked "If you describe yourself as being of Black or African-American background, which groups best describe you? Choose all that apply." Then depending on their responses, they were asked additional details about their racial background:
    - Students who selected "Caribbean" were asked "If you describe yourself as being Caribbean, which groups best describe you? Choose all that apply."
    - Students who selected "Central African" were asked "If you describe yourself as being Central African, which groups best describe you? Choose all that apply."
    - Students who selected "Eastern African" were asked "If you describe yourself as being Eastern African, which groups best describe you? Choose all that apply."
    - Students who selected "Latin American" were asked "If you describe yourself as being Latin American, which groups best describe you? Choose all that apply."
    - Students who selected "South African" were asked "If you describe yourself as being South African, which groups best describe you? Choose all that apply."
    - Students who selected "West African" were asked "If you describe yourself as being West African, which groups best describe you? Choose all that apply."
    - Students who selected "Middle Eastern or North African" were asked "If you describe yourself as being Middle Eastern or North African, which groups best describe you? Choose all that apply."
    - Students who selected "Native Hawaiian or other Pacific Islander" were asked "If you describe yourself as being of Native Hawaiian or other Pacific Islander background, which groups best describe you? Choose all that apply."
    - Students who selected "White" were asked "If you describe yourself as white, which groups best describe you? Choose all that apply."

From 2002 to 2023, race/ethnicity was on all survey forms.

Survey Language

In 2023, the Secondary and Elementary surveys were translated into eight languages: Arabic (AR), Chinese (ZH), Korean (KO), Russian (RU), Spanish (ES), Somali (SO), Ukrainian (UK), and Vietnamese (VI), surveylanguage.

Language Spoken at Home

In 2023, the language question was updated with additional response options (Arabic, Somali, Marshallese, and Punjabi) and the same question was asked on both the Secondary and Elementary surveys.

What language is usually spoken at home?

1. English

2. Spanish
3. Russian
4. Vietnamese
5. Ukrainian
6. Arabic
7. Somali
8. Marshallese
9. Chinese
10. Korean
11. Punjabi
12. Other

Prior to 2023, there were two different variables for language spoken at home. Variable g07_06 was asked on Forms A and B for 8th, 10th and 12th graders. Three new response options – Chinese, Korean, and Japanese – were added to g07_06 in 2006. The variable g08 was asked on Form C for 6th graders. It only included three response options: English, Spanish, or Other.

Mother's Education Status and Socioeconomic Status (SES)

In 2002 and 2004, maternal education was g10 and the question was "What is the highest degree or diploma your mother earned?" In 2006, the question wording and the response options changed and the variable for maternal education became g17. Since 2006, the survey question was, "How far did your mother get in school?". For 2023, this question was core question on the Secondary survey.

Some youth do not know their mother's level of education, so this question has a large number of "Don't know" responses and missing values. For example, for maternal education in 2021, only 64% of 8th graders, 73% of 10th graders, and 80% of 12th graders selected an education level for their mother. Because of the large number of missing values, use this question with caution, especially for 8th graders.

From 2002 and 2004 and from 2006 to 2014, the survey included similar questions about paternal education, variables g09 and g18.

Maternal education has been used as a proxy measure for low socio-economic status. Socioeconomic status is a measure of an individual or family's relative economic and social ranking – and is an important social determinant of health; however, we recognize that youth are not accurately able to report on family income. Maternal education (the level of education that has been completed by the student's mother) is a proxy measure for family SES that has been described in literature. While this question is asked on the survey and can be used as a proxy for SES, it is not perfect and does not represent the family or household structure for all students. To use this variable as an SES proxy, maternal education can be stratified in a variety of ways; we recommend stratifying as "lower SES" if a mother has no post-high school education and "moderate - higher SES" if a mother has had any post-high school education.

```
gen lowses=g17
recode lowses 1=1 2=1 3=0 4=0 5=0
lab def ses 1"low ses" 0"higher"
```

```
lab val lowses ses
```

Given the limitations of using mother's education as a proxy for socioeconomic status, other HYS measures such as skipping/cutting meals (f22), losing housing due to family finances/housing instability (f36), free/reduced price lunch (g22), or lack of recent access to dental care (h25) may be more useful.

Free or Reduced Priced Lunch

In 2016, a question about receiving free or reduced priced lunches at school was added, g22. In 2021, many schools provided free lunch to all students due to COVID-19, so this measure may not be useful in determining SES for that year. For 2023, free and reduced lunch was a bank question on the Secondary survey. In years prior to that, it was asked on Form B.

Migrant Status

In 2018, a question was added to identify students from migrant families, g25. The question wording was slightly changed in 2021, g25_20. For 2023, migrant status was asked as a core Secondary and an Elementary question. It was asked on Forms A and C in 2018 and expanded to all forms in 2021.

Chronic Absenteeism

Chronic absenteeism is when students miss ten percent or more of their school days. Variable g27 asks "During the past 30 days, on how many days have you been absent from school for any reason? Include any day that you missed at least half of the school day, so "3 or more days" absent is considered chronic absenteeism. For 2023, absenteeism was asked as a core Secondary and an Elementary question. It was asked on all forms in 2018 and 2021.

Sexual Orientation

A question about sexual orientation was added in 2014 and response options were updated in 2018. In 2023, the sexual orientation was switched form a single selection to a "choose all that apply" question.

- Below is a list of terms that people often use to describe their sexuality or sexual orientation. Choose all that apply.
  - g20_23a Heterosexual (straight)
  - g20_23b Gay or lesbian
  - g20_23c Bisexual
  - g20_23d Questioning/not sure
  - g20_23e Something else fits better
  - g20_23f I don't know what this question is asking

The question is "choose all that apply" so there is an individual variable for each specific sexual orientation response that includes students who selected the response alone or in combination (AOIC) with any other sexual orientations.

A combined variable was also computed to include the results for the responses in which only a single selection was made with a "More than one response selected" option, g20_23.

In 2014, sexual orientation was asked on the removable section of Form B. In 2016 and 2018, it was asked on the removable sections of both Forms A and B. In 2021, it was included as part of the main survey on both Forms A and B, but a few schools requested an exemption to not ask the question. In 2023, sexual orientation was a core question on the Secondary survey.

Sexually and Gender Diverse

Sexually or gender diverse youth are defined as any student selecting "Transgender", "Questioning/not sure", Something else fits better", or multiple options for gender identity, or any student selecting "Gay or lesbian", "Bisexual", "Questioning/not sure", "Something else fits better", or multiple options for sexual orientation.

To following code is used to calculate the sexually and gender diverse variable in the dataset, sgd:

```
gen sgd=0
replace sgd =1 if g20_23==2 | g20_23==3 | g20_23==4 | g20_23==5 | g20_23==7
replace sgd =1 if g26_23==3 | g26_23==4 | g26_23==5 | g26_23==6 | g26_23==8
replace sgd =. if g20_23f==1 | g26_23f==1
replace sgd =. if g20_23==. | g26_23==.
lab def sgd 0"Not Sexually or Gender Diverse" 1"Sexually or Gender Diverse"
lab val sgd sgd
```

Living Situations

Since 2008, HYS has included questions about who students live with and where they live. These questions have changed over time (earlier variables included f30, f31, f34, f34_14, f34_18, f35, and f35_16).

In 2021 and 2023, the question about who students live with included the following response options (f34_20):

1. Parent(s), step-parent(s), or legal guardian
2. Relatives like a grandparent, an aunt, an older brother—but NOT your parents
3. Foster care parent(s)
4. Adults who are not your parents, relatives, or foster parents
5. Friends of yours with no adults present
6. On your own
7. Other

Since 2018, the question about where students live included the following response options (f35_18):

1. In a house or apartment that my family rents or owns
2. In a house or apartment that a relative rents or owns
3. In a house or apartment with someone who is not a relative
4. In a shelter

5. In a car or RV, park, or campground
6. In a motel/hotel
7. On the street
8. Moved from place to place
9. Other

In 2023, who students live with and where they live were both Secondary bank questions. Prior to 2023, the questions were asked on both Forms A and B.

Use caution when comparing the who they live with question, f35, to 2018. In 2018, there was an error on the Form A questionnaire and the response option "a. In my own house or apartment that my family rents or owns was accidentally excluded – so there are three different variables – f35_18, f35_18original, and f35_18clean. If you are looking at results from the entire question, we recommend using f35_18 clean. If you are looking at a specific response, we recommend different variables for different responses:

- In a house or apartment that my family rents or owns – use f35_18clean
- In a house or apartment that a relative rents or owns – use f35_18clean
- In a house or apartment with someone who is not a relative – use f35_18clean
- In a shelter – use f35
- In a car or RV, park, or campground – use f35
- In a motel/hotel – use f35
- On the street – use f35
- Moved from place to place – use f35
- Other – use f35

Kinship Care

Living in kinship care is defined as living with a relative who is not a parent or step-parent. Available for 2012 to 2023.

```
gen kinship= f34_18
recode kinship 1=0 2=1 3/7=.
lab def kinship 0"with parents" 1"relatives not parents"
lab val kinship kinship
```

Foster Care

Living in foster care is defined as living with foster care parent(s). Available for 2012 to 2023.

```
gen foster= f34_18
recode foster 1/2=0 3=1 4/7=.
lab def foster 0"with parents" 1"in foster care"
lab val foster foster
```

Homeless Situation

In 2008, a question was added to try to identify homeless youth, based on the definition used in the McKinney-Vento act, a complicated legal definition. The question has changed over time but can be used as a surrogate measure for homeless youth. Currently, homelessness includes living in a shelter, a car, a park or campground, or on the street.

```
gen homeless=f35_18
recode homeless 1/3=0 4/5=1 6=0 7=1 8/9=0
lab def homeless 0 "Not homeless" 1"Homeless"
lab val homeless homeless
lab var homeless "Homeless screener"
```

Unstable Housing Situation

Unstable housing could simply be defined as "yes" current living arrangements are the result of losing your home because your family cannot afford housing (f36).

Substance Use Variables

Some of the current (past 30-day) and lifetime substance use variables are created from recoded variables or by combinations of variables. The current (past 30-day) use questions ask about the use of a substance in the past 30 days and are available with all of the original responses or in a collapsed version with no days and any days of use. Many of the lifetime substance use variables are recoded from questions that ask about the age of first use.

The following are lists of the current 30-day and lifetime use variables from 2023. Substance use questions have changed and rotated on and off the survey over time. For more information on variables including which survey form they are on and the survey item number, see the HYS Data Dictionary and Crosswalk (XLS) on the AskHYS Data Resources page: https://www.askhys.net/Resources/Data

Current (past 30-Day) Substance Use

For most of the current substance use questions there are two variables. One includes all of the responses and the other includes collapsed response options of "yes" for use on any days and "no" for use on 0 days (e.g., for cigarettes d14 includes all responses and d14use is collapsed to no/yes).

Prior to 2023, the response options for the current substance use questions varied by the number of days that were asked. The number or response options ranged from five to seven. In 2023, all of the current substance use questions had the same seven response options:

1. 0 days
2. 1 – 2 days
3. 3 – 5 days
4. 6 – 9 days
5. 10 – 19 days
6. 20 – 29 days
7. All 30 days

The following is a summary of the substance use variables from 2002 to 2023:

Question	Years Asked	Variable(s)	2023 description	Earlier Years description
Cigarettes	2002 to 2023	d14_23, d14, d14use	Secondary core and Elementary questions (d14_23) and computed (d14use)	From 2002 to 2021, asked on all forms (d14) and computed (d14use). Prior to 2023, included less response options.
Chewing tobacco	2002 to 2023	d15_23, d15, d15use	Secondary bank and Elementary questions (d15_23) and computed (d15use). Included new language about smokeless nicotine products (for example: pouches, lozenges, gum, or toothpicks)	From 2002 to 2021, asked only on Forms B and C (d15) and computed (d15use). Prior to 2023, included less response options.
Cigar, cigarillo, or little cigar	2002 to 2023	d16_23, d16, d16use	Secondary bank question (d16_23) and computed (d16use). Included new language about smokeless nicotine products (for example: pouches, lozenges, gum, or toothpicks)	From 2002 to 2021, asked only on Forms B (d16) and computed (d16use). Removable in 2006 and 2008. Prior to 2023, included less response options.
Electronic cigarettes, e-cigs or vape pens	2012 to 2023	d90_16, d90, d90_16use, d90use	Secondary core and Elementary questions (d90_16) and computed (d90_16use)	In 2012, was only on Form B and did not include "vape pens." (d90) and computed (d90use), In 2014, was only on Form B (d90_14) and computed (d90_14use). In 2016, more response options were added and was asked on Forms B and C (d90_16) and computed (d90_16use). In 202, asked on all forms and included "JUUL".
Hookah	2008, 2012 to 2021	d81_23, d81 d81use	Secondary bank question, d81_23 and computed d81use	From 2008 to 2021, asked on Form B only (d81) and computed (d81use). Prior to 2023, included less response options.
Alcohol	2002 to 2023	d20_23, d20, d20use	Secondary core and Elementary question, (d20_23) and computed (d20use)	From 2002 to 2021, asked on all forms (d20) and computed (d20use). Prior to 2023, included less response options.
Marijuana	2002 to 2023	d21_16, d21, d21_16use, d21use	Secondary core and Elementary question, (d21_16) and computed (d21_16use)	From 2002 to 2014, asked on all forms (d21) and computed (d21use). In 2016, more response options were added on all forms (d21_16) and computed (d21_16use).

Question	Years Asked	Variable(s)	2023 description	Earlier Years description
Illegal drug not including alcohol, tobacco or marijuana	2004 to 2023	d63_23, d63, d63use	Secondary bank and Elementary question, (d63_23) and computed (d63use)	From 2004 to 2014, asked on Forms A and B (d63) and computed (d63use). From 2010 to 2014, asked on all forms (d63) and computed (d63use). From 2016 to 2021, asked only on Forms A and C. Prior to 2023, included less response options.
Illegal drug including marijuana	2004 to 2023	d68_23, d68, d68use	Computed from d63_23 and d21_16	From 2004 to 2014, computed from d63 and d21. From 2016 to 2021, computed from d63 and d21_16
Pain killers	2006 to 2023	d75_23, d75, d75use	Secondary core and Elementary, (d75_23) and computed (d75use)	In 2006, asked on Forms A and B (d75) and computed (d75use). In 2008, asked only on Form A. From 2010 to 2021, asked on Forms A and B. Prior to 2023, included less response options.
Prescription drugs not prescribed to you	2014 to 2023	d92_23, d21, d92use	Secondary bank and Elementary, (d92_23) and (d92use)	From 2014 to 2021, asked only on Form A (d92) and computed (d92use). Prior to 2023, included less response options.
Drugs for non-medical reasons:	2018 to 2023		Secondary bank, select all that apply question (d109a,b,c,d,e,f,g)	In 2018, asked only on Form A (d109a,b,c,d,e,f). In 2021, asked only on Form A and the option "I took something, but I don't know what it was added d109g.
None		d109a		
Stimulant		d109b		
Painkiller		d109c		
Tranquilizer		d109d		
Another kind of Rx drug		d109e		
Over-the-counter drug		d109f		
Something, but I don't know what it was		d109g		
Flavored tobacco or marijuana products:	2021 and 2023		Secondary bank, select all that apply question (d113a,b,c,d,e)	Asked only on Form B in 2021 (d113a,b,c,d,e)
None		d113a		
Cigars/hookah/ other smoked tobacco		d113b		
Chewing tobacco/ dissolvables/ snus/other smokeless tobacco		d113c		

Question	Years Asked	Variable(s)	2023 description	Earlier Years description
Joints/bongs/pipes/blunt/ other smoked marijuana		d113d		
Don't know		d113e		
E-cig or vaping products:	2021 and 2023		Secondary bank, select all that apply question (d114a,b,c,d,e,f)	Asked on Forms A and B in 2021 (d114a,b,c,d,e,f).
None		d114a		
With nicotine		d114b		
With THC		d114c		
With nicotine and THC		d114d		
Neither		d114e		
Don't know		d114f		
E-cig or vaping products that were flavored:	2021 and 2023		Secondary bank, select all that apply question (d115a,b,c,d,e,f)	Asked only on Form B in 2021 (d115a,b,c,d,e,f).
None		d115a		
With nicotine		d115b		
With THC		d115c		
With nicotine and THC		d115d		
Neither		d115e		
Don't know		d115f		
Marijuana and alcohol use at the same time	2021 and 2023	d106	Secondary bank question (d106)	Asked only on Form A in 2021 (d106).
Heated tobacco products	2021 and 2023	d112	Secondary bank question (d112)	Asked only on Form B in 2021 (d112).

Lifetime Substance Use and Age of First Substance Use Variables

Over time, lifetime substance use has been asked in two main way, as "have you ever" with "Yes" or "No" response options or as "how old were you the first time" with age level response options. Results from the age of first use questions were often collapsed into yes/no results.

The following table includes the lifetime questions that have been asked on the survey.

Question	Years Asked	Variable(s)	2023 Description	Earlier Years Description
Cigarette, just a puff	2002 to 2023	d01, p19	Secondary core asked as age of first use (p19) and computed (d01)	Asked as age (p19) and computed ever yes/no (d01) on Form A in 2002 to 2021. Form A only for all years.

Question	Years Asked	Variable(s)	2023 Description	Earlier Years Description
Cigarette, whole	2002 to 2008	d02, d31, d32	N/A	Asked as age (d31 and d32) and computed ever yes/no (d02) in Form A, B, and C in 2002 to 2008.
Chewing tobacco	2002 to 2004	d03, d38	N/A	Asked as age (d38) and computed ever yes/no (d03) on Form B in 2002 to 2004.
Cigar, cigarillo, or little cigar	2002	d39	N/A	Asked as age on Form B in 2002 (d39).
Alcohol, sip	2002 to 2023	d05, p20, p21	Secondary core asked as age of first use (p20), Elementary asked as ever No/Yes (p21), computed (d05)	Asked as age Form A and B (p20), asked as ever yes/no on Form C (p21) and computed ever yes/no (d05) in 2002 to 2021.
Marijuana	2002 to 2023	d06_14, p17_14, p17, p18_14, p18	Secondary core asked as age of first use (p17_14), Elementary asked as ever yes/no (p18_14), and computed d06_14	Asked as age Form A and B (p17), asked as ever yes/no on Form C (p18), and computed (d06) in 2002 to 2004. In 2014, smoked marijuana was changed to use marijuana.
Electronic cigarette	2018 to 2023	d110, d111	Secondary core asked as age of first use (d111), computed (d110)	
Meth-amphetamines	2002 to 2023	d88_18a,b,c, d88, d10	Secondary bank asked select all that apply never, past year, over a year (d88_18)	Asked as ever yes/no (d10) in 2002. Asked as age of first use (p46) and computed as ever yes/no (d10) in 2004 to 2008. Asked as every yes/no (d88) in 2010 to 2016. Asked as select all that apply never, past year, over a year (d88_18)in 2018 and 2021. Only asked on Form A for all years.
Heroin	2010 to 2023	d89_18a,b,c, d89	Secondary bank asked select all that apply never, past year, over a year, (d89_18)	Asked as age of first use (p45) in 2004 to 2008. Asked as every yes/no (d89) in 2010 to 2016. Asked as select all that apply never, past year, over a year (d89_18) in 2018 and 2021. Only asked on Form A for all years.
Steroids	2002 to 2006, 2010 to 2016	d07	N/A	Asked as No/Yes on Form A and B in 2002, only on Form B in 2004 and 2006, and only on Form A in 2010 to 2016. Asked as check all that apply never, past year, over a year (d07_18a,b,c) in 2018 on Form A.
Cocaine	2002 to 2018	d08	N/A	Asked as No/Yes on Form A and B in 2002, only on Form B in 2004, and only on Form A in 2010 to 2016. Asked as check all that apply never, past year, over a year (d08_18a,b,c) in 2018 on Form A.

Question	Years Asked	Variable(s)	2023 Description	Earlier Years Description
Illegal injection drugs	2002 to 2006	d09	N/A	Asked as ever yes/no on Form A and B in 2002 and only on Form B in 2004 and 2026.
Inhalants	2002 to 2018	d11	N/A	Asked as ever yes/no (d11) on Form C in 2002 to 2018.
Other illegal drugs	2002 to 2023	d12	Elementary asked ever yes/no (d12)	Asked as ever yes/no (d12) on Form C from 2002 to 2021

Variables that ask the age of first use for substances can be used to calculate the average age of first use. Prior to running the mean age, you need to recode the respondents who have not used the substances to missing and change the other response options to match the age level they represent. To calculate the age of first sip of alcohol by grade:

```
gen agesip=p20
recode agesip 1=. 2=10 3=11 4=12 5=13 6=14 7=15 8=16 9=17
svy:mean agesip
```

Levels of Alcohol Use

The computed levels of alcohol use variable, cdv, is on all Forms A, B and C since 2008. The cdv variable combines current (past 30-day) alcohol drinking and binge drinking to break drinking down into the following levels:

- No drinking
- Experimental drinking – 1-2 days drinking and no binge drinking
- Problem drinking – 3-5 days drinking and/or one binge
- Heavy drinking – 6 or more days drinking and/or two or more binges

Warning: In 2006, the levels of alcohol use variable, cdv, was calculated incorrectly. In 2006, the binge drinking question was only asked on Form A, so the levels of alcohol use should only include respondents who answered Form A. To fix the problem, use the following STATA coding:

```
*Fixing 2006 cdv
replace cdv=. if formtype~="A" & year==2006
```

Sources of Alcohol

HYS asks youth about where they get their alcohol (from 2008 to 2023). In 2023, this was a Secondary bank question in previous years it was on Form A.

Youth were asked to check all sources that applied, so there are multiple variables – d76a, d76b, d76c, d76d, d76e, d76f, d76g, d76i, d76j d76k, d76m, d76n. The response options for this question have changed over time. "I got it from someone older who I'm not related to." (d76m) and "Someone sold it to me." (d76n) were new response options in 2023.

Often, we want to recode this variable to look only at the youth who actually got alcohol. The question's first response option is "I did not get alcohol in the past 30 days," so the

recommended method for recoding is to create a new variable for each of the sources and replace the "did not get" respondents as missing.

```
gen boughtstore=d76b
replace boughtstore=. if d76a==1
gen stolestore=d76i
replace stolestore=. if d76a==1
gen friend=d76c
replace friend=. if d76a==1
gen party=d76g
replace party=. if d76a==1
gen sibling=d76k
replace sibling =. if d76a==1
gen somoneolder=d76m
replace somoneolder =. if d76a==1
gen soldit=d76n
replace soldit =. if d76a==1
gen gavemoney=d76d
replace gavemoney=. if d76a==1
gen homewithperm=d76e
replace homewithperm=. if d76a==1
gen homewithout=d76f
replace homewithout=. if d76a==1
gen other=d76j
replace other=. if d76a==1
```

This variable could also be recoded by restricting it to include only current alcohol users. The method is not recommended because this question does not mention "using" it only mentions "getting alcohol."

Sources of Marijuana

Since 2014, HYS asked youth about where they get their marijuana. In 2023, this was a Secondary bank question in previous years it was on Form A.

Youth were asked to check all sources that applied, so there are multiple variables – d97a, d97b, d97c, d97d, d97e, d97f, d97g, d97i, d97j, d97k, d97l, d97m. The response options for this question have changed over time. "I got it from someone older who I'm not related to." (d76m) and "Someone sold it to me." (d76n) were new response options in 2023.

To look only at those who got marijuana, the question's first response option is "I did not get marijuana in the past 30 days is set to missing.

```
gen boughtstore=d97b
replace boughtstore=. if d97a==1
gen stolestore=d97i
replace stolestore=. if d97a==1
gen friend=d97c
replace friend=. if d97a==1
```

```
gen party=d97g
replace party=. if d97a==1
gen sibling=d76k
replace sibling =. if d97a==1
gen somoneolder=d97l
replace somoneolder =. if d97a==1
gen soldit=d97m
replace soldit =. if d97a==1
gen gavemoney=d97d
replace gavemoney=. if d97a==1
gen homewithperm=d97e
replace homewithperm=. if d97a==1
gen homewithout=d97f
replace homewithout=. if d97a==1
gen other=d97j
replace other=. if d97a==1
```

This variable could also be recoded by restricting it to include only current marijuana users. The method is not recommended because this question does not mention "using" it only mentions "getting" marijuana.

Usual Sources of Tobacco or Electronic Vapor Products

In previous years, there were separate questions about the sources of tobacco (d56 from 2002 to 2021, except 2014) and electronic vapor products (d103 from 2016 to 2021). For 2023, the substances were combined and the question was asked ask as "During the past 30 days, if you used tobacco or e-cigarettes/vaping products, how did you get it? Choose all that apply."

Youth were asked to check all sources that applied, so there are multiple variables – d124a, d124b, d124c, d124d, d124e, d124f, d124g, d124h, and d124i.

Any Tobacco Use

It is possible to combine all types of tobacco for a single "any tobacco use" variable, but cation should be used since tobacco product questions have not been consistently asked on HYS. For this reason, it is common to describe combinations of specific products (e.g., smoked cigarettes or cigars or used smokeless tobacco) rather than "any tobacco use" as the available combinations could change from year-to-year. For details on which questions have been asked over time, see the list of Current Substance Use Variables presented earlier or the Data Dictionary and Crosswalk on the Data Resources page: https://www.askhys.net/Resources/Data

Below is an example of one way to calculate an "any tobacco":

```
*Any tobacco use (cigarette, smokeless, cigar, hookah and e-cig)
gen anytob=.
replace anytob=1 if (d14use==1 | d15use==1 | d16use==1 | d81use==1 | d90_16use==1)
replace anytob=0 if (d14use==0 & d15use==0 & d16use==0 & d81use ==0 & d90_16use==0)
replace anytob=. If (d14use==. | d15use==.  |d16use==. | d81use ==. | d90_16use=.)
```

```
replace anytob=. If (grade==6 | formtype~=”B”)
lab def anyuse 1”used any” 0”no use”
lab val anytob anyuse
```

Other Calculated/Computed Variables

There are a number of computed variables in the HYS; some of these were not provided for earlier years of the survey. We are providing the computations so that you can create these variables for datasets where they do not exist and so that you understand where the computed variables come from.

Asthma – recode for “current asthma”

From 2008 to 2023, there were two primary variables used to describe asthma prevalence: “has a doctor or nurse ever told you that you have asthma” (lifetime asthma) h22, and “do you still have asthma”, h86. This matches the national Youth Risk Behavioral Survey questions to calculate current asthma. Prior to 2008, HYS used different questions so a comparison of current asthma over time is not available.

In 2023, the asthma questions were bank questions and “do you still have asthma” was only asked among those who were told they ever had asthma.

To following code is used to calculate lifetime asthma and the current asthma variable in the dataset, currentasthma:

```
*Lifetime asthma
gen asdrdiag=h22
recode asdrdiag 1=1 2=0 3=0
lab val asdrdiag yesno

*current asthma
gen stillasth=h86
recode stillasth 1=0 2=1 3/4=0
lab val stillasth yesno
lab var stillasth "Still have asthma"
gen currentasth=.
replace currentasth=1 if (asdrdiag==1 & stillasth==1)
replace currentasth=0 if (asdrdiag==0 | stillasth==0)
lab val currentasth yesno
lab var currentasth "Current asthma, diagnosed by a dr. and still have"
```

For more discussion on this topic, refer to “The Burden of Asthma in Washington State: 2013 Update”, available at:
https://www.doh.wa.gov/DataandStatisticalReports/DiseasesandChronicConditions/AsthmaData

Disability

In 2023, two new questions on disability were asked as Secondary core questions, h131 and h138 along with an existing disability question h21:

- Do you have any of these conditions? Check all that you have.
  - h131a Developmental or intellectual disability (down syndrome, autism, ADHD, or other things like that)
  - h131b Learning disability (dyslexia, dyscalculia, or other things like that)
  - h131c Mental health condition (depression, anxiety, bipolar, schizophrenia, or other things like that)
  - h131d Mobility disability (use a wheelchair, walker, cane, prosthetic, or other things like that)
  - h131e Sensory disability (blindness, low-vision, deaf, hard-of-hearing, DeafBlind, or other things like that)
  - h131f Other health condition (HIV/AIDS, cancer, diabetes, epilepsy, or other things like that)
  - h131g None
- h21: Are you limited in any activities because of a disability or long-term health problem including physical health, emotional, or learning problems expected to last 6 months or more?
  - Yes
  - No
  - Not sure
- h138: At school, do you have an Individualized Education Plan (IEP) or 504 accommodation to help you learn?
  - Yes
  - No
  - Not sure

Any variable for any disability, disab, was computed for students who selected any of the conditions from h131, answered "yes" to being limited in any activities from h21, and answered "yes" to having an IEP or 504 accommodation.

To following code is used to calculate the any disability variable in the dataset, disab:

```
egen disabcondition=rowtotal(h131a h131b h131c h131d h131e h131f)
recode disabcondition 0=0 1/6=1
replace disabcondition=0 if h131g==1
replace disabcondition=. if h131a==. & h131b==. & h131c==. & h131d==. & h131e==. & h131f ==. & h131g ==.
gen disab=0 if disabcondition==0 & (h21==2 | h21==3) & (h138==2 | h138==3)
replace disab=1 if disabcondition==1 | h21==1 | h138==1
replace disab=. if disabcondition==. | h21==. | h138==.
lab def disab 0"No-disability" 1"Disability"
lab val disab disab
lab var disablex "Youth disability screener"
```

Physical Activity – Recode for Meeting Physical Activity Recommendations

The Centers for Disease Control and Prevention has changed their recommendations for physical activity over time. Currently, they recommend that children and adolescents participate in at least 60 minutes of physical activity daily, and muscle strengthening three days a week. Since 2006, HYS has been asking the physical activity question "In the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of physical activity that increases your heart rate or makes you breathe hard some of the time.)". In 2023, this physical activity question was a Secondary bank question.

To calculate for daily physical activity and 3-day a week strengthening:

```
**physical activity – 60 minutes 7 days a week
**physical activity – 60 minutes 7 days a week
tab h63, missing
gen pa_7days=h63
recode pa_7days 1/7=0 8=1
lab def pa_7days 1"daily" 0"less than daily"
lab val pa_7days pa_7days

**muscle strengthening – 3 days a week
tab h12, missing
gen strength_3days=h12
recode strength _3days 1/3=0 4/8=1
lab def strength _3days 1"3+ days" 0"0-2 days"
lab val strength _3days strength _3days
```

More information about physical activity recommendations is available at:
https://www.cdc.gov/physical-activity/php/guidelines-recommendations/index.html

Nutrition – Recode for Fruits and Vegetables Servings "Five a Day"

The Centers for Disease Control and Prevention recommendations for fruit and vegetable consumption for youth is five or more servings per day. The Healthy Youth Survey asks students how often they have eaten several common fruits and vegetables in the past week, and the responses are combined into an estimated daily consumption pattern. Note that the individual responses (for example, fv5, the frequency of carrot consumption alone) are not considered useful and not included in any HYS reports.

It is important to recognize that HYS questions are framed as *times* per day, which is different than *servings*. Also providing serving size information doubles the estimated percent eating "five a day" when number of servings is asked; see Bensley, L., Van Eenwyk, J, and Bruemmer, BA. (2003). Journal of the American Dietetic Association, 103:1530-1532. Thus we can estimate the percent of students who meet past nutrition guidelines ("five a day") using this measure, but it is likely to be an over-estimate if students eat multiple servings at the time they eat fruits or vegetables.

In 2023, the six fruit and vegetable consumption question (fv1, fv2, fv3, fv4, fv5, and fv6) were Secondary bank questions.

To calculate five or more servings per day:

```
*5 servings of fruits and vegetables daily
gen fiveserve=h07
recode fiveserve 1=0 2=0 3=0 4=1
lab def fiveserve 0"Fewer than 5 a day" 1"5+ fruit-veggies a day"
lab val fiveserve fiveserve
```

You can also look at low fruit or vegetable consumption – fruit less than once a day or vegetables less than once a day

```
* fruits less than once a day
gen numday1=fv1
recode numday1 1=0 2=.286 3=.714 4=1 5=2 6=3 7=4
gen numday2=fv2
recode numday2 1=0 2=.286 3=.714 4=1 5=2 6=3 7=4
gen fruit=(numday1 +numday2)
recode fruit 0/0.999=1 1/24=0
lab def fruit 1"less than 1" 0"more than 1"
lab val fruit fruit

* vegetable less than once a day
gen numday3=fv3
recode numday3 1=0 2=.286 3=.714 4=1 5=2 6=3 7=4
gen numday4=fv4
recode numday4 1=0 2=.286 3=.714 4=1 5=2 6=3 7=4
gen numday5=fv5
recode numday5 1=0 2=.286 3=.714 4=1 5=2 6=3 7=4
gen numday6=fv6
recode numday6 1=0 2=.286 3=.714 4=1 5=2 6=3 7=4
gen veggie=(numday3 +numday4 +numday5 +numday6)
recode veggie 0/0.999=1 1/24=0
lab def veggie 1"less than 1" 0"more than 1"
lab val veggie veggie
```

"Obesity" from Body Mass Index h01_14

Obesity is calculated using BMI based on students' self-reported height and weight. Height is converted to centimeters and weight to kilograms, then BMI is computed using the standard formula:

BMI=(weight in kilograms)/(height in centimeters squared)

The cutpoints for obesity and overweight are based on age and gender-specific growth charts developed by the CDC. Individuals in the top 5 percent for BMI based on age- and gender-specific growth charts are considered obese. Those in the top 15 percent, but not the top 5 percent, are considered overweight. Since 2014, h01_14 was also coded to include the results for underweight in the bottom 5% for BMI, and include the results for "healthy weight", which are respondents above 5% and under 85% for BMI.

In 2023, height and weight were Secondary bank questions. In previous years, they were asked on Form B.

Obesity is not reported at the school-building level.

Children's Hope Scale

Hope reflects a future orientated mindset and motivational process by which an individual has an expectation toward attaining a desirable goal. Research has linked hope with overall physical, psychological, and social well-being. This section introduces the Children's Hope Scale, an assessment of agency (ability to initiate and sustain action towards goals) and pathways (capacity to find a means to carry out goals).

Hope Scale questions were asked in 2018 on Form B and expanded to on all forms in 2021. For 2023, the four questions were asked on the Secondary core and the Elementary survey.

To following code is used to calculate the Hope Scale variable in the dataset, hopescale:
```
gen hopescale=(l14 + l15 + l16+ l17)
recode hopescale 0/8=1 9/12=2 13/16=3 17/24=4
lab def hopescale 1"very low hope" 2"slightly hopeful" 3"moderately hopeful" 4"highly hopeful"
lab val hopescale hopescale
```

Screen Time

Excessive screen time is defined as watching or playing video games for three or more hours on a school day. The questions for screen time have changed and are not comparable over time. In 2023, the question was updated to ask "On an average school day, how many hours do you spend in front of a TV, computer, smart phone, or other electronic device watching shows or videos, playing games, accessing the Internet, or using social media (also called "screen time")? (Do not count time spent doing schoolwork.)" and was a bank Secondary and Elementary question, h128.

In the past screen time was computed from two separate questions:

```
gen tvhr=.
replace tvhr=0 if h13_18==1
replace tvhr=.2 h13_18==2
replace tvhr=1 h13_18==3
replace tvhr=2 h13_18==4
replace tvhr=3 h13_18==5
replace tvhr=4 h13_18==6
replace tvhr=5 h13_18==7
gen vidhr=.
replace vidhr=0 h122_18==1
replace vidhr=.2 h122_18==2
replace vidhr=1 h122_18==3 replace vidhr=2 h122_18==4 replace vidhr=3 h122_18==5 replace vidhr=4 h122_18==6 replace vidhr=5 h122_18==7
gen screenttl=tvhr + vidhr
gen scrn3p=.
```

```
replace scrn3p=1 if (screenttl>=3 & screenttl<=10)
replace scrn3p=0 if screenttl<3
replace scrn3p=1 if h102==5
replace scrn3p=0 if h102<=4
lab var scrn3p "3+ hours screen time daily"
lab def scrn3p 0"less than 3 hours" 1"3 or more hours"
lab val scrn3p scrn3p
```

Problematic Internet Use, problematicinternet

In 2021, three questions from the Problematic and Risky Internet Use Screening Scale (PRIUSS)-3 were added to HYS on Form B. The PRIUSS-3 includes questions on anxiety when away from the Internet, loss of motivation when on the Internet, and feelings of withdrawal when away from the Internet. The three variable are recoded and added together to create a score 0-12. Scores of 3 or more are considered at risk for problematic internet use. In 2023, these were bank Secondary questions, h132, h133, h134.

To following code is used to calculate the Problematic Internet Use variable in the dataset, problematicinternet:

```
gen h132new=h132
recode h132new 1=0 2=1 3=2 4=3 5=4
gen h133new=h133
recode h133new 1=0 2=1 3=2 4=3 5=4
gen h134new=h134
recode h134new 1=0 2=1 3=2 4=3 5=4
egen problematicinternet_num = rowtotal(h132new h133new h134new)
replace problematicinternet_num =. if h132new==. | h133new==. | h134new==.
gen problematicinternet= problematicinternet_num
recode problematicinternet 1/2=0 3/12=1
lab def problematicinternet 0"no problematic internet use" 1"problematic internet use"
lab var problematicinternet "Problematic and Risky Internet Use Screening Scale"
```

Washington HYS Adverse Childhood Experience Score (WAH-ACEs), aces_count, aceflag4

Adverse Childhood Experience (ACEs) are indicators of severe stressors that occur during a person's first 18 years of life. Research has shown that these adverse experiences can influence physical, mental, social, and behavioral health across the lifespan. The Washington HYS ACEs Score (WAH-ACEs) is computed from 11 HYS questions on Secondary survey.

The results are collapsed as binary, (0,1) and to create a WAH-ACEs score of 0-11:

- I feel safe during school (NO!/no).
- During the past 30 days, on how many days did you not go to school because you felt you would be unsafe on your way to and from school? (Any days)
- Bullying is when one or more students threaten, spread rumors about, hit, shove, or otherwise hurt another student over and over again. It is not bullying when two students

of about the same strength or power argue or fight or tease each other in a friendly way. In the last 30 days, how often have you been bullied? (Any days)

- During the past 12 months, did someone you were dating or going out with ever limit your activities, threaten you, or make you feel unsafe in any other way? (Yes)
- In the past 12 months, how many times did someone you were dating or going out with physically hurt you on purpose? (Count such things as being hit, slammed into something, or injured with an object or weapon.) (Any times)
- Have you ever been in a situation where someone made you engage in kissing, sexual touch or intercourse when you did not want to? (Yes)
- Not counting TV, movies, video games, and sporting events, have you seen an adult hit, slap, punch, shove, kick, or otherwise physically hurt another adult more than one time? (Yes)
- Has an adult ever physically hurt you on purpose (like pushed, slapped, hit, kicked or punched you), leaving a mark, bruise or injury? (Yes)
- How often does a parent or adult in your home swear at you, insult you, put you down or humiliate you? (Sometimes, Often, Very often)
- Are your current living arrangements the result of losing your home because your family cannot afford housing? (Yes)
- How often in the past 12 months did you or your family have to cut meal size or skip meals because there wasn't enough money for food? (Any times)

Some students did not answer all 11 WAH-ACEs questions on the survey. To calculate their individual scores and account for those missing answers, a method called multiple imputation was used. This method also used predictors such as mother's education, sex, and race/ethnicity to estimate students' WAH-ACEs score.

The WAH-ACEs score includes a sexual violence question that schools could request an exemption for in 2023. Schools that chose not to administer the removable questions will not have results for the WAH-ACEs score. Use the aces_count variable for scores from 0 to 11 and the collapsed aceflag4 for 0, 1, 2, 3, or 4 or more ACEs.

More information is available in the WAH-ACEs Interpretive Guide: https://www.askhys.net/HYS/GetDocument?path=Reports&fileName=HYS_Interpretive-Guide_ACEs_2021_FINAL_1_13_22.pdf

Risk and Protective Factors

Risk factors are characteristics of individuals, families, and communities that make us more vulnerable to ill health. Protective factors are characteristics that "protect" and thus significantly reduce the likelihood of disease, injury, or disability. Health-related risk and protective factors are commonly grouped into three general categories including lifestyle and behavior; environmental exposure, encompassing both the physical and social environments; and biologic and genetic characteristics. Risk and protective factors are often measured as different ends of the same continuum. For example, wearing seatbelts protects against motor vehicle-related injury and death; not using a seatbelt increases risk for these outcomes.

The risk and protective factors in the Healthy Youth Survey focus on lifestyle and behaviors and the social environment. The social environment includes the school, peer, community and home environments, as well as individual assets. The survey includes some factors directly related to health, but most of the risk and protective factors are associated with intermediary behaviors, such as drug and tobacco use, violence, and staying in school. Many of these factors have been compiled into scales following the research of Hawkins and Catalano at the Social Development Research Group (SDRG), University of Washington.

The Hawkins and Catalano theoretical framework of risk and protective factors includes twenty-five factors, the scales for which are part of a survey called Communities That Care (CTC). The presence of multiple risk factors predicts an increased likelihood that an individual will engage in substance use, while the presence of protective factors helps to buffer the effect of risk factors and increase resilience.

For additional information, see the "What are Risk and Protective Factor fact sheet: https://www.askhys.net/HYS/GetDocument?path=Training&fileName=Risk%20and%20Protective%20Factors%20on%20HYS.pdf. For a detailed summary of the history of Risk and Protective Factors Scales used in the HYS see: https://www.askhys.net/HYS/GetDocument?path=Reports&fileName=2010%20History%20of%20Risk%20and%20Protective%20Factors%20in%20HYS.pdf

Content Changes Over Time

Several Healthy Youth Survey questions have changed over time. A crosswalk and data dictionary of survey questions back to 2002 is available on the AskHYS Data Resources page: https://www.askhys.net/Resources/Data

The names of survey questionnaires or the method in which they have been administered has also changed over time. This table provides a list of names and the format in which they were administered.

Year	Survey Name Grade 6	Survey Name Grades 8/10/12	Format
2002	Form C	Form A and Form B	Paper and pencil
2004	Form C	Form A and Form B	Paper and pencil
2006	Form C	Form A and Form B	Paper and pencil
2008	Form C	Form A and Form B	Paper and pencil
2010	Form C	Form A and Forms B/NS	Paper and pencil
2012	Form C	Form A and Forms B/NS	Paper and pencil
2014	Form C	Forms A/A-Enhanced and Forms B/B-Enhanced	Paper and pencil
2016	Form C	Form A and Form B	Paper and pencil
2018	Form C	Form A and Form B	Paper and pencil
2021	Form C	Form A and Form B	Mostly only, some Paper and pencil
2023	Elementary	Secondary	Online

Throughout the years of HYS, schools have been able to choose to include/exclude some questions on the survey. The following table describes how these questions have been asked each administration:

- Removable: The last page of the Paper and pencil surveys had a page with questions that could be removed by schools by tearing off a perforated page (2002-2008 and 2016-2018). In 2010 and 2012, Form B included two types of removable pages, one with the normal removable pages (NS) and another that included those questions plus sexual behavior questions (B). Schools could register for B or NS. In 2021, schools could register to have the sexual behavior and violence questions not included on their online surveys.
- Enhanced: In 2014, there were two versions of Form A and two versions of Form B. Schools could register for the enhanced versions of the surveys. Form A enhanced included sexual orientation and Form B included sexual behavior and sexual violence.
- Exempt: In 2021, schools taking the online survey could request an exemption from the sexual orientation and gender identity questions. In 2023, schools could request an exemption from the sexual behavior and sexual violence questions.
- Optional: in 2023, schools with 6th grade could register for an optional gender identity question.

This table includes a list of the removable questions for each year and form:

Year	Grade 6 Form	Grades 8/10/12 Form
2002	Removable Form C: Family Opportunities (risk22p, f13, f14, f15), Family Rewards (risk23p, f16, f17, f18, f19), abuse (h51), food insecurity (f22, f23)	Removable Form A: Poor Family Management (risk21p, f05, f06, f07, f08, f09, f10, f11, f12), Family Opportunities (risk22p, f13, f14, f15), Family Rewards (risk23p, f16, f17, f18, f19) Removable Form B: tobacco (d17, d18, d19, d57, d58, d59), sexual violence (h49, h50, h51, h52), harassment (c03, c04, c05), family (f20, f21), food insecurity (f22, f23)
2004	Removable Form C: Family Opportunities (risk22p, f13, f14, f15), Family Rewards (risk23p, f16, f17, f18, f19)	Removable Form A: Poor Family Management (risk21p, f05, f06, f07, f08, f09, f10, f11, f12), Family Favor Antisocial Behavior (risk26p, f28. f29) Removable Form B: tobacco (d17, d18, d19), sexual violence (h49, h50), harassment (c03, c04, c05), family (f20, f21), food insecurity (f22)
2006	Removable Form C: Family Opportunities (risk22p, f13, f14, f15), Family Rewards (risk23p, f16, f17, f18, f19)	Removable Form B: tobacco (d17, d18, d19), asthma (h69, h70, h71, h72, h73, h74, h75, h76), diabetes (h77, h78) Removable Form A: Poor Family Management (risk21p, f05, f06, f07, f08, f09, f10, f11, f12), Family Opportunities (risk22p, f13, f14, f15), Family Rewards (risk23p, f16, f17, f18, f19)
2008	Removable Form C: Family Opportunities (risk22p, f13, f14, f15), Family Rewards (risk23p, f16, f17, f18, f19), food insecurity (h08)	Removable Form A: Poor Family Management (risk21p, f05, f06, f07, f08, f09, f10, f11, f12), Family Opportunities (risk22p, f13, f14, f15), Family Rewards (risk23p, f16, f17, f18, f19), Parents Favor Drug Use (risk25p, f24, f25, f26) Removable Form B: tobacco (d13_06, d16, d17, d18, d19, d81, d28), asthma (h69, h70, h72,h75, h76), diabetes (h77), food insecurity (h08, f22)
2010	Removable Form C: Family Opportunities (risk22p, f13, f14, f15), Family Rewards	Removable Form A: Poor Family Management (risk21p, f05, f06, f07, f08, f09, f10, f11, f12), Family Opportunities (risk22p, f13, f14, f15), Family Rewards (risk23p, f16, f17, f18, f19) Removable Form B: food insecurity (f22, h08), asthma (h70, h72), sexual

Year	Grade 6 Form	Grades 8/10/12 Form
	(risk23p, f16, f17, f18, f19), food insecurity (h08)	behavior (h96, h97, h98, h99), abuse (h51, h52), Removable Form NS: food insecurity (f22), asthma (h70, h72), abuse (h51,h52),
2012	Removable Form C: Family Opportunities (risk22p, f13, f14, f15), Family Rewards (risk23p, f16, f17, f18, f19), food insecurity (h08)	Removable Form A: Poor Family Management (risk21p, f05, f06, f07, f08, f09, f10, f11, f12), Family Opportunities (risk22p, f13, f14, f15), Family Rewards (risk23p, f16, f17, f18, f19) Removable Form B: food insecurity (f22, h08), asthma (h95, h70, h100, h69), sexual behavior (h96, h97, h98, h99), sexual violence (h49, h87), abuse (h51), sexual education (s21, s22) Removable Form NS: food insecurity (f22, h08), asthma (h95, h70, h100, h69), sexual violence (h49, h87), abuse (h51), sexual education (s21, s22)
2014	None	Enhanced Form A: sexual orientation (g20) Enhanced Form B: sexual behavior (h97, h98, h99, h103), sexual violence (h105, h106)
2016	None	Removable core: sexual orientation (g20) Removable Form B: sexual behavior (h97, h98, h99), sexual violence (h105)
2018	None	Removable core: sexual orientation (g20), gender identity (g26) Removable Form B: sexual behavior (h97_18, h98_18, h103_18, h126), sexual violence (h105_18, h127)
2021	None	Exempt core: sexual orientation (g20), gender identity (g26) Removable Form B: sexual behavior (h97_18, h98_18, h103_18, h126), sexual violence (h105_18, h127)
2023	Optional: gender identity (g44)	Exempt bank: sexual behavior (h97_18, h98_18, h103_18,hj126), sexual violence(h105_18, h127)

Getting to Know STATA

This section includes a table that provides a brief overview of some useful STATA commands.

For more information on the specific commands and the output they generate see Data Analysis sections 4 and 5, type help and the command in STATA, or use the Help drop- down on your STATA tool bar and select the STATA command.

For retrieving and saving data

Command	Example	Results
use	use "C:\My Documents\2023HYS.dta"	Opens the STATA file
save	save "C:\My Documents\new2023HYSdata.dta"	Saves a modified STATA data file
keep	keep d21_23 h53 grade g05_18, or keep if conum==1	Keeps only specific variables, or specified response options. Use caution, keep will permanently delete responses if you save over your old dataset.
drop	drop d21_23, or drop if conum==2	Drops specific variables, or specified response options. Use caution, drop will permanently delete responses if you save over your old dataset.

For variable exploration

Command	Example	Results
codebook	codebook c01	Describes the variable c01. Includes the question, the data type (numeric or string), the number of values, the number of missing, the response options and labels.
summarize	summarize c01	The number of observations, the mean, the standard deviation, the minimum value and the max value
summarize, detail	summarize c01, detail	Also includes the percentiles, variance, skewness and kurtosis
histogram	histogram c01	Plots a histogram of the variable responses

Creating and transforming variables

Command	Example	Results
gen	gen year==2023, gen bully=c01	Creates a new variable, or creates a new variable based on an original variable
recode	recode bully 1=0 2/5=1	Recodes the variable response options, in this example recodes the response options to be not bullied vs. bullied
replace	gen bully=.	In this example, the gen command creates a new variable and the replace commands describe the new variable response options.
	replace bully==0 if c01==1 replace bully==1 if (c01==2 | c01==3 | c01==4 | c01==5)	Replace can also be used to create more complex recodes that combine more than one original variable

For labeling variables

Command	Example	Results
lab var	lab var bully "bullied, none vs. any	Labels the variable with a description of the variable
	any"	
lab def	lab def noneany 0"none" 1"any"	Creates new response option labels that can be applied to a variable
lab val	lab val bully noneany	Applies the response option label

Setup commands for analysis

Command	Example	Results
svyset	gen fakewt==1	Creates a new variable with a weight of 1
	svyset [pweight=fakewt]	Designates the weighting. In this example the newly created fakewt variable is used, so the weight for all responses is equal to 1. Use for analysis of a census county.
	svyset [pweight=fakewt], psu(schgrd) svyset [pweight=fakewt], psu(psu)	Sets the weight as 1 and the primary sampling unit as the school building/grade. Use for analysis of the state sample or analysis of a county with a county sample.

Updating STATA

Command	Example	Results
update	update all	Install official updates to STATA and provides new programs or commands.

For computing frequencies

Command	Example	Results
tab	tab c01 grade	Runs a crosstab of the two variables. Tab does not calculate percentages but just provides the number of observations for each cross
svy:tab	svy:tab c01 grade, col se ci obs	Can be used once the data is set up with the svyset command. Svy:tab runs crosstabs of two variables and provides a percentage by row or column and can include additional information such as the standard error (se), 95% confidence intervals (ci) and the number of observations (obs) if designated

For adding additional datasets

Command	Example	Results
merge	merge (schgrd) using "C:\My Documents\2021 school demo.dta"	Adds additional data to the respondents. In this example we are adding school building information based on the schgrd, possibly school type or enrollment, or free and reduced lunch rates. Remember if you have a de-identified dataset you will have to use schgnoid or psu variable depending on the HYS year.

Command	Example	Results
	merge 1:1	Newer versions of STATA have additional merge options: For 1 to 1 merge
	merge m:1 merge 1:m merge m:m	Merges many variables one to one Merges one variable one to many Merges many variables one to many
append	append using "C:\My Documents\2021 HYS data.dta"	Adds additional respondents. In this example we are adding an additional year of data from 2021.

A few more useful commands

Command	Example	Results
if	svy:tab c01 grade if g05_18==1, col se ci obs svy:tab c01 grade if g05_18==2, col se ci obs	Limits the analysis to females. "If" at the end of a command means the command is to use only the data specified. When doing CI, use "if" with caution as it can affect CI. Subpop is preferable.
subpop	tab grename sexrename sexsvy:tab csvy:tab c01 grade, subpop(male) col se ci obs	Use the tab and gen commands to create dummy variables (coded as 0,1). Use the dummy variables with subpop to subset your analysis to a specific group.
&	keep if (conum==1 & grade==6)	And
|	keep if (conum==1 | conum==2)	Or
*		Use in "do files" for notes, * before any statement will not run in STATA
///		Use in "do files" if statements are too long to fit on a page. /// at the end of a statement will make it continue to the next line

HYS Data Analysis in STATA

This section describes how to set up STATA for different types of data, how to explore HYS data, transform it and run some simple analyses.

For a hands-on experience, a STATA "do file" is provided in the following Appendix:

- Appendix A: Do File ~ HYS State Data Analysis Examples in STATA

The do file follows this section of the manual so that you can run analyses and experience producing similar output. If you are using the state sample data, you should be able to reproduce the outputs in this section. This section is formatted so that STATA commands are highlighted in grey and STATA outputs are highlighted in black boxes

This section covers the following topics:

- Opening your dataset
- Do files
- General setup for survey analysis – state, county, ESD, district and building
- Analysis by Grade
- Frequencies and summaries of statistics
- Creating new variables
- Labeling new variables
- Dichotomizing variables
- Two-way tables and crosstabs
- More options for using "svy"
- Additional tips for formatting
- Stratified analysis and subpopulations

For a table of commonly used STATA commands see the previous section Getting to Know STATA. For short examples of STATA coding see the Data Analysis – Quick Examples.

Results presented in this section are from the 2023 HYS data.

Opening your Dataset and "Do Files"

Open the data file by typing "use" and then the file pathway in quotes (see syntax below). Or use the STATA drop down menus by selecting File – Open - then find the dataset you want to open and double click on it:

```
clear
set mem 200m
*use "hys2023 state.dta"
```

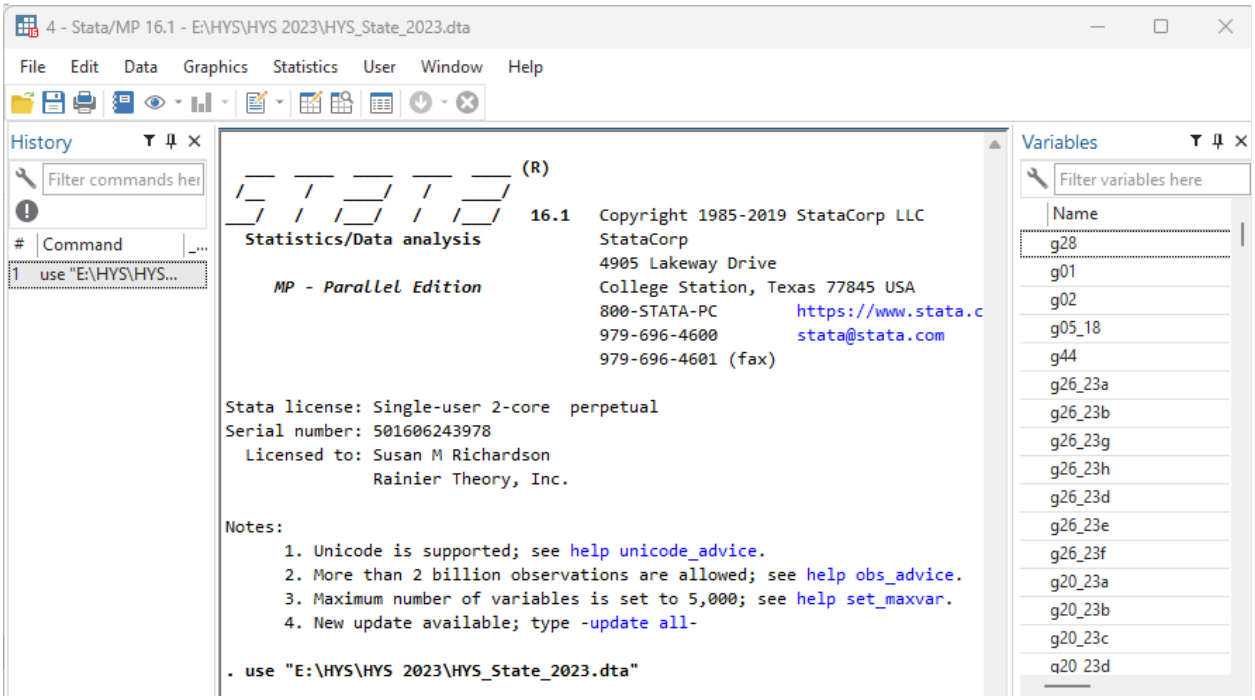
*insert the name of the file path to your state sample data

To open a "do file" click the "New do-file Editor" icon:  on the tool bar, select Do File Editor from the Window drop down menu, or hit Ctrl 9.

Once a blank do file is open, you can begin writing commands or open an existing do file by selecting Open from the do file - File drop down menu. "Do files" are handy because they keep a record of your coding and analysis. They also make it easy to change commands and rerun analysis.

To run individual lines or sections of commands in the "do file," highlight them and hit the icon  that looks like a page with text with an arrow. To run the complete do file hit the icon that looks like a blank page with an arrow  .

Or right click, select all and copy commands you have typed into the History box in STATA (usually on the left) and paste them into a do file.



General Setup for Survey Analysis

Prior to survey analysis, it is necessary provide STATA with setup commands to account for weighting, primary sampling units, and strata.

The setup options needed are dependent on the type of data being using and which type of analysis being conducted. Below are some examples of types of analysis that would influence setup options:

- State sample analysis
- County sample analysis
- County census analysis
- County "mixed sampling" analysis

- ESD analysis
- District analysis
- Building analysis

State Sample Analysis

The state sample was drawn by simple random sample, so there is no weighting or strata required. For survey analysis STATA requires a weight, so you will need to create a fake weight (fakewt) that is equal to 1. The state sample was drawn at the school building level, so the primary sampling unit is the school building (schgrd) if your dataset has identifiers, or schgnoid (2002-2014) or psu (2016 and newer) if the dataset you have has the school buildings de-identified.

Setup command example:

```
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
keep if staterec==1
```

County Analysis

Be cautious not to report data on counties that should not be reported because either the number of schools/districts or the number of students (less than 15 valid) did not meet the minimum threshold for reporting. It is also recommended to not report counties with survey participation rates below 40%. Exclude specific counties or grades using the "drop" command.

For 2023, the following counties and grades must be dropped and cannot be reported:

```
drop if conum==1 & grade==6
drop if conum==4 & grade==12
drop if conum==7 & (grade==8 | grade==10)
drop if conum==10 & (grade==6 | grade==10 | grade==12)
drop if conum==11
drop if conum==12 & grade==12
drop if conum==17 & grade==12
drop if conum==19 & grade==12
drop if conum==21 & grade==12
drop if conum==23 & grade==12
drop if conum==24 & (grade==10 | grade==12)
drop if conum==26 & (grade==10 | grade==12)
drop if conum==30 & (grade==6 | grade==8)
drop if conum==32 & grade==12
drop if conum==33
drop if conum==35
drop if conum==36 & grade==12
drop if conum==37 & grade==12
drop if conum==38 & (grade==6 | grade==8)
```

To find past year participation, see Appendix A or go to:
https://www.askhys.net/SurveyResults/PastParticipation

NOTE: The county participation rates vary by year. For more information on who received reports in previous years and who results can be reported for, go to the AskHYS Past Participation webpage: https://www.askhys.net/SurveyResults/PastParticipation

County sample analysis

Random county samples were drawn for counties with more than 30 schools in a grade. The following table describes the county samples from 2002 to 2023.

Year	Clark	King	Kitsap	Pierce	Snohomish	Spokane	Thurston
2002	Grades 6 & 8	All grades	Grade 6	All grades	All grades	Grades 6 & 8	Grade 6
2004	-	All grades	Grade 6	All grades	All grades	Grade 6	-
2006	-	All grades	Grade 6	All grades	All grades	Grades 6 & 8	-
2008	Grades 6 & 8	All grades	-	All grades	All grades	Grade 6	Grade 6
2010	Grades 6 & 8	All grades	-	All grades	All grades	Grades 6 & 8	Grade 6
2012	-	All grades	-	All grades	All grades	Grade 6	Grade 6
2014	Grade 6	All grades	-	All grades	All grades	Grades 6 & 8	Grade 6
2016	Grades 6 & 8	All grades	-	All grades	All grades	Grade 6	-
2018	-	All grades	-	All grades	All grades	Grade 6 & 8	-
2021	-	All grades	-	All grades	All grades	Grade 6 & 8	-
2023	-	All grades	-	All grades	All grades	Grade 6 & 8	-

In 2023, county samples were drawn for all grades in King, Pierce, and Snohomish counties. To analyze data from one of these counties, use a similar setup as the state sample.

Setup command example:

```
keep if conum==17
*i.e., conum==17 is King County
keep if corec==1
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd) (or use psu(psu) if you have deidentified data
```

County census analysis

For other counties, all schools in the county are included (a census), so the primary sampling unit is the individual student. A psu is not needed.

Setup command example:

```
gen fakewt=1
keep if conum==2
*i.e., conum==2 is Asotin County
keep if corec==1
svyset [pweight=fakewt]
```

County with "mixed sampling" analysis

In 2023, only one county had a mix of sampling and census, Spokane County. County samples were only drawn for Spokane 6th and 8th grades, but 10th and 12th grades were a census. County sampling changes from year to year. For previous years see the table of Sampled Counties by Year above.

This scenario deserves special attention depending on the grades being analyzed. If you are just analyzing the 6th grade, then use the setup for county sample analysis noted above. If you are trying to look at all grades in the county, you need to create a new variable for your primary sampling unit. The new variable needs to simultaneously take into account 1) the primary sampling unit for grade six as the school building and 2) the primary sampling unit for the other grades as the individual student.

Setup command for Spokane example:

```
keep if conum==32
keep if corec==1
gen fakewt=1
gen id = _n
gen psu=id +10000
replace psu=schgrd if (grade==6 | grade==8)
svyset [pweight=fakewt], psu(psu)
```

All or multiple county analysis

The following commands can be used to run analysis for all counties, some sampled and some census. A complete census dataset is needed to run all counties.

Create a new primary sampling unit variable that takes into account the different sampling schemes, school building for counties and grades with samples and individual students for census counties.

For 2023, the following code is needed to create a psu to account for county sampling and set up data for analyzing data from multiple counties:

```
keep if corec==1
gen fakewt=1
gen id=_n
gen psu=id +10000
replace psu=schgrd if conum==17
replace psu=schgrd if conum==27
replace psu=schgrd if conum==31
replace psu=schgrd if conum==32 & (grade==6 | grade==8)
svyset [pweight=fakewt], psu(psu)
```

The command “gen id=_n” creates a unique identifier for each respondent. When we create our new “psu” variable we add 10,000 to the “id” variable to make sure the new “psu” variable is also unique. Then we replace the individual “id” with the school identifier “schgrd” (or schgnoid) in the counties that were sampled.

Also, drop any county/grades that should not be reported due to participation. For 2023, the following counties and grades should be dropped (because they cannot be reported and less than 40% response):

```
drop if conum==1 & grade==6
drop if conum==4 & grade==12
drop if conum==7 & (grade==8 |  grade==10)
drop if conum==10 & (grade==6 | grade==10 | grade==12)
drop if conum==11
drop if conum==12 & grade==12
drop if conum==17 & grade==12
drop if conum==19 & grade==12
drop if conum==21 & grade==12
drop if conum==23 & grade==12
drop if conum==24 & (grade==10 | grade==12)
drop if conum==26 & (grade==10 | grade==12)
drop if conum==30 & (grade==6 | grade==8)
drop if conum==32 & grade==12
drop if conum==33
drop if conum==35
drop if conum==36 & grade==12
drop if conum==37 & grade==12
drop if conum==38 & (grade==6 | grade==8)
```

To find out which counties and grades that need to be dropped for previous years, please see Appendix A: County-level Analysis Coding by Year.

ESD Analysis

ESDs are made up of counties or sections of counties. Some ESDs are made up of counties with samples and some with census. To account for the different sampling schemes, a weight needs to be used that takes the enrollment of schools in the sampled counties. The different sampling schemes also affect the primary sampling units, so a new primary sampling unit variable needs to be created. Also, because county is another layer of sampling, it needs to be accounted for by being designated as strata.

As with counties, make sure that the ESD had a 40% response rate and enough school participation to receive results. For 2023, the following ESDs and grade should be dropped for low response:

```
drop if esdnum==101 & grade==12
drop if esdnum==113 & grade==12
drop if esdnum==171 & grade==12
```

Some datasets may already have a “esdpsu” variable. Please do not use this variable, it has an error where the stratum has only a single sampling unit for census counties. Please use the codes below to compute new “esdpsu” variables.

ESD without sampled counties analysis

In 2023, ESDs 105, 112, 113, 114, 123 and 171 did not have any sampled counties, so no special weight or psu needs to be applied, but county does need to be included as strata.

Setup command example for ESD with no sampled counties:

```
keep if esdum==105
keep if esdrec==1
gen fakewt=1
svyset [pweight=fakewt], strata(conum)
```

ESD with sampled counties analysis

In 2023, ESD 101, 121 and 189 had some counties with samples. To analyze data from one of these ESDs, we need to apply weighting and a psu that takes into account the different county sampling.

Setup command examples for ESDs with some sampled counties:

```
keep if esdum==101
keep if esdrec==1
gen id=_n
gen esdpsu=id +10000
replace esdpsu=schgrd if conum==32 & (grade==6 | grade==8)
svyset [pweight=esdwt], psu(esdpsu) strata(conum)

keep if esdum==121
keep if esdrec==1
gen id=_n
gen esdpsu=id +10000
replace esdpsu=schgrd if conum==17
replace esdpsu=schgrd if conum==27
svyset [pweight=esdwt], psu(esdpsu) strata(conum)

keep if esdum==189
keep if esdrec==1
gen id=_n
gen esdpsu=id +10000
replace esdpsu=schgrd if conum==31
svyset [pweight=esdwt], psu(esdpsu) strata(conum)
```

All or multiple ESD analysis

Similar to the counties, the following code is needed to create a psu to account for county sampling and set up data for analyzing data from multiple ESDs:

```
keep if esdrec==1
gen id = _n
gen esdpsu=id + 10000
replace esdpsu=schgrd if conum==17
replace esdpsu=schgrd if conum==27
```

```
replace esdpsu=schgrd if conum==31
replace esdpsu=schgrd if conum==32 & (grade==6 | grade==8)
svyset [pweight=esdwt], psu(esdpsu) strata(conum)
```

Drop ESD grades with less than 40% participation:

```
drop if esdnum==101 & grade==12
drop if esdnum==113 & grade==12
drop if esdnum==171 & grade==12
```

District and Building Analysis

For district analysis, all school buildings are to be included because all buildings were eligible to participate, so the primary sampling unit is the student. The variable distnum is not a unique number, i.e., more than one district have the distnum 100. District numbers are only unique within counties, so for district analysis always use the codis variable (a number that includes the county number and the district number).

Setup command example for district:

```
keep if codis==15204
*i.e., codis=15204 is Coupeville School District in Island County
keep if distrec==1
gen fakewt=1
svyset [pweight=fakewt]
```

For building analysis all students were eligible, so students are the primary sampling unit.

Setup command example for building:

```
keep if schnum==2707
*i.e., schnum=2707 is Anacortes Middle School
gen fakewt=1
svyset [pweight=fakewt]
```

Special Regions Analysis

Accountable Communities of Health (ACH), Behavioral Health Organizations (BHO), and Regional Service Area (RSA)

The 2023 HYS datasets include variables to help run analysis by special regions for ACH's, BHO's, and RSA's.

Setup command example for Cascade Pacific Alliance Region ACH:

```
tab achid
keep if achid==2
*i.e., achid=2 is Cascade Pacific Alliance Region
gen fakewt=1
svyset [pweight=fakewt]
```

Setup command example for Greater Columbia

```
tab bhoid
keep if bhoid ==1
*i.e., achid=1 is Greater Columbia
gen fakewt=1
svyset [pweight=fakewt]
```

Setup command example for Thurston-Mason RSA:

```
tab rsaid
keep if rsaid==3
*i.e., achid=3 is Thurston-Mason RSA
gen fakewt=1
svyset [pweight=fakewt]
```

Analysis by Grade

The variable for a student's grade level is "grade."

We recommend that all analyses be done stratified by grade, because of the sampling procedure by grade and since responses are often variable according to the student grade level. We also recommend using the "svy" option in STATA. "Svy" is a prefix used with STATA commands when analyzing survey data. "Svy" takes weights, psu, strata, etc. into account when running estimation commands.

NOTE: There may be some exceptions to this, see the Combining Grade Levels section.

Some variables such as the ones that measure substance abuse, vary greatly by grade level. Others such as the prevalence of asthma are more stable across grade levels.

To simply look at the results for one variable by grade, use "svy:tab":

```
svy:tab d20use grade, col obs per
```

Drank alcohol - Any use in the past 30 days	Grade 6	8	10	12	Total
No	98.77	95.8	90.95	81.61	93.75
	8893	6847	5525	2885	2.4e+04
Yes	1.233	4.198	9.053	18.39	6.254
	111	300	550	650	1611
Total	100	100	100	100	100
	9004	7147	6075	3535	2.6e+04

Key: column percentage
number of observations

Pearson:
Uncorrected chi2(3) = 1407.7179
Design-based F(2.74, 616.82) = 172.8018 P = 0.0000

Interpretation: 1% of 6th graders, 4% of 8th graders, 9% of 10th graders, and 18% of 12th graders statewide drank alcohol in the past 30 days in 2023.

Frequencies and Summaries of Statistics

Run basic frequencies using the "tab" command.

Example in STATA using variable d14, 30-day current cigarette use:

```
tab d20_23
```

During the past 30 days, on how many days did you drink a glass, can or bottle o	Freq.	Percent	Cum.
0 days	24,150	93.75	93.75
1 - 2 days	1,015	3.94	97.69
3 - 5 days	278	1.08	98.77
6 - 9 days	120	0.47	99.23
10 - 19 days	105	0.41	99.64
20 - 29 days	24	0.09	99.73
All 30 days	69	0.27	100.00
Total	25,761	100.00	

For initial variable exploration, use the summarize command to find out the number of observations, mean, standard deviation, min and max type:

```
summarize d20_23
```

Variable	Obs	Mean	Std. Dev.	Min	Max
d20_23	25,761	1.111991	.5448768	1	7

For more information, including the percentile breakdowns, variance, skewness and kurtosis:

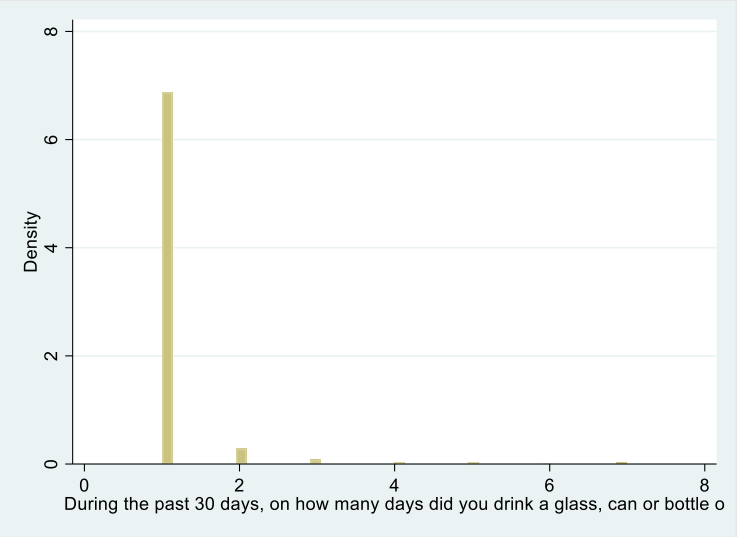
summarize d20_23, detail

During the past 30 days, on how many days did you drink a glass, can or bottle o

	Percentiles	Smallest		
1%	1	1		
5%	1	1		
10%	1	1	Obs	25,761
25%	1	1	Sum of Wgt.	25,761
50%	1		Mean	1.111991
		Largest	Std. Dev.	.5448768
75%	1	7		
90%	1	7	Variance	.2968908
95%	2	7	Skewness	6.83867
99%	4	7	Kurtosis	58.63968

Using histograms can also be helpful in getting a quick view of the distribution:

histogram d20_23



Explore variables by demographics such as grade to find out the number of observations for each category. Example, current alcohol drinking on any days by grade:

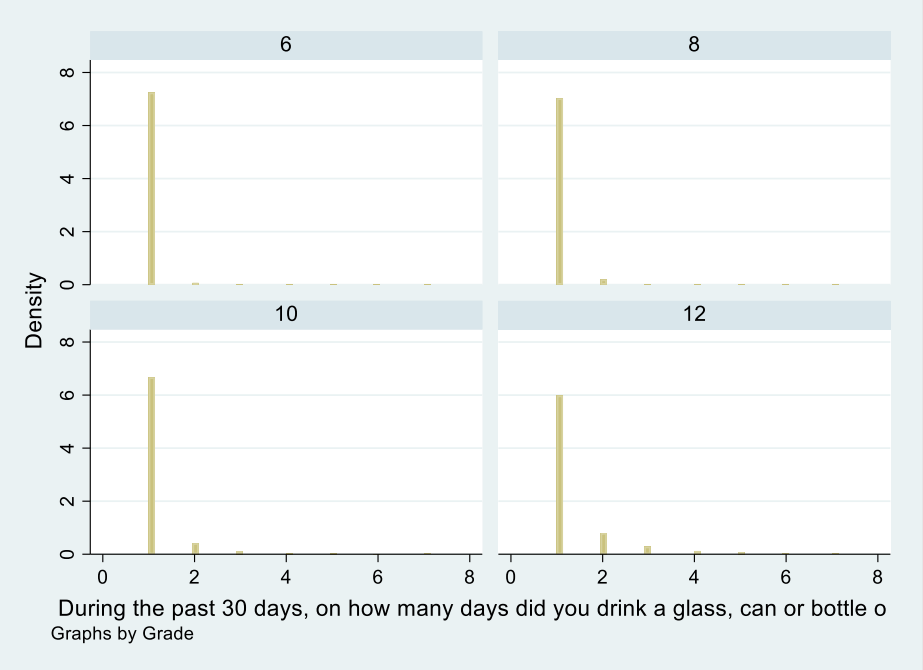
tab d20_use grade

Drank alcohol - Any use in the past 30 days	Grade 6	8	10	12	Total
No	8,893	6,847	5,525	2,885	24,150
Yes	111	300	550	650	1,611
Total	9,004	7,147	6,075	3,535	25,761

Notice that the proportion of 12th graders who drank alcohol on any days in the past 30 days is much higher than 6th graders.

Get a visual look at the data by running a histogram by grade:

```
histogram d20 by(grade)
```



Creating New Variables

There are many ways to create new variables in STATA - below are a few commands and options.

Generating

The command for creating a new variable is "generate" or "gen" for short. Below are a few examples using the "gen" command:

- gen alc30=d20_23 ~ creates a new variable that is the same as the original variable
- gen alcmarij30 = d20use + d21_16use ~ creates a variable that adds the responses from one variable to another for each respondent
- gen new=. ~ creates a variable with all missing values

- tab grade, gen(gradecat) ~ creates a new dummy variable for each of the original variable response options – with "gradecat" as the prefix followed by the numbers 1,2,3, etc. depending on the number of response options. In this case "gradecat1", "gradecat2," etc.

NOTE: For more information on generating variables, type the command "help gen" in STATA

Recoding

Often during analysis, response options need to be collapsed or dropped. The simplest way to do this is to create a new variable using the "gen" command and reorder the response options using the "recode" command. It is always a good idea to create a new variable before recoding in case you need to go back and use the original response options sometime during the analysis or recode the variable in a different way.

Before recoding, look at the numerical values assigned to each response option using the "codebook" command:

```
codebook d20_23
```

```
d20_23                  During the past 30 days, on how many days did you drink a glass, can or bottle o

                type:  numeric (byte)
               label:  HYSD20_23FMT

               range:  [1,7]                        units:  1
      unique values:  7                          missing .:  3,348/29,109

         tabulation:  Freq.   Numeric  Label
                     24,150         1  0 days
                      1,015         2  1 - 2 days
                        278         3  3 - 5 days
                        120         4  6 - 9 days
                        105         5  10 - 19 days
                         24         6  20 - 29 days
                         69         7  All 30 days
                      3,348         .
```

The codebook command shows that the variable has 6 response options. To recode the 30- day smoking response options into none or any, change the "none" response to 0 and all of the other responses to 1 "any." After recoding the new variable, run a "tab" to make sure the new response options reflect the desired change.

```
gen alc30 = d20_23
recode alc30 1=0 2=1 3=1 4=1 5=1 6=1 7=1
tab alc30 grade
```

alc30	Grade 6	8	10	12	Total
0	8,893	6,847	5,525	2,885	24,150
1	111	300	550	650	1,611
Total	9,004	7,147	6,075	3,535	25,761

Another option for recoding the above variable is:

```
recode alc30 1=0 2/7=1
```

After recoding it is always a good idea to check the new results to make sure they make sense when compared to the pre-collapsed variable results. In this case, check the recode by using the pre-collapsed variable d20_23.

```
tab d20_23 alc30
```

During the past 30 days, on how many days did you drink a glass, can or bottle o	alc30 0	1	Total
0 days	24,150	0	24,150
1 - 2 days	0	1,015	1,015
3 - 5 days	0	278	278
6 - 9 days	0	120	120
10 - 19 days	0	105	105
20 - 29 days	0	24	24
All 30 days	0	69	69
Total	24,150	1,611	25,761

NOTE: For more information on "recode," type the command "help recode" in STATA

Replacing

To combine more than one variable and do more complex recoding, use the "replace" command. For example, to calculate if someone has either seen a doctor or a dentist in the past 24 months, you need to combine two different variables, h24 visiting a doctor and h25 visiting a dentist.

Before starting to replace, it's always a good idea to run the codebook command on any variables that will be used to make sure to verify the numeric value is given to each response option.

```
codebook h24 h25
```

```
h24                   When was the last time you saw a doctor or health care provider for a check-up
-------------------------------------------------------------------------------

             type:  numeric (byte)
            label:  HYSH24FMT

            range:  [1,5]                        units:  1
      unique values:  5                      missing .:  20,404/29,109

       tabulation:  Freq.   Numeric  Label
                    5,677        1  During the past 12 months
                    1,126        2  Between 12 and 24 months ago
                      435        3  More than 24 months ago
                      261        4  Never
                    1,206        5  Not sure
                   20,404        .
```

To determine who visited both a doctor and a dentist, create a new variable "visitboth" with all values designated as missing. To do this type "gen visitboth=." Setting the new variable to missing ensures that you will only add in the respondents you want.

```
gen visitboth=.
```

For those who visited both a doctor and a dentist in the past 12 months, we want respondents who answered "during the past 12 months" for both of the questions. The following symbols are needed to tell STATA what to do:

Use "=" to assign the numeric value to the response option for the new variable Use "==" to designate which variable response options you are using

Use "&" to symbolize the word "and"

Below is an example of how you would use the symbols mentioned above to tell STATA the conditions for designating those who visited both as one:

```
replace visitboth=1 if (h24==1 & h25==1)
```

For those who didn't visit either a doctor or a dentist in the past 12 months, we want respondents who answered "between 12 and 24 months ago" or "more than 24 months ago" or "never." To tell STATA what to do, use "|" to symbolize the word "or" (use shift and hit "\").

Below is an example of how you would use this symbol above to tell STATA the multiple conditions for designating those who did not visit both as zero:

```
replace visitboth=0 if (h24==2 | h24==3 | h24==4 | h25==2 | h25==3 | h25==4)
```

When generating variables with "replace", make sure respondents who didn't answer both questions are excluded and tell STATA to set them to missing:

```
replace visitboth=. if (h24==. & h25==.)
tab visitboth grade
```

visitboth	Grade 8	10	12	Total
0	905	881	640	2,426
1	2,090	1,878	1,014	4,982
Total	2,995	2,759	1,654	7,408

Notice that there are no results for 6th grade because these questions were not asked of 6th graders.

Recoding can be tricky because it is not just one-sided coding. Make sure to include exactly the respondents you want and exclude the respondents you don't want.

Labeling New Variables

Once a new variable has been created or response options have been recoded, use the following commands to create labels:

- "lab var" or "label variable" ~ adds a description to your variable
- "lab def" or "label define" ~ creates response option labels (once you create a response option label, you can reuse it over and over with other variables)
- "lab val" or "label value" ~ applies response option labels to your variable

```
lab var visitboth "visited both a doctor and a dentist in the past year"
lab def visit 1"both" 0"one or none"
lab val visitboth visit
tab visitboth
```

visited both a doctor and a dentist in the past year	Freq.	Percent	Cum.
one or none	2,426	32.75	32.75
both	4,982	67.25	100.00
Total	7,408	100.00	

NOTE: For more information on labeling, type the command "help label" in STATA

General Rules on Creating Dichotomous or Binary Variables

When creating dichotomous or binary variables, HYS uses the guidelines from the CDC's Youth Risk Behavior Survey when possible to allow for comparisons to national data.

When calculating dichotomous or binary variables, in general, the numerator is the percent saying "Yes." The denominator is either all students or a subset of students who have indicated in the current survey they participate in a selected activity or behavior. Students must have provided valid data to be included in any dichotomous variable calculations.

Therefore, students with missing responses are not included. Some examples are included below.

Example 1:

Question: Has a doctor or nurse ever told you that you have asthma?

1. *Yes*
2. *No*
3. *Not sure*

Summary text: Percentage of students who had ever been told by a doctor or nurse that they had asthma

Numerator: Students who answered a. Yes
Denominator: Students who answered a. Yes, b. No, or c. Not sure

```
gen asthmalifetime=h22
recode asthmalifetime 1=1 2/3=0
```

Example 2:

Question: During the past 30 days, if you used alcohol, what type of alcohol did you usually drink?

1. *I did not drink alcohol during the past 30 days.*
2. *I do not have a usual type.*
3. *Beer*
4. *Flavored malt beverages, such as Smirnoff Ice, Bacardi Silver, or hard lemonade*
5. *Wine*
6. *Hard liquor (such as vodka, rum, tequila, gin, or whiskey) alone or mixed in a drink*
7. *I drank alcohol but am unsure of what type*
8. *Some other type*

Summary text: Among students who said they drank alcohol in the past 30 days in this question, the percentage who drank beer

Numerator: Students who answered 3 Beer
Denominator: Students who answered 2, 3, 4, 5, 6, 7, or 8
Students who answered a. I did not drink alcohol during the past 30 days are set to missing

```
gen drankbeer=d94
recode drankbeer 1=. 2=0 3=1 4/8=0
```

Example 3:

Question: How much do you think people risk harming themselves if they smoke one or more packs of cigarettes per day?

1. *No risk*
2. *Slight risk*
3. *Moderate risk*
4. *Great risk*
5. *Not sure*

Summary text: Percentage of students who said they "great risk" from pack a day smoking

Numerator: Students who answered 4 Great risk
Denominator: Students who answered 1, 2, 3, 4, or 5

```
gen ciggreatrisk=p01
recode ciggreatrisk 1/3=0 4=1 5=0
```

OR if you don't want to count the students who said "Not sure"
Numerator: Students who answered 4 Great risk
Denominator: Students who answered 1, 2, 3, or 4

```
gen ciggreatrisk=p01
recode ciggreatrisk 1/3=0 4=1 5=.
```

NOTE: If a question has a "Not sure" response, determine if the "Not sure" respondents should be included in the denominator. If "Not sure" means "No" because they didn't answer "Yes," then combine "No" and "Not sure" together. If "Not sure" means the respondent didn't have a response or didn't understand the question, then do not include them in the denominator. This is different from the Behavioral Risk Factor Surveillance Survey (BRFSS), a telephone survey of adults that allows the caller to keep probing for a Yes/No response.

Two-Way Tables or Crosstabs

"Svy" is a prefix used with STATA commands for analyzing survey data. "Svy" takes weighting, psu, strata, etc. into account when running estimation commands. "Svy:tab" is a tabulation command. It also provides a test of independence.

Example of crosstab using variables:

h53: During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities? (no/yes)

g05_18: What sex/gender were you at birth, even if you are not that gender today?

```
svy:tab h53 g05_18
```

During the past 12 months, did you ever feel so sad or hopeless almost every day	What sex were you assigned at birth? Female	Male	Total
No	.3123	.396	.7083
Yes	.1953	.0964	.2917
Total	.5076	.4924	1

Key: cell proportion

Pearson:
Uncorrected chi2(1) = 715.1203
Design-based F(1, 150) = 561.8860 P = 0.0000

Interpretation: There are four cells in the two-way table. The results in the four cells add up to 100%: female no (31%) + female yes (20%) + male no (40%) + male yes (10%) = 100%

The key below the total row of the table includes a reminder that the results are displayed as cell proportions.

Underneath the key, the output also includes the results from a Pearson correlation test. If the P (p value) is less than 0.05, then one of the cells is significantly different than the others at a 95% confidence level.

Additional Options with "Svy"

There are a number of additional options that can be added to a "svy:tab" to change the way the data is displayed or to provide more information. To use the additional options, type a comma (,) after the variables.

Col and Row

"col": gives column percents. In this example, results are displayed for females no/yes in the first column and for males yes/no in the second column. **Each column adds up to 100%.**

```
svy:tab h53 g05, col
```

During the past 12 months, did you ever feel so sad or hopeless almost every day	What sex were you assigned at birth? Female	Male	Total
No	.6153	.8043	.7083
Yes	.3847	.1957	.2917
Total	1	1	1

Key: column proportion

Interpretation: 38% of females and 20% of males have experienced depressive feelings in the past year.

"row": gives row percents. In this example, results are displayed for no female/male in the first row and yes female/male in the second row. **Each row adds up to 100%.**

svy:tab h53 g05, row

During the past 12 months, did you ever feel so sad or hopeless almost every day	What sex were you assigned at birth? Female	Male	Total
No	.4409	.5591	1
Yes	.6696	.3304	1
Total	.5076	.4924	1

Key: row proportion

Interpretation: Of those students who experienced depressive feelings in the past year, 67% were female and 33% were male.

NOTE: Remember if "col" or "row" are not specified, the cells in the entire table add up to 100%.

Obs

Adding "obs" at the end of the "svy:tab" command will give the number of observations in each cell, each column, each row, and the total observations.

SE and CI

Include more options at the end of "svy:tab" to give the standard error (se) and 95% confidence intervals (ci).

Percentages

The "per" or "percent" command displays the point estimates as percentage points.

```
svy:tab h53 g05_18, col obs se ci per
```


Interpretation:
Among females, percent who experienced depressive feelings in the past year:

- 38.5% = point estimate
- ±2.1% = symmetric 95% confidence interval (calculated by multiplying the standard error 1.059 * 1.96 = 2.1%)
- [36.4%, 40.6%] = non- symmetric 95% percent upper and lower bound confidence intervals
- 3232 respondents

Among males, percent who experienced depressive feelings in the past year:

- 19.6% = point estimate
- ±1.4% = symmetric 95% confidence interval (calculated by multiplying the standard error 0.7569 * 1.96 = 1.4%)
- [18.1%, 21.1%] = non- symmetric 95% percent upper and lower bound confidence intervals
- 1595 respondents

Additional Tips for Formatting Data

The following commands can be used to format Stata output into a more understandable and readable format:

Widening table columns

Use stubwidth and cellwidth to change the size of output columns so that all of the label text can be displayed:

```
svy:tab s01 g05_18, row ci stubwidth (20) cellwidth (15)
```

How often do you feel the schoolwork you are assigned is meaningful and importan	What sex were you assigned at birth? Female	Male	Total
Almost always	.5212 [.5024,.5399]	.4788 [.4601,.4976]	1
Often	.507 [.4955,.5185]	.493 [.4815,.5045]	1
Sometimes	.5376 [.5257,.5494]	.4624 [.4506,.4743]	1
Seldom	.4744 [.4544,.4944]	.5256 [.5056,.5456]	1
Never	.3873 [.3593,.4161]	.6127 [.5839,.6407]	1
Total	.5056 [.4984,.5128]	.4944 [.4872,.5016]	1

Rounding

The "format" command is used to specify the display format for variables. When used as below, the number after the period allows you to indicate how many decimal points are included (thus 0 means to round the results to a whole number).

Use the format command to tell STATA how many numbers to display before and after the decimal point.

The rounding used to produce HYS results has changed over time. For consistency, it is recommended that analysis be produced to the 100th and rounded to the 10th or a whole number. E.g., use format(%3.2f) to produce the results 50.48% and report as 50.5% or 50%.

```
svy:tab grade g05_18, per row ci format(%3.2f)
```

Grade	What sex were you assigned at birth? Female	Male	Total
6	50.48 [49.59,51.38]	49.52 [48.62,50.41]	100.00
8	50.59 [49.63,51.55]	49.41 [48.45,50.37]	100.00
10	49.76 [48.33,51.19]	50.24 [48.81,51.67]	100.00
12	48.23 [46.42,50.04]	51.77 [49.96,53.58]	100.00
Total	50.01 [49.41,50.61]	49.99 [49.39,50.59]	100.00

Removing Scientific Notation

Rounding can also be useful if there are a large numbers of observations and the results come out in scientific notation.

```
svy:tab grade g05, row per obs format(%9.2f)
```

Grade	What sex were you assigned at birth? Female	Male	Total
6	50.48 4848.00	49.52 4755.00	100.00 9603.00
8	50.59 4102.00	49.41 4007.00	100.00 8109.00
10	49.76 3522.00	50.24 3556.00	100.00 7078.00
12	48.23 1997.00	51.77 2144.00	100.00 4141.00
Total	50.01 14469.00	49.99 14462.00	100.00 28931.00

In this example of the option "format(%9.2f)", the 9 tells STATA to display up to 9 digits before the decimal point and the .2 tells it to display 2 digits after the decimal point. Format affects both the point estimate (in the previous example when format was not specified, 4 digits were displayed after the decimal point) and how it affects the observations. Experiment with the numbers in the format command to get the ideal output.

Vertical Alignment

The "vert" or "vertical" command will display the upper and lower bound confidence intervals (ci) on top of each other and without the bracket and comma. This can be useful when copying results into Excel.

svy:tab grade g05, row ci per vert

Grade	What sex were you assigned at birth? Female	Male	Total
6	50.48	49.52	100
	49.59	48.62	
	51.38	50.41	
8	50.59	49.41	100
	49.63	48.45	
	51.55	50.37	
10	49.76	50.24	100
	48.33	48.81	
	51.19	51.67	
12	48.23	51.77	100
	46.42	49.96	
	50.04	53.58	
Total	50.01	49.99	100
	49.41	49.39	
	50.61	50.59	

For more information on format, type the command help format or see the Additional Tips for Formatting Data section in this manual.

Stratified Analysis and Subpopulations

Often crosstabs are u sed to produce results among specific subpopulations, i.e. among certain grade levels, races, etc. One simple way is to use "drop" or "keep" commands to limit the dataset to only include the subgroup of interest. For example, to look only at results among 8th grade students:

keep if grade==8 will remove students from all of the other grades.
drop if grade==8 will remove 8th grade students but keep other graders.

> NOTE: Make sure not save over the data file after using a keep or drop command. Saving will overwrite the file and records that were there previously will be lost.

To look at results among students who used marijuana in the past 30 days:

keep if d21_16use==1 will only keep the current marijuana users in the dataset.

Another option is to use the subpop command. Any binary variable that is coded as 0, 1 can be used as a subpopulation. Examples for making subpop variables:

Creates a subpop of only current marijuana users

```
gen marij30=d21_16
recode marij30=1=0 2/7=1=0
```

Creates a subpop of only Black-African Americans (selected Black or African American only, not in combination with another race)

```
gen black=g06_23
recode black 1=0 2=0 3=1 4=0 5=0 6=0 7=0 8=0
```

Creates a subpop of only 8th grade students (ok to use replace since there are no missing respondents in the grade variable, but check the number of missing before using this command for any other variable as missing values will be coded 0)

```
tab grade, missing
gen eight=1 if grade==8
replace eight=0 if grade~=8
```

Try creating new combined variables for subpops, for example, this creates a subpop of only 8th grade Black-African American students:

```
gen black8=g06
recode black8 1=0 2=0 3=1 4=0 5=0 6=0 7=0 8=0
replace black8=. if grade~=8
```

The best way to create subpops is to create "dummy" variables. This command will generate a new variable for each response option:

```
tab grade, gen(gradecat)
```

Creates four new variables:

- gradecat1 (for 6th grade)
- gradecat2 (for 8th grade)
- gradecat3 (for 10th grade)
- gradecat4 (for 12th grade)

NOTE: Four dummy variables will be created if the dataset includes four grades levels. If 6th graders were dropped from the dataset, then only three dummy variables and gradecat1 will be 8th grade.

Once you have your subpop variables created, you can use them with svy:tab.

For example, to look at marijuana use in the home by current marijuana use among 8th graders:

```
svy:tab d21_16use d99, subpop(gradecat2) col per
```

```
Used marijuana - Any use in the past 30 days | Does anyone who lives with you now use marijuana?
                                             |        No        Yes      Total
-------------------------------------------- | ----------------------------------
                                          no |     85.86      14.14        100
                                         yes |     40.38      59.62        100
                                             |
                                       Total |     84.05      15.95        100

  Key:  row percentage

  Pearson:
    Uncorrected   chi2(1)         = 1465.1086
    Design-based  F(1, 225)       =  235.1965     P = 0.0000
```

Interpretation: Among 8th graders who use marijuana, 60% live with someone who uses marijuana. Among 8th graders who do not use marijuana, 14% live with a marijuana user. The p-value is 0.0000, so 8th graders who use marijuana are more likely to live with someone who uses marijuana compared to 8th graders who don't use marijuana.

Note that the p-value does not actually equal 0, but the value is smaller than the number of digits the STATA output shows. In this case, for example, the p-value is less than 0.0000.

Trying looking at this the other way, by switching the variable order, i.e., to look at current marijuana use by marijuana use in the home:

```
svy:tab d99 d21_16use, subpop(gradecat2) col per
```

```
Does anyone who lives with you now use marijuana? | Used marijuana - Any use in the past 30 days
                                                  |        no        yes      Total
------------------------------------------------- | ----------------------------------
                                               No |     98.09       1.91        100
                                              Yes |     85.14      14.86        100
                                                  |
                                            Total |     96.03      3.975        100

  Key:  row percentage

  Pearson:
    Uncorrected   chi2(1)         = 1465.1086
    Design-based  F(1, 225)       =  235.1965     P = 0.0000
```

Interpretation: Among 8th graders who live with a marijuana user, 15% use marijuana. Among 8th graders who do not live with a marijuana user, 2% use marijuana. The p-value is 0.000, so 8th graders who live with a marijuana user are more likely to use marijuana compared to 8th graders who do not live with a marijuana user.

Another way to conduct stratified analyses is to use the "over" command. The "over" command replaces the "by" command used in previous versions of STATA (version 8 and earlier). The

variable or variables in parentheses after the over command define your subpopulations, e.g., to look at current marijuana use by grade and gender. When running a mean, make sure that the response of interest is equal to 1 and the other responses are equal to 0.

```
svy:mean d21_16use, over(grade g05_18)
```

	Mean	Linearized Std. Err.	[95% Conf.	Interval]
c.d21_16use@grade#g05_18				
6#Female	.0057005	.0012401	.0032567	.0081443
6#Male	.0038716	.000869	.0021592	.0055839
8#Female	.0433007	.0042084	.0350078	.0515935
8#Male	.0304914	.0033539	.0238824	.0371004
10#Female	.0915931	.0083242	.0751897	.1079964
10#Male	.0757881	.007811	.0603961	.09118
12#Female	.1806601	.0164025	.1483379	.2129823
12#Male	.1460929	.0119467	.1225511	.1696346

Interpretation: Current marijuana use for 12th grade females is 18.1%. Current marijuana use for 12th grade males is 14.6%.

HYS Data Analysis – Quick Examples

This section provides a few examples of how to run crosstab analyses in STATA with:

STATA setup commands for analysis:

- State sample data
- State census data
- County sample, census, or mixed sampling data
- ESD level analysis

STATA commands for simple crosstabs:

- One variable by grade
- One variable by grade and gender
- One recoded variable by race and grade
- Two variables by grade
- Two variables by race
- Two variables by grade and gender

For a hands-on experience, a STATA "do file" was provided with this manual. The do file is available in the following Appendix:

- Appendix B: Do File ~ Quick Examples of HYS Data Analysis in STATA

Setup for Survey Analysis

The following STATA commands can be used to set up each different level of analysis. For more information on setup commands see the section General Setup for Survey Analysis.

NOTE: Some datasets do not have the variable "schgrd," but instead have the variable "schgnoid" from 2002-2014 and "psu" in 2016-2018If your dataset has "psu" or "schgnoid", use it in place of schgrd in these STATA commands.

State Sample Data

```
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
```

State Census Data

```
gen fakewt=1
svyset [pweight=fakewt]
```

County Sample Data ~ for Counties without Samples (Census)

In 2023, these counties included: Adams, Asotin, Benton, Clark, Chelan, Clallam, Columbia, Cowlitz, Douglas, Ferry, Franklin, Garfield, Grant, Grays Harbor, Island, Jefferson, Kitsap, Kittitas,

Klickitat, Lewis, Lincoln, Mason, Okanogan, Pacific, Pend Oreille, San Juan, Skagit, Skamania, Stevens, Thurston, Wahkiakum, Walla Walla, Whatcom, Whitman, Yakima.

```
*keep if conum==X
*Insert your county number (conum) for X (see Demographic variables, conum)
keep if corec==1
gen fakewt=1
svyset [pweight=fakewt]
```

County Sample Data ~ for Sampled Counties

In 2023, these counties included: Pierce, King, Snohomish.

```
*keep if conum==X
*Insert your county number (conum) for X (see Demographic variables, conum)
keep if corec==1
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
```

County Sample Data ~ for Counties with Mixed Sampling

In 2023, counties with mixed sampling (some grades census and some grades sampled) included:

Spokane: 6th and 8th grades were sampled – 10th and 12th grades were census

```
keep if conum==32
keep if corec==1
gen fakewt=1
gen id=_n
gen psu=id +10000
Breplace psu=schgrd if (grade==6 | grade==8)
svyset [pweight=fakewt], psu(psu)
```

NOTE: Make sure not to run analysis for any county/grade levels that didn't meet county-level reporting requirements

Regional ESD Data

ESD regions are made up of counties or parts of counties, some which are sampled and some which are census. The following coding will set up analysis of any ESD.

```
*keep if esdnum==X
*Insert your ESD number (esdnum) for X
keep if esdrec==1
gen id = _n
gen psu=id + 10000
replace psu=schgrd if (conum==17)
replace psu=schgrd if (conum==27)
replace psu=schgrd if (conum==31)
replace psu=schgrd if conum==32 & (grade==6 | grade==8)
svyset [pweight=esdwt], psu(esdpsu) strata(conum)
```

NOTE: Again, do not to run analysis for any ESD/grade levels that didn't meet ESD-level reporting requirements.

Data Analysis Example

**Current marijuana use by grade*

To run one variable, d21_16use (current marijuana – already coded as no use or any use 0,1) by grade and include the following formatting options after the comma.

- col for column percentages
- per for results displayed in %
- se for standard error (to convert se to ci for upper/lower confidence intervals
- obs for "n"

```
svy:tab d21_16use grade, col per se ci obs format(%3.2f)
```

**Current marijuana use by grade and sex assigned at birth*

Generate a binary (1,0) sex dummy variable for subpopulations for marijuana use by grade among a specific sex.

```
tab g05_18, gen(sex)
rename sex1 female
rename sex2 male
svy:tab d21_16use grade, subpop(girl) col per se ci obs format(%3.2f)
svy:tab d21_16use grade, subpop(boy) col per se ci obs format(%3.2f)
```

Generate a binary (1,0) grade dummy variable for subpopulations for marijuana use by sex at birth for a specific grade.

```
tab grade, gen (gradecat)
svy:tab d21_16use g05_18, subpop(gradecat1) col per se ci obs format(%3.2f)
svy:tab d21_16use g05_18, subpop(gradecat2) col per se ci obs format(%3.2f)
svy:tab d21_16use g05_18, subpop(gradecat3) col per se ci obs format(%3.2f)
svy:tab d21_16use g05_18, subpop(gradecat4) col per se ci obs format(%3.2f)
```

**Current marijuana by grade and chronic absenteeism*

Create a chronic absenteeism variable (absent 3 or more days) with recode, then define and attach the new response option labels and add the new variable with a description. Crosstab marijuana by race and grade.

```
codebook g27
gen chronicabsent= g27
recode chronicabsent 1/2=0 3=1
lab def chronicabsent 1 "Yes-3 or more days" 0"No"
lab val chronicabsent chronicabsent
lab var chronicabsent "Absent from school on 3 or more days in past month for any reason"
svy:tab d21_16use chronicabsent, subpop(gradecat2) col per se ci obs format(%3.2f)
svy:tab d21_16use chronicabsent, subpop(gradecat3) col per se ci obs format(%3.2f)
```

```
svy:tab d21_16use chronicabsent, subpop(gradecat4) col per se ci obs format(%3.2f)
```

**Current marijuana use by depressive feelings*

Crosstab marijuana by depressive feelings and grade.

```
svy:tab d21_16use h53, subpop(gradecat2) col per se ci obs format(%3.2f)
svy:tab d21_16use h53, subpop(gradecat3) col per se ci obs format(%3.2f)
svy:tab d21_16use h53, subpop(gradecat4) col per se ci obs format(%3.2f)
```

**Current marijuana use by depressive among chronic absentee students*

Generate binary (0,1) for chronic absenteeism and grade subpopulations.

```
gen absent8=1 if chronicabsent==1 & grade==8
replace absent8=0 if chronicabsent==0 & (grade==10 | grade==12)
gen absent10=1 if chronicabsent==1 & grade==10
replace absent10=0 if chronicabsent==0 & (grade==8 | grade==12)
gen absent12=1 if chronicabsent==1 & grade==12
replace absent12=0 if chronicabsent==0 & (grade==8 | grade==10)
svy:tab d21_16use h53, subpop(absent8) col per se ci obs format(%3.2f)
svy:tab d21_16use h53, subpop(absent10) col per se ci obs format(%3.2f)
svy:tab d21_16use h53, subpop(absent12) col per se ci obs format(%3.2f)
```

**Current marijuana use by depressive feelings among boys*

```
gen boy8=1 if g05_18==2 & grade==8
replace boy8=0 if g05_18==1 &  (grade==10 | grade==12)
gen boy10=1 if g05_18==2 & grade==10
replace boy10=0 if g05_18==1& (grade==8 | grade==12)
gen boy12=1 if g05_18==2 & grade==12
replace boy12=0 if g05_18==1 & (grade==8 | grade==10)
svy:tab d21_16use h53, subpop(boy8) col per se ci obs format(%3.2f)
svy:tab d21_16use h53, subpop(boy10) col per se ci obs format(%3.2f)
svy:tab d21_16use h53, subpop(boy12) col per se ci obs format(%3.2f)
```

NOTE: Use caution with crosstabs of variables with low prevalence, or when looking at small subpopulations. Do NOT report results if there are less than 5 observations per cell when running state level data or less than 10 observations per cell when running sub-state-level analysis.

Comparing State and Local Data

This section describes how to compare local data to the state. The types of comparisons that can be made will depends on the type the data available and the desired interpretation.

The easiest way to compare state and local data is to use the HYS Reports of Results. Reports of Results were generated by the HYS survey contractor, Looking Glass Analytics for school buildings, districts, ESD regions, and counties that participated in the survey at the minimum level. Reports of results for the state sample, state sample subpopulations (gender and race), and counties are available on the AskHYS.net website. Building, district, ESD, and county reports also include the state sample results so comparisons can be made by using the confidence intervals to determine differences. (If confidence intervals do not overlap then the difference is statistically significant.) It's always a good idea to compare the results of STATA analyses to the produced reports online to confirm that they are accurate.

STATA can be used to do formal comparisons with statistical testing. There are two ways to make state and local comparisons:

1. Comparing local to state results that don't include the local results (the rest of the state)
2. Comparing local to the complete state sample

We recommend that when determining statistically significant differences between local data and state data, that the analysis compares local results to the rest of the state sample (i.e., the state sample minus the local results).

When reporting percentage point estimates and confidence intervals for the state sample, use the full state sample results so that the results do not contradict previously published state results. Be sure to document any methods that were used for state and local comparisons.

Appending

Use the "append" command to add datasets with similar variables. For example, to combine local and state sample HYS results, use the "append" command. Appending simply adds the additional data respondents below to the original respondents matching up the responses to the variable names.

Note: STATA defines the original data (the dataset opened first) as the "master data" and the new data the is being appended on as the "using data."

Data Preparation:

Create a new variable that will differentiate the respondents from each dataset. For example, open the 2023 state sample dataset and create a new variable for location:

```
use "C:2023 state.dta"
gen location=0
```

To compare to the rest of the state, drop any of the schools that are in the local data from the state sample data. Double check the conum variable to confirm the local schools were dropped and then save the file under a new name.

```
*drop if conum==X
*Insert the county number (conum) for X (see Demographic variables, conum)
tab conum
```

Be careful to save the new dataset under a different name. Don't save over the original state sample dataset.

```
save "C:2023 state location.dta"
```

Open the 2023 local dataset and create the same location variable with a different value:

```
use "C:2023 local.dta"
gen location=1
keep if corec==1
save "C:2023 local location.dta"
```

Sometimes it is useful to include only the variables that will be needed for the analysis. Use the "drop" or "keep" command to get rid of any unnecessary variables in both datasets before appending. This can speed up analysis and decrease the chance that STATA may become confused during the append.

Append the data:

Open the new 2023 state dataset and append using with the 2023 local dataset:

```
use "C: 2023 state location.dta"
append using "C:2023 local location.dta"
```

Another way to append data in STATA is to use the dropdown menus. Open the 2023 state location dataset, then select Data, Combine Datasets, Append Datasets. Browse to find the 2023 local dataset and hit Submit.

Label the new location variable:

```
lab var location "state and local identifier"
lab def location 0"state" 1"county"
lab val location location
```

Append Investigation:

It is important to verify that the append came out correctly. To make sure that all of the data is there, run a tab by location to confirm that the number of respondents is the same as in both of the original datasets (there should not be any missing data):

```
tab location, missing
```

If everything looks good, save the new combined dataset with a new file name:

```
save "C: 2023 state and local combo.dta"
```

Comparing Local vs. the Rest of the State Sample

Now open the new combined state and local dataset and set it up for survey analysis:

```
use "C: 2023 state and local combo.dta"
```

If the local data has sampling (such as King, Pierce, Snohomish counties) then set up for analysis with:

```
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
```

If the local data is census data (most counties, all districts and schools) then set up for analysis with:

```
gen fakewt=1
gen id = _n
gen psu = id + 5000
replace psu = schgrd if location==0
svyset [pweight=fakewt], psu(psu)
```

This creates a psu with individual responses for the local census and groups school building responses for the state sample.

To run a svy:tab by the group variable, first create a subpopulation to run the variable by a specific grade:

```
tab grade, gen(gradecat)
rename gradecat1 six
rename gradecat2 eight
rename gradecat3 ten
rename gradecat4 twelve
svy:tab d21_16use location, subpop(eight) col se obs
```

Comparing Local vs. the Complete State Sample

Instead of dropping the local results from the state sample, another option is to compare the local results to the complete state sample.

Append the data:

Open the 2023 state dataset and append using with the 2023 local dataset:

```
use "C: 2023 state.dta"
gen location=0
lab var location "state and local identifier"
lab def location 0"state" 1"county"
lab val location location
append using "C:2023 local.dta"
```

Then to label the local results location, use:

```
replace location=1 if location==.
```

If the local data is a sample (such as King, Pierce, Snohomish counties) then set up for analysis with:

```
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
```

If the local data is census data (most counties, all districts and schools) then set up for analysis with:

```
gen fakewt=1
gen id = _n
gen psu = id + 5000
replace psu = schgrd if location==0
svyset [pweight=fakewt], psu(psu)
```

This creates a psu with individual responses for the local census and groups school building responses for the state sample.

To run a svy:tab by the group variable, first create a subpopulation to run the variable by a specific grade:

```
tab grade, gen(gradecat)
rename gradecat1 six
rename gradecat2 eight
rename gradecat3 ten
rename gradecat4 twelve
svy:tab d21_16use location, subpop(eight) col se obs
```

Comparing Years of Data

This section describes how to combine multiple years of HYS data. It includes information about how to use the append command. Append allows the additional of more respondents to the data.

Note: STATA defines the original data (the dataset opened first) as the "master data" and the new data the is being appended on as the "using data."

Appending

Use the "append" command to add datasets with similar variables. For example, if you wanted to combine HYS 2023 and 2021 data, use the "append" command. Appending simply adds the additional data respondents below to the original respondents matching up the responses to the variable names.

Data Preparation:

Create a new variable that will differentiate the respondents from each dataset. Open the 2023 dataset and create a new variable for year if there isn't one already:

```
use "C:2023 data.dta"
gen year=2023
save "C: 2023 data year.dta"
```

Open the 2021 dataset and create the year variable if there isn't one already:

```
use "C: 2021 data.dta"
gen year=2021
save "C: 2021 data year.dta"
```

Sometimes it is useful to include only the variables that you will need for your analysis. Use the "drop" or "keep" command to get rid of any unnecessary variables in both datasets before appending. This can speed up analysis and decrease the chance that STATA may become confused during the append.

Append the data:

Open the 2023 dataset and append using:

```
use "C:2023 data year.dta"
append using "C:2021 data year.dta"
```

It's always best to append older data onto the new data, that way the newest variable labels and formats will be included in the appended dataset.

Append Investigation:

It is important to verify that the append came out correctly. In general, the 2023 variables will stay in the same order and any variables that were unique to the 2021 data will now be at the

bottom of your variable list. To make sure that all of the data is there, run a tab by year to see if you have the same number of respondents as in both of the original datasets:

```
tab year, missing
```

There should not be any missing data. It's always a good idea to run some frequencies to verify that the results are the same as they were before the append.

If everything looks correct, save the new combined dataset with a new file name:

```
save "C:2023 and 2021 combo.dta"
```

Analysis Stratified by Year

At this time, we are not recommending that STATA be used to determine significant trends over time. For trend analysis, we recommend having at least 5 data points and using a regression analysis program like Joinpoint.

Joinpoint is available at: https://surveillance.cancer.gov/joinpoint/

STATA can be used to determine changes from a single survey administration to another, e.g., a change from 2021 to 2023.

The following is a comparison of current alcohol use for 8th and 10th graders from 2021 to 2023 using the state sample:

```
use "C:2023 and 2021 combo.dta"
```

To compare 2021 to 2023 state sample data, or local sample data (such as King, Pierce, Snohomish counties) then set up for analysis with:

```
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
```

To compare 2021 to 2023 local census data (most counties, all districts and schools) then set up for analysis with:

```
gen fakewt=1
svyset [pweight=fakewt]
```

To compare local census data that is sampled one year and not the other, or in one grade or not the other, see HYS Data Analysis in STATA – the section General Setup for Survey Analysis and the sub-section on County with mixed sampling analysis. Then create subpopulations to run analysis for a specific grade:

```
tab grade, gen(gradecat)
rename gradecat1 six
rename gradecat2 eight
rename gradecat3 ten
rename gradecat4 twelve
```

Compare current cigarette smoking in the past two years among 8th graders.

svy:tab d14use year, subpop(eight) col se obs per format(%9.2f)

Smoked cigarettes in past 30 days	Survey year 2021	2023	Total
No	98.69	98.52	98.60
	(0.18)	(0.16)	(0.12)
	6928.00	7037.00	13965.00
Yes	1.31	1.48	1.40
	(0.18)	(0.16)	(0.12)
	92.00	106.00	198.00
Total	100.00	100.00	100.00
	7020.00	7143.00	14163.00

Key: column percentage
(linearized standard error of column percentage)
number of observations

Pearson:
Uncorrected chi2(1) = 3.1963
Design-based F(1, 307) = 0.4581 P = 0.4990

Interpretation: 8th grade current cigarette smoking was 1.3% in 2021 and 1.5% in 2023. There was no change in current cigarette smoking among 8th graders from 2021 to 2023 (p-value is 0.4992, greater than 0.05).

Then compare current cigarette smoking in the past two years among 6th graders.

svy:tab d14use year, subpop(six) col se obs per format(%9.2f)

Electronic cigarettes, e-cigs, or vape pens - Any use in the past 30 days	Survey year 2018	2021	Total
no	96.97	96.99	96.98
	(0.27)	(0.33)	(0.22)
	8571.00	7380.00	15951.00
yes	3.03	3.01	3.02
	(0.27)	(0.33)	(0.22)
	268.00	229.00	497.00
Total	100.00	100.00	100.00
	8839.00	7609.00	16448.00

Key: column percentage
(linearized standard error of column percentage)
number of observations

Pearson:
Uncorrected chi2(1) = 0.0264
Design-based F(1, 314) = 0.0029 P = 0.9568

Interpretation: 6th grade current cigarette smoking was 0.8% in 2021 and 0.4% in 2023. There was a significant decrease in current cigarette smoking among 6th graders from 2021 to 2023 (p-value is 0.0036, less than 0.05).

When to Combine Multiple Years of Data

We generally recommend that all analyses be done stratified by year.

However, under certain conditions, you may want to consider combining years of data. Some possible reasons to combine years include:

1. If crosstabs don't meet the minimum cell requirements (5 per cell for state and 10 per cell for local).
2. If there are a small number of respondents, like in smaller counties, or when analyzing non-core items located toward the end of the survey form.
3. If the survey question has been asked consistently over the years and results are similar from year to year.
4. If you want to analyze variables that are only applicable to a small group, such as trying to find out how many students with current asthma visited an emergency room in the past year.

Please give extra attention to dot point 3 for 2021. Results for 2021 may be different from other years due to COVID-19. Use caution when combining 2021 data with any other years.

Methods for Combining Years

We recommend using the following decision rules for year-adjustments when using year-combined single grade estimates:

1. Crude: If there is no substantial difference in a factor across years, report a "crude" estimate and note that the results are from multiple years. When running a factor by year in STATA, the Total column includes this "crude" estimate, or run the analysis without year as a variable or subpopulation (e.g., not stratifying by grade). In this case, set up the analysis to include "year" as strata, e.g., for state sample analysis:
   svy:set [pweight=fakewt], psu(schgrd) strata(year)
2. Average: If there is a significant difference in a factor by year, but the purpose of the analysis is simply to express the burden of a condition, then use an average of the year-specific results. Averaging gives equal weight to the results for each year, instead of giving equal weight to each respondent.

For example, to estimate the percent of 10th graders who seriously considered suicide, run the factor by year then add the estimates for each year together and divide by the number of years, e.g., in 2021 and 2023 the statewide average seriously considering suicide was: 17.5%, calculated by (19.6+15.4)/2.

Unfortunately, this method does not produce a confidence interval.

3. Adjusted: If there is significant difference in a factor by year and the purpose of the analysis is to present an assessment of underlying factors that may lead to a condition, then it would be appropriate to use a year-adjusted estimate.

For example, to look at the percent of youth cigarette smokers by gender who say that tobacco is easy to get and to illustrate that it is different for males and females to inform planning, then use a year-adjusted estimate.

Year-Adjusted Estimates

Year-adjustment ensures that each year contributes equally to the overall percent estimate. This can be especially useful if the number of respondents differ by year, e.g., there was greater participation in one year compared to another. To generate a year-adjusted estimate, data must be weighted.

Steps for Creating Year-Adjusted Estimates

Using the 2021 and 2023 state samples, here is the methodology for weighting the data to create year-adjusted estimates (i.e., combining both years 2018 and 2021).

According to the 2021-2022 and the 2023-2024 OSPI enrollment data for the state (available on their website: https://ospi.k12.wa.us/data-reporting/data-portal) there were:

Grade	2018	2021	Combined
6th graders	80,747	80,450	161,197
8th graders	85,813	81,910	167,723
10th graders	84,877	88,415	173,292
12th graders	91,740	91,855	183,595

Looking at the number of valid respondents in the 2021 and 2023 state sample:

```
tab grade
```

Grade	**2021**	**2023**
6th graders	8,426	9,696
8th graders	7,691	8,148
10th graders	9,378	7,105
12th graders	5,672	4,160

For each grade, the enrollments for each year are added together to produce a combined enrollment number for the years. Then for each grade and year, the combined enrollment for that grade is divided by the total number of respondents for that specific grade and year.

```
gen yearwt=.
replace yearwt = 161197/8426 if (grade==6 & year==2021)
replace yearwt = 161197/9696 if (grade==6 & year==2023)

replace yearwt = 167723/7691 if (grade==8 & year==2021)
replace yearwt = 167723/8148 if (grade==8 & year==2023)

replace yearwt = 173292/9378 if (grade==10 & year==2021)
```

```
replace yearwt = 173292/7105 if (grade==10 & year==2023)

replace yearwt = 183595/5672 if (grade==12 & year==2021)
replace yearwt = 183595/4160 if (grade==12 & year==2023)
```

Year-Standardized Example

The following is an example looking at the prevalence of 10th graders missing school because they felt unsafe and carrying a weapon at school in the 2023 state sample:

```
gen unsafe=s20_21
recode unsafe 1=0 2/5=1 6=.
lab def days 1"any days" 0"no days"
lab val unsafe days
lab var unsafe "did not go to school because felt unsafe in past month"

gen carriedweapon=h39_21
recode carriedweapon 1=0 2/3=1 4=.
lab val carriedweapon days
lab var carriedweapon "carried weapon at school in past month"

tab grade, gen(gr)
rename gr3 ten
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)

svy:tab carriedweapon unsafe, subpop(ten) col se obs per format(%3.2f)
```

carried weapon at school in past month	did not go to school because felt unsafe in past month		
	no days	any days	Total
no days	98.28	93.83	98.03
	(0.30)	(1.82)	(0.32)
	2686.00	152.00	2838.00
any days	1.72	6.17	1.97
	(0.30)	(1.82)	(0.32)
	47.00	10.00	57.00
Total	100.00	100.00	100.00
	2733.00	162.00	2895.00

```
Key:  column percentage
      (linearized standard error of column percentage)
      number of observations

Pearson:
  Uncorrected   chi2(1)         =  135.1380
  Design-based  F(1, 225)       =   18.7769     P = 0.0000
```

Interpretation: Looking at 10th graders, it appears that carrying a weapon on any days is higher among those who didn't go to school on any days because they felt unsafe (6.2%) compared to those who didn't miss school due to safety (1.8%). Notice that the number of respondents is fairly small (n=10).

Using a combined 2021 and 2023 dataset (see the previous Appending section), first look at the results by year to see if combining them makes sense. Use extra caution when combining 2021 results with other years, as there may be differences in results due to COVID-19.

```
use "C:2021 and 2023 combo.dta"

gen unsafe=s20_21
recode unsafe 1=0 2/5=1 6=.
replace unsafe=0 if s20==1
replace unsafe=1 if s20==2 | s20==3 | s20==4 | s20==5
lab def days 1"any days" 0"no days"
lab val unsafe days
lab var unsafe "did not go to school because felt unsafe in past month"

gen carriedweapon=h39_21
recode carriedweapon 1=0 2/3=1 4=.
replace carriedweapon =0 if h39_06==1
replace carriedweapon =1 if h39_06==2 | h39_06==3
lab val carriedweapon days
lab var carriedweapon "carried weapon at school in past month"

tab grade, gen(gr)
rename gr3 ten
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)

svy:tab unsafe year, subpop(ten) col se obs per format(%3.2f)
svy:tab carriedweapon year, subpop(ten) col se obs per format(%3.2f)
```

In this example, 10th graders in the state sample, missing school due to safety was 8.3% in 2021 and 5.8% in 2023, and weapon carry at school was 2.2% in both 2021 and 2023. First, decide if the results are appropriate to combine, then create the "yearwt" that we calculated previously by combining the enrollments from each year by grade and dividing them by the number of respondents for each year and grade. Then use that yearwt in the svyset command and set strata to year.

```
use "C:2018 and 2021 combo.dta"
gen yearwt=.
replace yearwt = 161197/8426 if (grade==6 & year==2021)
replace yearwt = 161197/9696 if (grade==6 & year==2023)
replace yearwt = 167723/7691 if (grade==8 & year==2021)
replace yearwt = 167723/8148 if (grade==8 & year==2023)
replace yearwt = 173292/9378 if (grade==10 & year==2021)
replace yearwt = 173292/7105 if (grade==10 & year==2023)
replace yearwt = 183595/5672 if (grade==12 & year==2021)
replace yearwt = 183595/4160 if (grade==12 & year==2023)
tab grade, gen(gr)
```

```
rename gr3 ten
svyset [pweight=yearwt], psu(schgrd) strata(year)
svy:tab unsafe carriedweapon, subpop(ten) col se obs per format(%3.2f)
```

carried weapon at school in past month	did not go to school because felt unsafe in past month: no days	any days	Total
no days	98.26	94.98	98.03
	(0.20)	(1.00)	(0.20)
	6505.00	473.00	6978.00
any days	1.74	5.02	1.97
	(0.20)	(1.00)	(0.20)
	115.00	25.00	140.00
Total	100.00	100.00	100.00
	6620.00	498.00	7118.00

Key: column percentage
(linearized standard error of column percentage)
number of observations

Pearson:
Uncorrected chi2(1) = 185.1657
Design-based F(1, 423) = 21.4268 P = 0.0000

Interpretation: Looking at 10th graders, it appears that carrying a weapon on any days is higher among those who didn't go to school on any days because they felt unsafe (5.0%) compared to those who didn't miss school due to safety (1.7%). Notice that the number of respondents who carried a weapon and missed school due to safety more than doubled (from 10 to 25) with two years of data. As a additional check, you'll also want to look to make sure the results for the two years combined are fairly similar to the individual years.

Instead of combining years, another option is to consider combining grades. For some variables like substance use or missing school due to safety, combining grades isn't recommended because the prevalence increases as students get older (p-value=0.0006). In this case and when analyzing the use of a substances where the prevalence usually increases by grade – it is better to combine years.

If results aren't different by grade, you can explore the next section on Combining Grade Levels.

Combining Grade Levels

This section describes when it is acceptable to combine grade levels and how to create grade-adjusted and high school estimates.

When to Combine Grades

We generally recommend that all analyses be done stratified by grade (see Analysis by Grade in Section 5). However, under certain conditions it may be desirable to combine the results from different grade levels. Some possible reasons to combine grades include:

1. If crosstabs don't meet the minimum cell requirements (5 per cell for state and 10 per cell for local).
2. If there is a small number of respondents, like in smaller counties, or when analyzing non-core items located toward the end of the survey form.
3. To analyze variables that are only applicable to a small group, such as trying to find out how many students with current asthma visited an emergency room in the past year.
4. To produce a high school estimate for comparison with the YRBS – see Synthetic High School Estimates.
5. To replicate combined grade results to match estimates in CPWI Data Books – see Data Book Combined Grade Estimates.

Methods for Combining Grades

We recommend the following decision rules for grade-adjustment when using grade-combined estimates for a single year of data to determine if it is best to report crude, average, or adjusted results.

Crude

If there is no substantial difference in a factor across grades, you could report a "crude" estimate and note that the results are from multiple grades. If you run a factor by grade in STATA, the Total column is the "crude" estimate, or run an analysis without grade as a variable or subpopulation (i.e., not stratifying by grade).

Average

If there is a significant difference in a factor by grade, but the purpose of the analysis is to simply express the burden of a condition, then use an average of the grade specific results. Averaging gives equal weight to the results for each grade, instead of giving equal weight to each respondent.

For example, to estimate the percent of youth who seriously considered suicide, run the factor by grade then add the estimates for each grade together and divide by the number of grades, e.g., in 2023 the statewide average seriously considering suicide was: 15.0%, calculated by (15.2% +14.5% + 15.3%)/3. Unfortunately, this method does not produce a confidence interval.

Adjusted

If there is significant difference in a factor by grade and the purpose of the analysis is to present an assessment of underlying factors that may lead to a condition, then it would be appropriate to use a grade-adjusted estimate.

For example, to look at the percent of youth smokers by gender who say that tobacco is easy to get and want to illustrate that it is different for males and females in order to inform planning, then use a grade-adjusted estimate.

Grade-Adjusted Estimates

Grade-adjusted estimates ensure that each grade group contributes equally to the overall percent estimate, instead of giving equal "weight" to each respondent. They can be especially useful if the number of respondents differ by grade, e.g., there are more 8th grade respondents than 10th grade respondents. To generate a grade-adjusted estimate, the data must be weighted.

This is similar to "age-adjusted" analyses often used in Healthy People 2030 or other national measures where population demographics change over time and may influence the factor being measured.

Steps for Creating Grade-Adjusted Estimates

Using the 2023 state sample, here is the methodology for weighting the data to create grade-adjusted estimates (i.e., combining all grades together 6, 8, 10 and 12):

Looking at the number of valid respondents in the 2023 state sample, there are:

```
tab grade
```

Grade	2023
6th graders	9,696
8th graders	8,148
10th graders	7,105
12th graders	4,160
Total to use for questions asked of all grades (6,8,10,12)	29,109
Total for questions asked only of secondary students (8,10,12)	19,413

The enrollments for each grade are added together to produce a combined enrollment number for the grades. Then for each grade, the combined enrollment is divided by the total number of respondents for that specific grade:

```
gen gradewt=.
replace gradewt = 29109/9696 if grade==6
replace gradewt = 29109/8148 if grade==8
replace gradewt = 29109/7105 if grade==10
replace gradewt = 29109/4160 if grade==12
```

Grade-Adjusted Example

The following is an example looking at missing school on five or more days because of toothache by whether or not they've been to a dentist in the past 2 years for 8th graders in the 2023 state sample. First, look at each of the variables by grade.

```
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
gen misstooth=h101
recode misstooth 1=0 2/3=1 4=0
lab def misstooth 0"none-few days" 1"5 or more days"
lab val misstooth misstooth
lab var misstooth "missed school due to toothache on 5 or more days"
gen dentistno=h25
recode dentistno 1/2=0 3/4=1 5=.
lab def dentistno 1"2 or more years" 0"less than 2 years"
lab val dentistno dentistno
lab var dentistno "have not been to a dentist in past 2 years"
tab grade, gen(gradecat)
rename gradecat2 eight
rename gradecat3 ten
rename gradecat4 twelve
svy:tab misstooth dentistno, subpop(eight) col se obs per format(%3.2f)
```

missed school due to toothache on 5 or more days	have not been to a dentist in past 2 years		
	less tha	2 or mor	Total
none-few	94.00	89.74	93.79
	(0.56)	(2.36)	(0.58)
	2912.00	140.00	3052.00
5 or mor	6.00	10.26	6.21
	(0.56)	(2.36)	(0.58)
	186.00	16.00	202.00
Total	100.00	100.00	100.00
	3098.00	156.00	3254.00

```
svy:tab misstooth dentistno, subpop(ten) col se obs per format(%3.2f)
```

missed school due to toothache on 5 or more days	have not been to a dentist in past 2 years		
	less tha	2 or mor	Total
none-few	95.42	90.42	95.13
	(0.57)	(2.81)	(0.54)
	2605.00	151.00	2756.00
5 or mor	4.58	9.58	4.87
	(0.57)	(2.81)	(0.54)
	125.00	16.00	141.00
Total	100.00	100.00	100.00
	2730.00	167.00	2897.00

svy:tab misstooth dentistno, subpop(twelve) col se obs per format(%3.2f)

missed school due to toothache on 5 or more days	have not been to a dentist in past 2 years		
	less tha	2 or mor	Total
none-few	94.89	94.74	94.87
	(0.80)	(1.83)	(0.76)
	1503.00	126.00	1629.00
5 or mor	5.11	5.26	5.13
	(0.80)	(1.83)	(0.76)
	81.00	7.00	88.00
Total	100.00	100.00	100.00
	1584.00	133.00	1717.00

- Missing school due to a toothache is higher among those who didn't go to the dentist in the past two years for only 8th and 10th grades, but the number of respondents is small: 16 for 8th and 10th graders and seven for 12th graders.

To calculate grade-adjusted estimates we can create a "gradewt" that is calculated by combining the grade enrollments for the 3 grades the question is asked for (8^{th}, 10^{th}, and 12^{th} grades) and dividing it by the number of respondents for each grade.

```
use "C:2023 data year.dta"
gen gradewt=.
replace gradewt = 19413/8148 if grade==8
replace gradewt = 19413/7105 if grade==10
replace gradewt = 19413/4160 if grade==12
```

```
svyset [pweight=gradewt], psu(schgrd)
svy:tab misstooth dentistno,col se obs per format(%3.2f)
```

missed school due to toothache on 5 or more days	have not been to a dentist in past 2 years: less tha	2 or mor	Total
none-few	94.77	92.10	94.61
	(0.39)	(1.38)	(0.38)
	7020.00	417.00	7437.00
5 or mor	5.23	7.90	5.39
	(0.39)	(1.38)	(0.38)
	392.00	39.00	431.00
Total	100.00	100.00	100.00
	7412.00	456.00	7868.00

```
Key:  column percentage
      (linearized standard error of column percentage)
      number of observations

Pearson:
  Uncorrected   chi2(1)         =    6.3348
  Design-based  F(1, 150)       =    4.8450     P = 0.0293
```

- Interpretation: In 2023, among 8th, 10th, and 12th graders combined, the percentage of students who missed 5 or more days of school due to toothache was higher among those who said it had been 2 or more years since they saw a dentist (8%) compared to those who saw a dentist in the past 2 years (5%).

Synthetic High School Estimates

The Centers for Disease Control and Prevention's Youth Risk Behavior Survey (YRBS) measures health behaviors of students in grades 9, 10, 11, and 12. They report "high school" estimates that combine all four grades. YRBS high school estimates are often used for setting benchmarks, like the Healthy People 2030. In order to compare HYS results to national measures, we can create a synthetic high school estimate by following the steps for grade-adjusted weighting (described above) and applying an additional weight for the non-surveyed grades 9th and 11th.

According to the 2023-2024 OSPI enrollment data for the state, there are (available at: https://www.k12.wa.us/data-reporting/data-portal):

Grade	Enrolled	% High School
9th	86,427	0.2437
10th	88,415	0.2493
11th	87,979	0.2481
12th	91,855	0.2590
Total	354,676	1.0000

To create a weight for each grade, we include the proportion that each grade contributes towards the high school enrollment and a proportion that takes into account how much the grade level should contribute to the overall estimate. For example, ½ of the 8th grade estimate and ½ of the 10th grade estimate should be used to create a 9th grade estimate.

Grade	Weight Formula	Reasoning
8th	0.2437* 0.5 = **0.1218**	contributes to ½ of 9th grade
10th	0.2437* 0.5 = 0.1218 0.2493* 1 = 0.2493 0.2481* 0.5 = 0.1240 Add all 3: 0.1218 + 0.2493 + 0.1240 = **0.4958**	contributes to ½ of 9th grade for the 10th grade contributes to ½ of 11th grade
12th	0. 2481* 0.5 = 0.1240 0. 2590* 1 = 0.2590 Add both: 0.1240 + 0.2590 = **0.3803**	contributes to ½ of 11th grade for the 12th grade

Total = (gr8*0.1218) + (gr10 *0.4958) + (gr12*0.3803)

The coding for generating 2021 synthetic high school estimates is:

```
gen hswt=.
replace hswt=0.1218*100 if grade==8
replace hswt=0.4958*100 if grade==10
replace hswt=0.3803*100 if grade==12
```

Or to have STATA do the math, use the following formula:

```
gen hswt=.
replace hswt=(354676/86427*.5) if grade==8
replace hswt=((354676/86427*.5)+( 354676/88415*1)+( 354676/87979*.5)) if grade==10
replace hswt=((354676/87979*.5)+( 354676/91855*1)) if grade==12
svyset [pweight=hswt], psu(schgrd)
svy:tab d21_16use grade, col se obs per format(%3.2f)
```

Used marijuana - Any use in the past 30 days	Grade 8	Grade 10	Grade 12	Total
no	96.28	91.60	83.71	90.35
	(0.32)	(0.66)	(1.23)	(0.61)
	6814.00	5551.00	2934.00	15299.00
yes	3.72	8.40	16.29	9.65
	(0.32)	(0.66)	(1.23)	(0.61)
	263.00	509.00	571.00	1343.00
Total	100.00	100.00	100.00	100.00
	7077.00	6060.00	3505.00	16642.00

Key: column percentage
(linearized standard error of column percentage)
number of observations

Pearson:
Uncorrected chi2(2) = 344.6022
Design-based F(1.42, 213.16) = 56.3483 P = 0.0000

Interpretation: The weighted synthetic high school estimate for current marijuana use is 9.7% ±1.2 (0.61*1.96).

Data Book Combined Grade Estimates

The Washington State Health Care Authority – Division of Behavioral Health and Recovery (DBHR) creates Community Needs Assessment Data Books for Community Prevention and Wellness Initiative (CPWI) coalitions to help with prevention strategic planning. To produce estimates for CPWI coalitions with small populations, grade levels are combined to produce Grades 8-10 results and Grades 8-12 results. These results are weighted by the number of students enrolled and the number of valid HYS respondents in the grades. According to the 2023-2024 OSPI enrollment data for the state, there are:

Grade	Enrolled	Valid N
8th	81,910	58,992
10th	88,415	53,426
12th	91,855	33,929

Combined Grade 8 and 10 Estimates

To create a weight for each grade, we include the enrollment for grades 8 and 10 divided by the number of valid survey respondents for grades 8 and 10. The enrollment and validn for each community can be found in the Report List at: www.AskHYS.net/Past. This example uses the 2023 census dataset.

```
use "C:2023 census.dta"
gen weight810=.
replace weight810= 81910/58992 if grade==8
replace weight810=88415/53426 if grade==10
svyset [pweight=weight810]
gen grade810=grade
recode grade810 6=. 7=. 8=1 9=. 10=1 11=. 12=.
svy:tab d21_16use grade810, col se obs per format(%3.2f)
```

Used marijuana - Any use in the past 30 days	column	se	obs
no	93.93	0.08	90776.00
yes	6.07	0.08	5664.00
Total	100.00		96440.00

Interpretation: The weighted combined grade 8 and 10 estimate for current marijuana use is 6.1% ±0.2.

Combined Grade 8 through 12 Estimates

For communities that surveyed their extra grades. create a weight for each grade, we include the enrollment for grades 8, 9, 10, 11, and 12 divided by the number of valid survey respondents for grades 8, 9, 10, 11, and 12. The enrollment and valid n for each community can be found in the Report List at: www.AskHYS.net/Past.

For this example, we'll use San Juan County.

Grade	Enrolled	Valid N
8th	156	92
9th	174	105
10th	141	86
11th	150	77
12th	143	92

```
keep if conum==28
gen weight812=.
replace weight812=156/92 if grade==8
replace weight812=174/105 if grade==9
replace weight812=141/86 if grade==10
replace weight812=150/77 if grade==11
replace weight812=143/92 if grade==12
svyset [pweight=weight812]
gen grade812=grade
recode grade812 6=. 7=. 8=1 9=1 10=1 11=1 12=1
svy:tab d21_16use grade812, col se obs per format(%3.2f)
```

Used marijuana - Any use in the past 30 days	column	se	obs
no	85.56	1.72	363.00
yes	14.44	1.72	61.00
Total	100.00		424.00

The weighted combined grade 8, 9, 10, 11, and 12 estimate for current marijuana use is 14.4% ±3.4.

For communities that didn't survey their extra grades. create a weight for each grade, we include the enrollment for grades 8, 10, and 12 divided by the number of valid survey respondents for grades 8, 10, and 12:

For this example, we'll use Adams County.

Grade	Enrolled	Valid N
8th	419	341
10th	457	348
12th	403	266

```
keep if conum==1
gen weight81012=.
replace weight81012=419/341 if grade==8
replace weight81012=457/348 if grade==10
replace weight81012=403/266 if grade==12
gen grade81012=grade
recode grade81012 8=1 10=1 12=1 6=. 7=. 9=. 11=.
svyset [pweight=weight81012]
svy:tab d21_16use grade81012, col se obs per format(%3.2f)
```

Used marijuana - Any use in the past 30 days	column	se	obs
no	91.90	0.96	778.00
yes	8.10	0.96	66.00
Total	100.00		844.00

Interpretation: The weighted combined grade 8, 9, 10, 11, and 12 estimate for current marijuana use is 8.1% ±1.9.

Adding Additional Data

This section describes how to add more data onto HYS datasets. It includes information about how to use the merge command. Merge add additional data to an HYS data by joining a common variable.

NOTE: STATA defines the original data as the "master" data and the new data that is being merged on as the "using" data.

Merging

Merging is used when the data you want to add has at least one variable in common with your original dataset, like school building number or county number.

For example, to conduct analysis of the state sample data according to the four classifications for urban/rural and you had a dataset with that classification by school building number, you could add the classification to your HYS data with merge.

Data Preparation:

Keep merges simple; don't include unnecessary variables. Sometimes both datasets have the same (duplicate) variables. Duplicates can confuse STATA and cause problems with your merge. Only keep the duplicate variables that are needed to make a proper merge. If it's necessary to keep other duplicate variables, rename them so they will be distinct variables in your new dataset.

You also need to make sure that the variable in your new data is in the same format as your HYS data. For example, the variable schgrd in the HYS dataset is numeric. If you are going to merge your new data with schgrd, you need to make sure that the schgrd variable in your new data is also numeric. If the schgrd variable in your new data is a string, change it to numeric using the encode command:

```
encode schgrd, gen(school)
drop schgrd
rename school schgrd
```

Sort Using Data:

The "using data" should be the dataset that is being are adding on to the HYS dataset. Prior to merging, sort the new dataset by the merge variable(s).

```
sort schgrd
```

After sorting, save the dataset with a new name. This is now referred to as your "using dataset."

```
save "C:new using data.dta"
```

Sort Master Data:

Open the HYS dataset (the "master dataset") and sort it by the merge variable(s).

```
sort schgrd
```

Merge the Data:

Once the master data is sorted, then merge it onto the new dataset:

```
merge (schgrd) using "C:new using data.dta"
```

Merge Investigation:

While merging, STATA will try to tell you if something looks wrong; look for any error messages. Error messages are usually in red font. Messages in green font are usually just letting you know that there were commonalities between the two datasets, like the same variable labels.

Merging creates a new variable "_merge." Use this variable to check the results of the merge. The response options provided for _merge are 1, 2 and 3:

```
tab _merge
```

1 = the using data did not have a match
2 = the master data did not have a match
3 = matched

Depending on the dataset being added, you may or may not be expecting all of the data to match. E.g., when we check our merge of the urban rural classifications to HYS we get mostly 3's (matches), but we get some 2's (non-matches in the master). This is OK because we know that the urban-rural classification data includes all schools in the state and our HYS data only includes schools that participated in the survey. We expect that the schools that did not participate should not match. So, in this case we would simply get rid of the non-matched data by dropping them:

```
drop if _merge==2
```

If we get some 1s with this same merge we would need to do more investigation. We expect that every school in our HYS dataset should have an urban-rural classification. We can find out the names of the schools that didn't match by:

```
tab schname if _merge==1
```

Then we would want to check our urban rural classification to see if that school existed. If not, we would need to figure out why. For example, maybe the school is new or it changed its location in the past year, etc. If this is the case, you can update your urban rural dataset and then re-merge.

Look at your actual data to see what happened in your merge by looking in the "data browser" by click on the toolbar icon  or in the "data editor" by clicking on the toolbar icon  . In either the browser or the editor you can sort by the _merge variable to see exactly which data

are not matching up. The data browser opens faster than the data editor, but the data editor allows you to add and delete data. When you exit the data editor it will ask you if you want to preserve your changes – only keep changes you are sure you want.

Once you're satisfied with the merge you can get rid of the "_merge" variable:

```
drop _merge
```

NOTE: You cannot merge on additional data until you drop the "_merge" variable or rename it.

For some reason, it usually takes most of us multiple attempts to get our merges correct. So don't worry if you it takes you a few tries, and always investigate your merge to make sure it did what you wanted it to.

Checking Findings and Significance Online

This section describes the information available on the AskHYS.net website to verify your analysis results. When running data analysis in STATA it's always a good idea to verify the results by looking at previously produced results.

This section also includes information about an online tool for testing statistical significance when you are comparing two estimates that have 95% confidence intervals.

AskHYS.net Website

AskHYS.net is the primary location of most HYS related information and results.

Address is: https://www.askhys.net/

AskHYS Fact Sheets

Currently, topical fact sheets are available with results from 2010 through 2023. State, ESD, and County fact sheets are available to the public. District and Building fact sheets are available to those with permission from district superintendents (through an approval process with OSPI – see the Log On page for more information).

Fact sheets can also be produced by gender, but the general rules for crosstabs apply (at least 5 respondents in every cell for state fact sheets and 10 per cell for local). 2023 grade-level fact sheets include the following topics:

- Unintentional Injury
- Violent Behaviors & School Safety
- Harassment and Bullying
- Community Risk Factors
- Community Protective Factors
- School Risk Factors
- School Protective Factors
- Peer-Individual Risk Factors
- Family Protective Factors
- BMI
- Dietary Behaviors
- Oral Health
- Physical Activity
- Mental Health and Well-being
- Hope
- WA HYS Adverse Childhood Experiences
- Sexual Behavior
- Current Substance Use
- Alcohol Use
- Commercial Tobacco Product Use
- Marijuana Use
- Polysubstance Use
- Migratory Students
- Insecure Housing

Multiple-grade fact sheets are available for the following topics:

- Alcohol Use
- Marijuana Use
- School Safety
- Depressive Feelings & Suicide
- Prescription Medication Use

Most fact sheets also include a chart with topical results, trend data, comparisons to the state, and relationships between a topic and academic achievement, e.g., cigarette smoking and academic achievement. There is also an information factsheet on what Risk and Protective Factors are.

Q x Q Analysis

The Q x Q is an interactive data query system to analyze state and local frequencies and crosstabs. HYS data from 2010 through 2023 are available to analyze. State, ESD, and County data can be accessed by all. District and Building data are available to those with permission from district superintendents (through an approval process with OSPI – see the Log On page for more information).

When running a crosstab, first think about how you want your results to turn out before you select your variables. The variable that is dropped into the first box will be the group you are interested in finding out more information about. The second variable select is the outcome variable. For example:

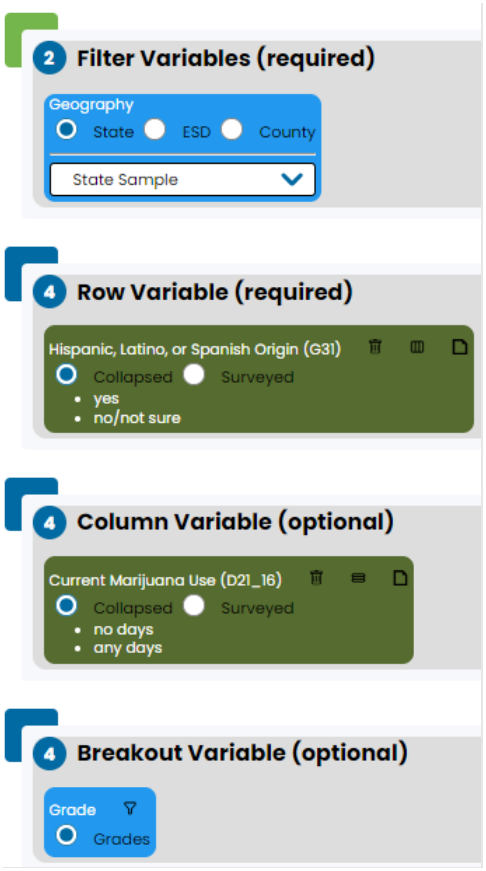
1. Do you want to know the prevalence of marijuana use among a specific race group like Hispanic students? Then select Demographics – Race/Ethnicity – Hispanic, Latino, or Spanish Origin (G31) as your first variable and Marijuana – Current Use – [D21_16] Current Marijuana Use as your second variable.
2. Do you want to know the prevalence of drinking alcohol among youth who use marijuana? Then select Marijuana – Current Use – [D21_16] Current Marijuana Use as your first variable and Alcohol – Current Use – [D20_23] Current Alcohol Drinking as your second.
3. Or do you what to know the flip side, what is the prevalence of marijuana use among youth who drink alcohol? Then select Alcohol first and Marijuana second.

Crosstabs on the Q x Q also have to follow the requirements for a minimum number of respondents per cell in order to produce results:

- For state level analysis you must have 5 or more respondents in each cell.
- For sub-state level analysis, you must have 10 or more respondents in each cell.

Example 1: Statewide HYS 2023 – Hispanic Ethnicity and Current Marijuana Use

Selected:



Output:

Washington State
Healthy Youth Survey Online Analysis - 2023

Statewide - Grade 6

Hispanic, Latino, or Spanish Origin and Current Marijuana Use

		Current Marijuana Use		
		no days	any days	Total
Hispanic, Latino, or Spanish Origin	yes	99.1% ± 0.5% 1,666	0.9% ± 0.5% 15	100.0% 1,681
	no/not sure	99.7% ± 0.1% 6,926	0.3% ± 0.1% 22	100.0% 6,948
	Total	99.6% ± 0.2% 8,592	0.4% ± 0.2% 37	100.0% 8,629

Variable questions:
- How do you describe yourself? [G31]
- During the past 30 days, on how many days did you use marijuana or hashish? [D21_16]

Cell contents:
- Percentage (row)
- 95% Confidence Interval
- # of Respondents

Washington State
Healthy Youth Survey Online Analysis - 2023

Statewide - Grade 8

Hispanic, Latino, or Spanish Origin and Current Marijuana Use

		Current Marijuana Use		
		no days	any days	Total
Hispanic, Latino, or Spanish Origin	yes	95.2% ± 1.1% 1,503	4.8% ± 1.1% 75	100.0% 1,578
	no/not sure	96.7% ± 0.7% 5,035	3.3% ± 0.7% 171	100.0% 5,206
	Total	96.4% ± 0.7% 6,538	3.6% ± 0.7% 246	100.0% 6,784

Variable questions:
- How do you describe yourself? [G31]
- During the past 30 days, on how many days did you use marijuana or hashish? [D21_16]

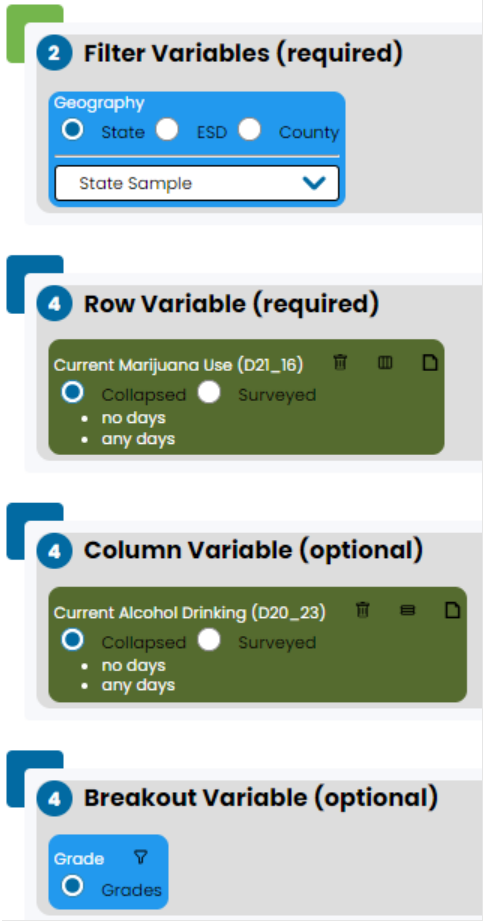
Cell contents:
- Percentage (row)
- 95% Confidence Interval
- # of Respondents

Interpretation: When reviewing your results, you should read them by each row. Notice that the "Total" for each row is 100%. Statewide in 2023, current marijuana use was:

- 0.9% ±0.5 among Hispanic/Latino/Spanish origin 6th graders (n=15)
- 4.8% ±1.1 among Hispanic/Latino/Spanish origin 8th graders (n=75)

Example 2: Statewide HYS 2023 - Current Marijuana Use and Current Alcohol Drinking

Selected:



Output:

Washington State
Healthy Youth Survey Online Analysis - 2023

Statewide - Grade 6

Current Marijuana Use and Current Alcohol Drinking

		Current Alcohol Drinking		
		no days	any days	Total
Current Marijuana Use	no days	99.0% ± 0.3% 8,842	1.0% ± 0.3% 92	100.0% 8,934
	any days	50.0% ± 16.0% 16	50.0% ± 16.0% 16	100.0% 32
	Total	98.8% ± 0.3% 8,858	1.2% ± 0.3% 108	100.0% 8,966

Variable questions:
- During the past 30 days, on how many days did you use marijuana or hashish? [D21_16]
- During the past 30 days, on how many days did you drink a glass, can or bottle of alcohol? [D20_23]

Cell contents:
- Percentage (row)
- 95% Confidence Interval
- # of Respondents

Washington State
Healthy Youth Survey Online Analysis - 2023

Statewide - Grade 8

Current Marijuana Use and Current Alcohol Drinking

		Current Alcohol Drinking		
		no days	any days	Total
Current Marijuana Use	no days	97.6% ± 0.4% 6,348	2.4% ± 0.4% 154	100.0% 6,502
	any days	53.4% ± 6.4% 135	46.6% ± 6.4% 118	100.0% 253
	Total	96.0% ± 0.6% 6,483	4.0% ± 0.6% 272	100.0% 6,755

Variable questions:
- During the past 30 days, on how many days did you use marijuana or hashish? [D21_16]
- During the past 30 days, on how many days did you drink a glass, can or bottle of alcohol? [D20_23]

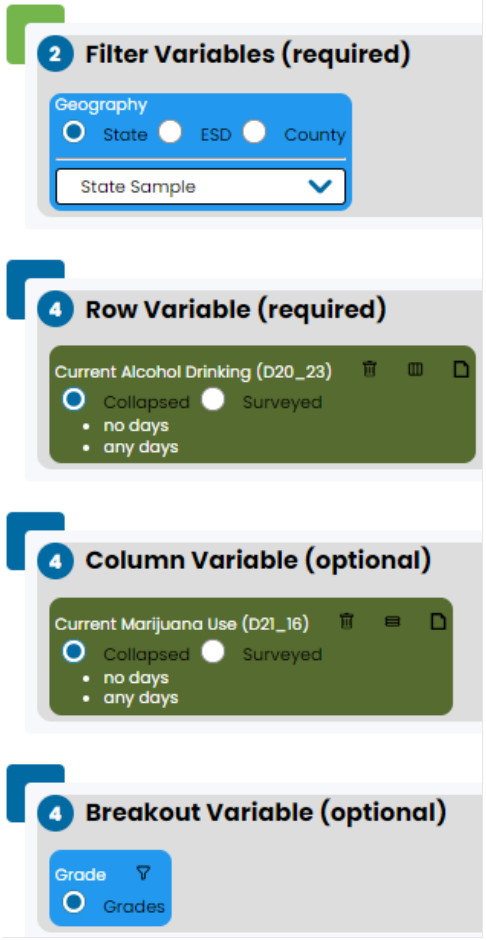
Cell contents:
- Percentage (row)
- 95% Confidence Interval
- # of Respondents

Interpretation: Statewide in 2023, current alcohol drinking was:

- 1.0% ±0.3 among 6th graders who didn't use marijuana on any day in the past 30 days (n=92)
- 50.0% ±16.0 among 6th grade current marijuana users (n=16)
- 2.4% ±0.4 among 8th graders who didn't use marijuana on any day in the past 30 days (n=154)
- 46.6% ±6.4 among 8th grade current marijuana users (n=272)

Example 3: Statewide HYS 2023 - Current Alcohol Drinking and Current Marijuana Use

Selected:



Output:

Washington State
Healthy Youth Survey Online Analysis - 2023

Statewide - Grade 6

Current Alcohol Drinking and Current Marijuana Use

		Current Marijuana Use		
		no days	any days	Total
Current Alcohol Drinking	no days	99.8% ± 0.1% 8,842	0.2% ± 0.1% 16	100.0% 8,858
	any days	85.2% ± 6.5% 92	14.8% ± 6.5% 16	100.0% 108
	Total	99.6% ± 0.1% 8,934	0.4% ± 0.1% 32	100.0% 8,966

Variable questions:
- During the past 30 days, on how many days did you drink a glass, can or bottle of alcohol? [D20_23]
- During the past 30 days, on how many days did you use marijuana or hashish? [D21_16]

Cell contents:
- Percentage (row)
- 95% Confidence Interval
- # of Respondents

Washington State
Healthy Youth Survey Online Analysis - 2023

Statewide - Grade 8

Current Alcohol Drinking and Current Marijuana Use

		Current Marijuana Use		
		no days	any days	Total
Current Alcohol Drinking	no days	97.9% ± 0.5% 6,348	2.1% ± 0.5% 135	100.0% 6,483
	any days	56.6% ± 5.7% 154	43.4% ± 5.7% 118	100.0% 272
	Total	96.3% ± 0.7% 6,502	3.7% ± 0.7% 253	100.0% 6,755

Variable questions:
- During the past 30 days, on how many days did you drink a glass, can or bottle of alcohol? [D20_23]
- During the past 30 days, on how many days did you use marijuana or hashish? [D21_16]

Cell contents:
- Percentage (row)
- 95% Confidence Interval
- # of Respondents

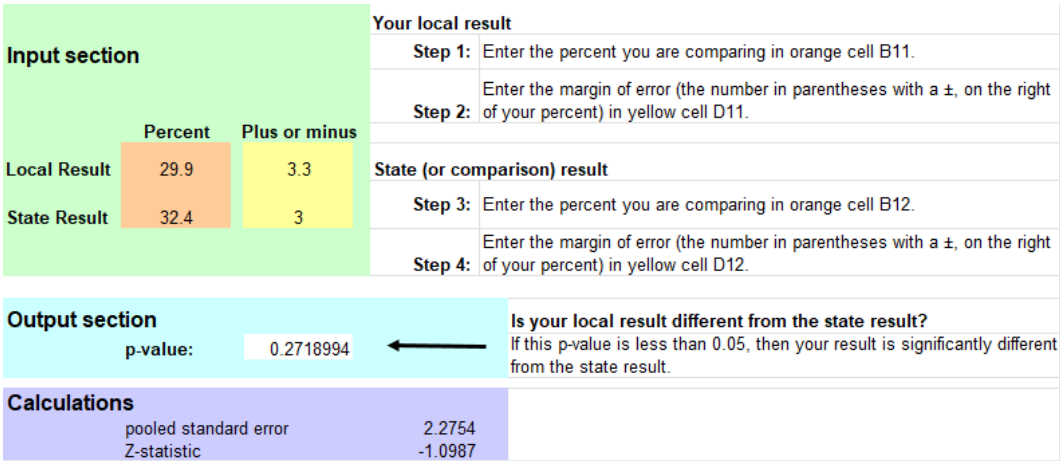
Interpretation: Statewide in 2023, current marijuana use was:

- 0.2% ±0.1 among 6th graders who didn't drink alcohol on any day in the past 30 days (n=16)
- 14.8% ±6.5 among 6th grade current alcohol drinkers (n=16)
- 2.1% ±0.5 among 8th graders who didn't drink alcohol on any day in the past 30 days (n=135)
- 43.4% ±5.7 among 8th grade current alcohol drinkers (n=253)

Online Tool for Determining Statistical Significance

There is an "Excel Tool for Determining Statistical Significance" on Data Resources page: Address is: https://www.askhys.net/Resources/Data. The tool has cells to enter local and state data, but you can use this tool to test the difference between any two estimates with 95% confidence intervals.

1. For example, to test for differences in experiencing depressive feelings between 10th and 12th graders in 2023 statewide using the following results:
    - 10th grade: 29.9% (±3.3)
    - 12th grade: 32.4% (±3.0)



Input section	Percent	Plus or minus
Local Result	29.9	3.3
State Result	32.4	3

Your local result

Step 1: Enter the percent you are comparing in orange cell B11.

Step 2: Enter the margin of error (the number in parentheses with a ±, on the right of your percent) in yellow cell D11.

State (or comparison) result

Step 3: Enter the percent you are comparing in orange cell B12.

Step 4: Enter the margin of error (the number in parentheses with a ±, on the right of your percent) in yellow cell D12.

Output section

p-value: 0.2718994 ←

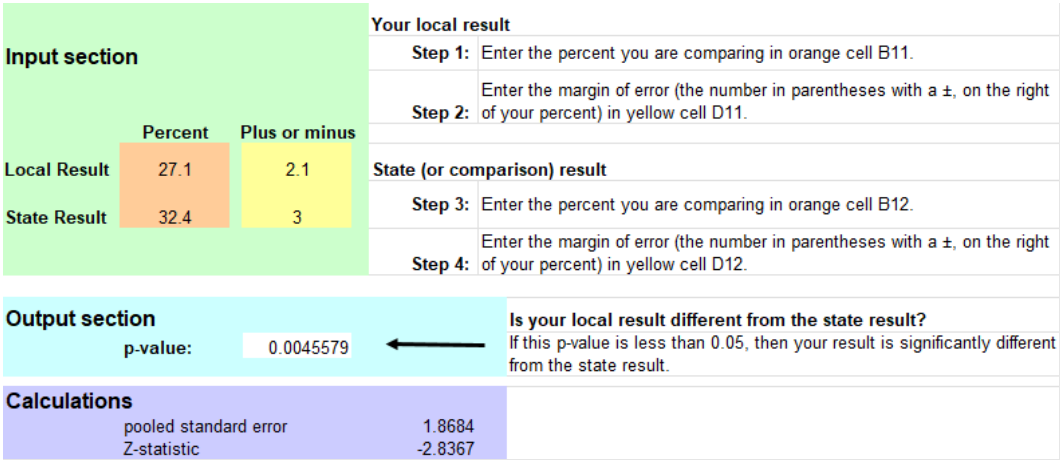
Is your local result different from the state result?
If this p-value is less than 0.05, then your result is significantly different from the state result.

Calculations

pooled standard error	2.2754
Z-statistic	-1.0987

Interpretation: P-value is 0.000, which is not less than 0.05, so there is no difference in experiencing depressive 12th graders are more likely than 10th graders and 12th graders, in 2023 statewide.

2. If you look at the same thing, but compare 8th graders to 12th graders for experiencing depressive feelings in 2023 statewide using the following results:
    - 8th grade: 27.1% (±2.1)
    - 12th grade: 32.4% (±3.0)



Input section	Percent	Plus or minus
Local Result	27.1	2.1
State Result	32.4	3

Your local result

Step 1: Enter the percent you are comparing in orange cell B11.

Step 2: Enter the margin of error (the number in parentheses with a ±, on the right of your percent) in yellow cell D11.

State (or comparison) result

Step 3: Enter the percent you are comparing in orange cell B12.

Step 4: Enter the margin of error (the number in parentheses with a ±, on the right of your percent) in yellow cell D12.

Output section

p-value: 0.0045579 ←

Is your local result different from the state result?
If this p-value is less than 0.05, then your result is significantly different from the state result.

Calculations

pooled standard error	1.8684
Z-statistic	-2.8367

Interpretation: P-value is 0.046, which is less than 0.05, so 12th graders are more likely than 8th graders to experience depressive feelings, in 2023 statewide.

3. Test for differences in experiencing depressive feelings between 10th grade males and females in 2023, statewide using the following results:
    - 10th grade females: 38.6% (±4.0)
    - 10th grade males: 20.8% (±2.6)

Input section

	Percent	Plus or minus
Local Result	38.6	4
State Result	20.8	2.6

Your local result

Step 1: Enter the percent you are comparing in orange cell B11.

Step 2: Enter the margin of error (the number in parentheses with a ±, on the right of your percent) in yellow cell D11.

State (or comparison) result

Step 3: Enter the percent you are comparing in orange cell B12.

Step 4: Enter the margin of error (the number in parentheses with a ±, on the right of your percent) in yellow cell D12.

Output section

p-value: 0.0000000 ←

Is your local result different from the state result?

If this p-value is less than 0.05, then your result is significantly different from the state result.

Calculations

pooled standard error	2.4341
Z-statistic	7.3129

Interpretation: P-value is 0.0000, which is less than 0.05, so 10th grade females are more likely to experience depressive feelings compared to 10th grade males, in 2023 statewide.

Displaying Results

This section provides some tools to help you display the results of your STATA analysis.

Tables and charts are a common way to present analysis results in a useful and visually-appealing way. STATA provides a number of graphic options that you can use to display your results. Start by selecting Graphics from the dropdown menu. The first option on the drop down, Easy Graphs, has some simple graphs such as line graphs, bar charts, and histograms.

It requires some practice to produce meaningful graphs in STATA, or many lines of code. A "do file" is provided in the following Appendix:

- Appendix C: Making Bar Graphs with Error Bars in STATA

This "do file" walks through a number of different commands for creating bar charts, including how to add confidence intervals to your charts. The example used is perception of great risk from regular marijuana use by race and age.

Often it is easiest to copy and paste output results into a more familiar program such as Excel and convert it into tables and charts. Charts can also be produced in Excel using pasted STATA output. Again, the trick is formatting your output so that it can easily be incorporated into a chart using such formatting options as se, ci and vert.

Producing Graphs in STATA

Newer versions of STATA provide a variety of graphing options. Try to experiment with the dropdown Graphics menu on the tool bar to create graphics.

NOTE: Type "help graph" in STATA to find more instructions about graphics. There are also a number of helpful STATA graphics books and websites.

The following example takes you through the steps to create a graph of two variables with confidence intervals of current marijuana use by race and grade. It was modified from an example on a UCLA STATA website and found at:
http://www.ats.ucla.edu/stat/STATA/faq/barcap.htm

This example does not attempt to thoroughly explain all of the steps involved in the graphic process, but to provide you with some sample commands that you can experiment with. A "do file" is provided in the following Appendix:

- Appendix E: Making Bar Graphs with Error Bars in STATA

Setting up

```
use "C:\HYS State Sample.dta"
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
```

Creating a recoded race variable

```
gen newrace=g06_23
recode newrace 1=2 2=1 3=3 4=. 5=1 6=5 7=. 8=.
replace newrace=4 if g31==1
lab def newrace 1"API" 2"AI/AN" 3"Black" 4"Hispanic" 5"White"
lab val newrace newrace
```

Recode your outcome variable to be 0,1, so you get the correct mean.

Creating a collapsed smoking mean by grade and race

```
collapse (mean) d21_16use= d21_16use (sd) sdd21_16use=d21_16use (count) n=d21_16use, by(grade newrace)
```

Creating the high and low confidence interval values

```
gen hi_d21_16use = d21_16use + invttail(n-1,0.025)*(sdd21_16use/sqrt(n))
gen lo_d21_16use = d21_16use - invttail(n-1,0.025)*(sdd21_16use/sqrt(n))
```

Graphing

Creating a simple two-way bar graph

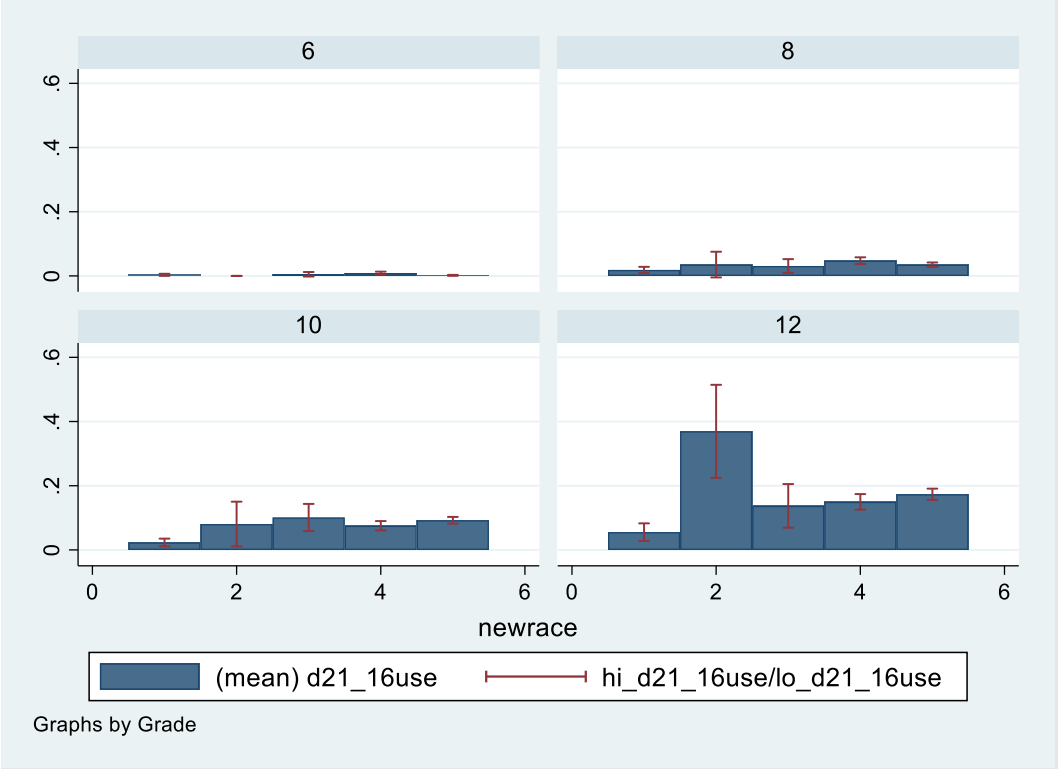
```
graph bar d21_16use, over(newrace) by(grade)
```

Adding some color

```
graph bar d21_16use, over(newrace) by(grade) asyvars
```

Adding confidence intervals error bars

```
graph twoway (bar mean_d21_16use newrace) (rcap hi_d21_16use lo_d21_16use newrace), by(grade)
```



Changing the graph to be set up by single variables for each race and grade and creating a graph with confidence intervals

```
gen graderace= newrace if grade==6
replace graderace= newrace +10 if grade==8
replace graderace= newrace +20 if grade==10
replace graderace= newrace +30 if grade==12
sort graderace
list graderace grade race, sepby(grade)
twoway(bar d21_16use graderace)(rcap hi_d21_16use lo_d21_16use graderace)
```

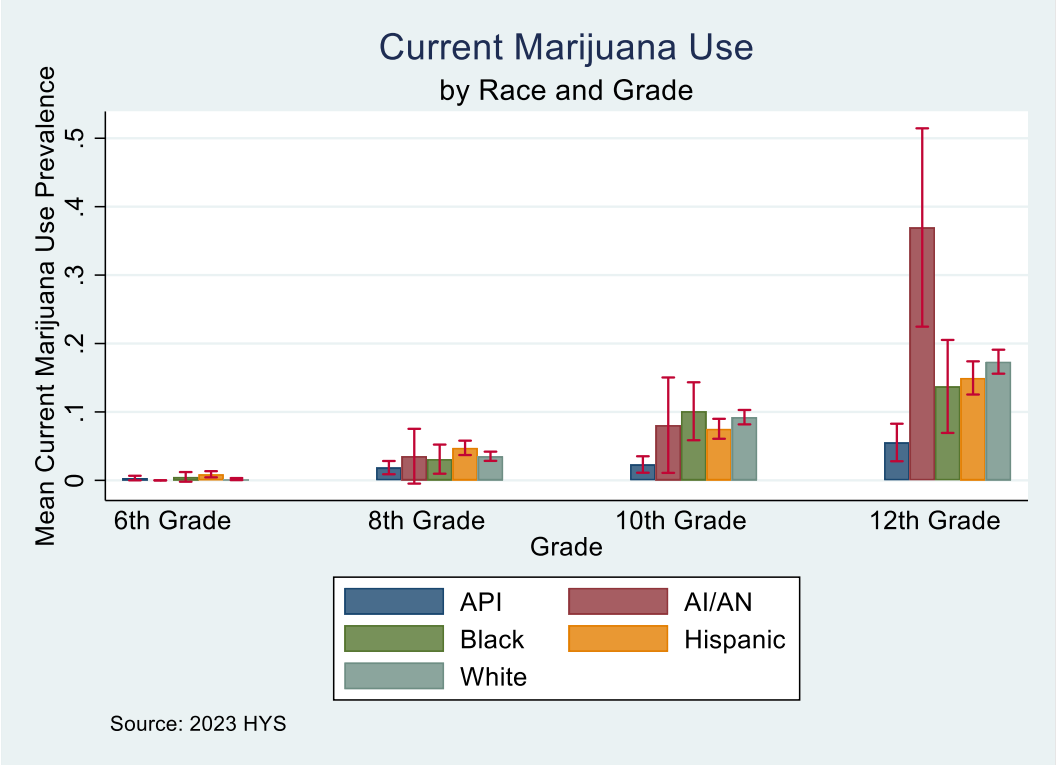
Adding in more color

```
twoway (bar d21_16use graderace if newrace==1) ///
(bar d21_16use graderace if newrace==2) ///
(bar d21_16use graderace if newrace==3) ///
(bar d21_16use graderace if newrace==4) ///
(bar d21_16use graderace if newrace==5) ///
(rcap hi_d21_16use lo_d21_16use graderace)
```

Adding in a legend and labels

```
twoway (bar d21_16use graderace if newrace==1) ///
(bar d21_16use graderace if newrace==2) ///
(bar d21_16use graderace if newrace==3) ///
(bar d21_16use graderace if newrace==4) ///
(bar d21_16use graderace if newrace==5) ///
```

```
(rcap hi_d21_16use lo_d21_16use graderace), ///
legend(order(1 "API" 2 "AI/AN" 3 "Black" 4 "Hispanic" 5 "White")) ///
xlabel(2.5 "6th Grade" 12.5 "8th Grade" 22.5 "10th Grade" 32.5"12th Grade", noticks) ///
xtitle(Grade) ytitle(Mean Current Marijuana Use Prevalence) ///
title(Current Marijuana Use) subtitle(by Race and Grade) note(Source: 2023 HYS)
```



Web Resources

Here are a few helpful resources on the Healthy Youth Survey, STATA, and statistical analysis. The links provided here do not in any way imply that the sources are endorsed by the state agencies involved in HYS. They are just some sites that we have found to be helpful.

Healthy Youth Survey

- AskHYS: https://www.askhys.net/
- Office of Superintendent of Public Instruction's HYS webpage: https://ospi.k12.wa.us/student-success/health-safety/healthy-youth-survey
- Office of Superintendent of Public Instruction's data portal for enrollment data and other school-related data: https://ospi.k12.wa.us/data-reporting/data-portal

STATA Resources

- STATA: http://www.stata.com
- UCLA: https://stats.idre.ucla.edu/stata/
- Princeton: https://www.princeton.edu/~otorres/
- Harvard: https://sociology.fas.harvard.edu/need-help-basic-stata
- Tufts: https://sites.tufts.edu/datalab/learning-statistics/stats-online-tutorials/stata-resources/stata-website/

Statistical Analysis

- JoinPoint regression program: https://surveillance.cancer.gov/joinpoint/
- Allows you to convert data files into STATA datasets. Available free trial at: https://stattransfer.com/

Appendices

The following appendices are STATA do files that let you replicate many of the analyses presented in this manual.

- Appendix A: County-level Analysis Coding by Year
- Appendix B: State Level Enrollments by Year and Coding for Synthetic High School Weights
- Appendix C: Do File ~ HYS State Data Analysis Examples in STATA
- Appendix D: Do File ~ Quick Examples of HYS Data Analysis in STATA
- Appendix E: Do File – Making Bar Graphs with Error Bars in STATA

Appendix A: County-level Analysis Coding by Year

Use the following code to drop any counties with less than 40% response rate or if they don't have enough respondents or districts participating.

For 2023, the following counties and grades should be dropped:

```
drop if conum==1 & grade==6
drop if conum==4 & grade==12
drop if conum==7 & (grade==8 | | grade==10)
drop if conum==10 & (grade==6 | grade==10 | grade==12)
drop if conum==11
drop if conum==12 & grade==12
drop if conum==17 & grade==12
drop if conum==19 & grade==12
drop if conum==21 & grade==12
drop if conum==23 & grade==12
drop if conum==24 & (grade==10 | grade==12)
drop if conum==26 & (grade==10 | grade==12)
drop if conum==30 & (grade==6 | grade==8)
drop if conum==32 & grade==12
drop if conum==33
drop if conum==35
drop if conum==36 & grade==12
drop if conum==37 & grade==12
drop if conum==38 & (grade==6 | grade==8)
```

For 2021, the following counties and grades should be dropped:

```
drop if conum==1 & grade==6
drop if conum==2 & (grade==10 | grade==12)
drop if conum==4 & grade==12
drop if conum==8 & grade==12
drop if conum==10 & (grade==10 | grade==12)
drop if conum==11
drop if conum==12 & grade==12
drop if conum==19 & grade==12
drop if conum==21 & grade==12
drop if conum==23 & (grade==6 | grade==12)
drop if conum==24 & grade==12
drop if conum==26 & grade==10
drop if conum==27 & grade==12
drop if conum==32 & grade==12
drop if conum==33 & (grade==10 | grade==12)
drop if conum==34 & grade==12
drop if conum==36 & grade==6
drop if conum==38 & grade==6
```

For 2018, the following counties and grades should be dropped:

```
drop if conum==1 & (grade==6 | grade==12)
drop if conum==10 & grade==8
drop if conum==11
drop if conum==19 & grade==12
drop if conum==33 & grade==6
drop if conum==36 & (grade==10 | grade==12)
```

For 2016, the following counties and grades should be dropped:

```
drop if conum==2 & grade==6
drop if conum==10 & (grade==6 | grade==8)
drop if conum==11
drop if conum==30 & grade==12
drop if conum==32 & grade==12
drop if conum==37 & grade==12
drop if conum==38 & grade==12
```

For 2014, the following counties and grades should be dropped:

```
drop if conum==1
drop if conum==5 & (grade==6 | grade==12)
drop if conum==10 & (grade==6 | grade==12)
drop if conum==11
drop if conum==16 & (grade==6 | grade==8)
drop if conum==19 & (grade==6 | grade==8)
drop if conum==20 & (grade==6 | grade==10 | grade==12)
drop if conum==21 & grade==12
drop if conum==26 & (grade==6 | grade==12)
drop if conum==28 & grade==8
drop if conum==30 & grade==12
```

For 2012, the following counties and grades should be dropped:

```
drop if conum==1
drop if conum==5 & (grade==8 | grade==12)
drop if conum==10 & grade==8
drop if conum==11
drop if conum==19 & (grade==6 | grade==8)
drop if conum==26 & grade==12
drop if conum==33 & (grade==6 | grade==10 | grade==12)
drop if conum==34 & grade==6
drop if conum==36 & (grade==10 | grade==12)
```

For 2010, the following counties and grades should be dropped:

```
drop if conum==5 & (grade==6 | grade==10 | grade==12)
drop if conum==11
drop if conum==16 & grade==12
```

```
drop if conum==30 & (grade==6 | grade==8)
drop if conum==33 & (grade==6 | grade==10 | grade==12)
```

For 2008, the following counties and grades should be dropped:

```
drop if conum==5 & (grade==10 | grade==12)
drop if conum==10 & grade==12
drop if conum==30 & (grade==6 | grade==8)
drop if conum==33 & grade==12
```

For 2006, the following counties and grades should be dropped:

```
drop if conum==3 & grade==12
drop if conum==5 & (grade==8 | grade==10 | grade==12)
drop if conum==10 & (grade==6 | grade==8 | grade==10)
drop if conum==12 & grade==6
drop if conum==13 & (grade==10 | grade==12)
drop if conum==14 & (grade==6 | grade==12)
drop if conum==16 & grade==12
drop if conum==23 & grade==6
drop if conum==28 & grade==8
drop if conum==30 & (grade==6 | grade==8)
drop if conum==33 & (grade==10 | grade==12)
```

For 2004, the following counties and grades should be dropped:

```
drop if conum==2 & grade==12
drop if conum==3 & (grade==8 | grade==12)
drop if conum==5 & (grade==6 | grade==10 | grade==12)
drop if conum==7
drop if conum==10 & (grade==6 | grade==12)
drop if conum==11 & (grade==10 | grade==12)
drop if conum==12
drop if conum==14 & grade==6
drop if conum==18 & grade==12
drop if conum==22
drop if conum==30 & (grade==10 | grade==12)
drop if conum==32 & grade==12
drop if conum==33 & (grade==10 | grade==12)
drop if conum==35
```

For 2002, the following counties and grades should be dropped:

```
drop if conum==2 & grade==12
drop if conum==3 & (grade==10 | grade==12)
drop if conum==5
drop if conum==6 & (grade==6 | grade==10 | grade==12)
drop if conum==7
drop if conum==11 & (grade==6 | grade==10 | grade==12)
drop if conum==12
```

```
drop if conum==14 & (grade==6 | grade==10 | grade==12)
drop if conum==16 & grade==12
drop if conum==17 & (grade==8 | grade==10 | grade==12)
drop if conum==18
drop if conum==22
drop if conum==23 & (grade==10 | grade==12)
drop if conum==24 & grade==10
drop if conum==26
drop if conum==30
drop if conum==32 & (grade==10 | grade==12)
drop if conum==33 & (grade==6 | grade==10 | grade==12)
drop if conum==35
drop if conum==36 & grade==8
drop if conum==37 & grade==12
```

Appendix B: State Level Enrollments by Year and Coding for Synthetic High School Weights

For more information on calculating synthetic high school estimates, see Combining Grade Levels.

2023-2024 State Enrollment

Grade	Enrolled	% High School
9th	86,427	0.2437
10th	88,415	0.2493
11th	87,979	0.2481
12th	91,855	0.2590
Total	354,676	1.0000

2023 weight coding:

```
gen hswt=.
replace hswt=(354676/86427*.5) if grade==8
replace hswt=((354676/86427*.5)+( 354676/88415*1)+( 354676/87979*.5)) if grade==10
replace hswt=((354676/87979*.5)+( 354676/91855*1)) if grade==12
```

2021-2022 State Enrollment

Grade	Enrolled	% High School
9th	87795	0.2526
10th	84871	0.2442
11th	83110	0.2391
12th	91763	0.2640
Total	347539	1.0000

2021 weight coding:

```
gen hswt=.
replace hswt=(347539/87795*.5) if grade==8
replace hswt=((347539/87795*.5)+(342713/87795*1)+( 342713/83110*.5)) if grade==10
replace hswt=((347539/83110*.5)+(342713/91763*1)) if grade==12
```

2018-2019 State Enrollment

Grade	Enrolled	% High School
9th	84,224	0.2461
10th	83,450	0.2438
11th	84,612	0.2472
12th	89,963	0.2629
Total	342,713	1.0000

2018 weight coding:

```
gen hswt=.
replace hswt=(342713/84224*.5) if grade==8
```

```
replace hswt=((342713/84224*.5)+(342713/83450*1)+( 342713/84612*.5)) if grade==10
replace hswt=((342713/8461*.5)+(342713/89963*1)) if grade==12
```

2016-2017 State Enrollment

Grade	Enrolled	% High School
9th	82,113	0.2418
10th	83,687	0.2464
11th	83,320	0.2453
12th	90,522	0.2665
Total	339,642	1.0000

2016 weight coding:

```
gen hswt=.
replace hswt=(339642/82113*.5) if grade==8
replace hswt=((339642/82113*.5)+( 339642/83687*1)+( 339642/83320*.5)) if grade==10
replace hswt=((339642/83320*.5)+( 339642/90522*1)) if grade==12
```

2014-2015 State Enrollment

Grade	Enrolled	% High School
9th	83,277	0.2499
10th	82,136	0.2465
11th	81,040	0.2432
12th	86,821	0.2605
Total	333,274	1.0000

2014 weight coding:

```
gen hswt=.
replace hswt=(83277/333274*100*.5) if grade==8
replace hswt=((83277/333274*100*.5)+(82136/333274*100*1)+(81040/333274*100*.5)) if grade==10
replace hswt=((81040/333274*100*.5)+(86821/333274*100*1)) if grade==12
```

2012-2013 State Enrollment

Grade	Enrolled	% High School
9th	82,921	0.2535
10th	81,141	0.2480
11th	80,702	0.2467
12th	82,397	0.2519
Total	327,161	1.0000

2012 weight coding:

```
gen hswt=.
replace hswt=(82921/327161*100*.5) if grade==8
replace hswt=((82921/327161*100*.5)+(81141/327161*100*1)+(80702/327161*100*.5)) if grade==10
replace hswt=((80702/327161*100*.5)+(82397/327161*100*1)) if grade==12
```

2010-2011 State Enrollment

Grade	Enrolled	% High School
9th	84,113	0.2551
10th	81,966	0.2486
11th	79,874	0.2422
12th	83,818	0.2542
Total	329,771	1.0000

2010 weight coding:

```
gen hswt=.
replace hswt=(84113/329771*100*.5) if grade==8
replace hswt=((84113/329771*100*.5)+(81966/329771*100*1)+(79874/329771*100*.5)) if grade==10
replace hswt=((79874/329771*100*.5)+(83818/329771*100*1)) if grade==12
```

2008-2009 State Enrollment

Grade	Enrolled	% High School
9th	87,638	0.2635
10th	83,359	0.2506
11th	81,601	0.2453
12th	80,013	0.2406
Total	332,611	1.0000

2008 weight coding:

```
gen hswt=.
replace hswt=(87638/332611*100*.5) if grade==8
replace hswt=((87638/332611*100*.5)+(83359/332611*100*1)+(81601/332611*100*.5)) if grade==10
replace hswt=((81601/332611*100*.5)+(80013/332611*100*1)) if grade==12
```

2006-2007 State Enrollment

Grade	Enrolled	% High School
9th	90,444	0.2721
10th	84,476	0.2542
11th	80,193	0.2413
12th	77,242	0.2324
Total	332,355	1.0000

2006 weight coding:

```
gen hswt=.
replace hswt=(90444/332355*100*.5) if grade==8
replace hswt=((90444/332355*100*.5)+(84476/332355*100*1)+(80193/332355*100*.5)) if grade==10
replace hswt=((80193/332355*100*.5)+(77242/332355*100*1)) if grade==12
```

2004-2005 State Enrollment

Grade	Enrolled	% High School
9th	89,970	0.2769
10th	83,315	0.2564
11th	77,443	0.2383
12th	74,248	0.2285

Grade	Enrolled	% High School
Total	324,976	1.0000

2004 weight coding:

```
gen hswt=.
replace hswt=(89970/324976*100*.5) if grade==8
replace hswt=((89970/324976*100*.5)+(80877/324976*100*1)+(77443/324976*100*.5)) if grade==10
replace hswt=((77443/324976*100*.5)+(74248/324976*100*1)) if grade==12
```

2002-2003 State Enrollment

Grade	Enrolled	% High School
9th	87,842	0.2763
10th	80,877	0.2544
11th	76,759	0.2415
12th	72,404	0.2278
Total	317,882	1.0000

2002 weight coding:

```
gen hswt=.
replace hswt=(87842/317882*100*.5) if grade==8
replace hswt=((87842/317882*100*.5)+(83315/317882*100*1)+(76759/317882*100*.5)) if grade==10
replace hswt=((76759/317882*100*.5)+(72404/317882*100*1)) if grade==12
```

Appendix C: Do File ~ HYS State Data Analysis Examples in STATA

*For use with State Sample data

*The following "do file" runs through examples see the HYS Data Analysis in STATA section

*To run a line of command highlight the command text and hit the icon above that looks like a page with text on it

*Instructions for this file are preceded by an asterisk, they are just informational. Actual STATA commands are indented and don't have an asterisk

*The commands and instructions presented here are suggestions and only one method in which STATA can be used to analyze survey data

*This section covers the following topics: Opening your dataset Analysis by Grade, Frequencies and summaries of statistics, Creating new variables, Labeling new variables, General set up for survey analysis, Two-way tables and crosstabs, More options for using "svy", Additional tips for formatting, Analysis by grade, Stratified analysis and subpopulations

*==

*Open your 2023 State Sample dataset and Setup for Survey Analysis

*==

*start your do file with the clear command to get rid on any previous data or add clear to the end of your use command

```
clear
*use "hys23 state dataset.dta"

*use "hys23 state dataset.dta", clear
```

*Put in the pathway to **your** dataset or you can also open your data file by using the File drop down menu

*==

*General Setup for Survey Analysis - state sample

*==

```
gen fakewt=1

svyset [pweight=fakewt], psu(schgrd)

keep if staterec==1
```

*==

*Frequencies and Summaries of Statistics

```
*============================================================
```

*you can look at basic frequencies using the tab command

```
tab d20_23
```

*for variable exploration use the summarize commands

```
summarize d20_23
summarize d20_23, detail
```

*use a histogram to look at the distribution of your variable

```
histogram d20_23
```

*you can also explore combinations of variables by demographics

```
tab d20use grade
```

*look at your variables graphically with a histogram by grade

```
histogram d20_23, by(grade)
*============================================================
```

*Creating and Recoding New Variables

```
*============================================================
```

*GENERATING new Variables

*you can create a new variable that has the same value as an original variable this can be useful if you plan to modify the variable in any way, so you still have the original in tact

```
gen alc30=d20_23
tab d20_23
tab alc30
```

*notice that they have exactly the same output

*you can generate combined variables of one or more original variables

```
gen cigchew30 = d14use + d15use
tab d14use
tab d15use
tab cigchew30
```

*notice that there are more response options (2=yes to both cigarettes and chew, 1=yes to one but not both, 0=no to both)

*you can create variables with no respondents, only missing values

```
gen new=.
tab new
```

*you can also create new dummy variables for each response option from an original variable

```
tab grade, gen(gradecat)
tab grade gradecat1
tab grade gradecat2
```

*notice that gradecat1 are the respondents from grade 6, gradecat2 are the respondents from grade 8 and notice that you have new variables at the bottom of your variable list

*All of these generated variables come in handy when trying to recode your data

*RECODING

*Recode the original current smoking variable to see if you get the same results as the pre-collapsed variable (d14use)

*Codebook your new cig30 variable to see the response options before recoding

```
codebook d20_23
gen alcohol30=d20_23
recode alcohol30 1=0 2=1 3=1 4=1 5=1 6=1 7=1
tab d20_23 alcohol30
tab alcohol30 grade
```

*here's another way to recode

```
gen alcthirty=d20_23
recode alcthirty 1=0 2/7=1
tab d20_23 alcthirty
tab alcthirty grade
```

*in this case you can also check your recode with a pre-collapsed variable

```
tab d20use alc30
```

*REPLACING

*For more complex coding you will need to use the replace command

*In this example we will combine the variable for visiting a doctor (h24) with visiting a dentist (h25) to create an any visit variable

*Always a good idea to codebook your variables first

```
codebook h24 h25
```

*Create the new combined variable by designating with location of the response options from the original variables

```
gen visitboth=.
replace visitboth=1 if (h24==1 & h25==1)
replace visitboth=0 if (h24==2 | h24==3 | h24==4 | h25==2 | h25==3 | h25==4)
tab visitboth grade
```

*If you only wanted to include respondents who answered both questions, sometimes it's helpful to add one more line of command to ensure that both questions have to be answered

```
replace visitboth=. if (h24==. & h25==.)
tab visitboth grade
```

*==

*Labeling

*==

*Labeling newly created variables helps to keep response options clear

*to label a variable with a description:

```
lab var visitboth "Visited both a doctor and a dentist in the past year"
```

*to label response options you have two steps, first you have to create a label and then you have to attach it

```
lab def visit 1"Both" 0"One or none"
lab val visitboth visit
```

*run a tab to see if the labels were applied

```
tab visitboth
```

*==

*Two-Way Tables or Crosstabs

*==

*SETUP

*Before you can run actual survey analysis, you need to provide STATA with setup commands to account for weighting, primary sampling units and strata

*For these examples we're using state sample data, so we will set up STATA for that type of analysis.

*If you are running a different type of analysis, for example county, then see the setup commands under the section General Setup for Survey Analysis or see the examples in Appendix B: Quick Examples of HYS Data Analysis in STATA

```
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
keep if staterec==1
```

*SURVEY ANALYSIS

*svy:tab allows you to cross two variables this simple tab splits up the data into four cells with the totals of the cells = 100%

*the tab will also give you the results of a chi-squared test to let you know if one of the cells is different from the others

```
svy:tab h53 g05_18
*=============================================================
*Additional Options with "Svy"
*=============================================================
*COLUMN AND ROW PERCENTAGES
*Use "col" and "row" to get a cross tab with column or row percents
svy:tab h53 g05_18, col
svy:tab h53 g05_18, row
 *notice how row and col produce different point estimates
 *col gives you the prevalence of depressive feelings for females and males
 *row tells you among those with depressive feelings, what proportion  are female and what proportion are male
*OBSERVATIONS
*Obs - you can also add the obs command to get the number of observations used to calculate each point estimate
svy:tab h53 g05_18, col obs
*STANDARD ERROR and CONFIDENCE INTERVALS
*Use "se" and "ci" to add confidence intervals and standard errors to your output
*for standard error (to get symmetrical confidence intervals multiply by 1.96)
svy:tab h53 g05_18, col se
*for asymmetrical confidence intervals at the 95% confidence level, (95% is the default, you can change it with formatting)
svy:tab h53 g05_18, col ci
*PERCENTAGES
*Use "per" to display your estimate as percentage points
svy:tab h53 g05_18, col per
*you can add as many of these commands as you need
svy:tab h53 g05_18, col se ci obs per
*WIDENING TABLE COLUMNS
*You can create output with columns wide enough to display your response option labels and estimates
```

*stubwidth changes the width of response labels, cellwidth changes the width for the estimates

```
svy:tab s01 g05_18, row ci stubwidth (20) cellwidth (15)
```

*compare your results without designating the column widths

```
svy:tab s01 g05_18, row ci per
```

*STATA displays your estimates by 2 decimal points, so usually you only need to include the stubwidth command, not the cellwidth

```
svy:tab d20_23 grade, col ci stubwidth (15)
```

*ROUNDING

*to modify the number of decimal places in the output use the format command

```
svy:tab grade g05_18, per row ci format(%3.2f)
svy:tab grade g05_18, per row ci format(%9.3f)
```

*notice the difference changing the number after the decimal point makes .3 gives 3 decimal points and .0 rounds to the whole number

*REMOVING SCIENTIFIC NOTATION

*sometimes making the formatting number bigger can help if your observations are coming out in scientific notation

```
svy:tab grade g05_18, row per obs
svy:tab grade g05_18, row per obs format(%9.3f)
```

*VERTICAL ALIGNMENT

*to display upper and lower bound confidence intervals in a vertical fashion without the bracket and comma use the vert option

*this can be handy if you are pasting results into an excel table

```
svy:tab grade g05_18, row ci per vert
```

*==

*Stratified Analysis and Subpopulations

*==

*STATA provides a number of ways to create and run stratified analysis. Below are a few ways to generate subpop variables to use in analysis. The important thing is they need to be coded as 1, 0. The best way to create subpops is to make dummy variables. This creates four new dummy variables gradecat1 (for 6th grade), gradecat2 (for 8th grade), gradecat3 (for 10th grade) and gradecat4 (for 12th grade).

*open your dataset

```
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
```

```
keep if staterec==1
```

*creates a subpop of only 8th graders

```
tab grade, gen(gradecat)
rename gradecat2 eight
tab eight
```

*creates a subpop of only Black-African American students

```
tab g06_23, gen(racecat)
rename racecat3 black
tab black
```

*creates a subpop of only 8th grade Black-African American students

```
gen black8=1 if black==1 & eight==1
replace black8=0 if black==0 & eight==0
tab g06_23 grade
tab black8
```

*Then use to cross current marijuana use by household marijuana use 8th graders, first looking at among current marijuana users/non-marijuana users, what proportion live with a marijuana user?

```
svy:tab d21_16use d99, subpop(eight) row per
```

*Then among 8th graders who live/or don't live with a marijuana user, what proportion use marijuana

```
svy:tab d99 d21_16use, subpop(eight) row per
```

*USING OVER

*You can also use the over command to run stratified analysis. To look at a mean use or create a binary variable that is coded as 0 and 1

```
tab d21_16use
svy:mean d21_16use, over(grade g05_18)
```

*6#Female represents 6th grade females, so current marijuana use for 6th grade females is 0.6%. Current marijuana use for 8th grade females is 4.3%.

Appendix D: Do File ~ Quick Examples of HYS Data Analysis in STATA

*The following "do file" runs through examples see the Data Analysis - Quick Examples section

*Select the proper set up according to your data, to replicate the results in the manual – use the 2023 state sample dataset

*To run a line of command highlight the command text and hit the icon above that looks like a page with text on it

*Instructions for this file are preceded by an asterisk, they are just informational. Actual STATA commands are indented and don't have an asterisk

*The commands and instructions presented here are suggestions and one method in which STATA can be used to analyze survey data

*==

*Set ups

*==

*STATE SAMPLE

```
*use "hys23 state dataset.dta", clear
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
```

*STATE CENSUS

```
*use "hys23 census dataset.dta", clear
gen fakewt=1
svyset [pweight=fakewt]
```

*ANALYSIS of a COUNTY with a CENSUS in 2023

*Adams, Asotin, Benton, Chelan, Clallam, Columbia, Cowlitz, Douglas, Ferry, Franklin, Garfield, Grant, Grays Harbor, Island, Jefferson, Kitsap, Kittitas, Klickitat, Lewis, Lincoln, Mason, Okanogan, Pacific, Pend Oreille, San Juan, Skagit, Skamania, Stevens, Wahkiakum, Walla Walla, Whatcom, Whitman, Yakima

*For COUNTY level setup, you need to replace the "x" with the proper county number

```
*use "hys23 census dataset.dta", clear
keep if conum==x
keep if corec==1
gen fakewt=1
svyset [pweight=fakewt]
```

*Analysis of a COUNTY with a COUNTY SAMPLE in 2023

*King, Pierce, Snohomish, and Spokane 6th grade and 8th grade

```
*use "hys23 census dataset.dta", clear
keep if conum==X
keep if corec==1
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
```

*ANALYSIS of a COUNTY with both SAMPLE and CENSUS in 2023, Spokane

```
*use "hys23 census dataset.dta", clear
keep if conum==32
keep if corec==1
gen fakewt=1
gen id=_n
gen psu=id +10000
replace psu=schgrd if (grade==6 | grade==8)
svyset [pweight=fakewt], psu(psu)
```

*DROP any COUNTY/GRADE levels that cannot be reported for 2023

```
*use "hys23 census dataset.dta", clear
drop if conum==1 & grade==6
drop if conum==4 & grade==12
drop if conum==7 & (grade==8 | grade==10)
drop if conum==10 & (grade==6 | grade==10 | grade==12)
drop if conum==11
drop if conum==12 & grade==12
drop if conum==17 & grade==12
drop if conum==19 & grade==12
drop if conum==21 & grade==12
drop if conum==23 & grade==12
drop if conum==24 & (grade==10 | grade==12)
drop if conum==26 & (grade==10 | grade==12)
drop if conum==30 & (grade==6 | grade==8)
drop if conum==32 & grade==12
drop if conum==33
drop if conum==35
drop if conum==36 & grade==12
drop if conum==37 & grade==12
drop if conum==38 & (grade==6 | grade==8)
```

*ESD ANALYSIS

```
*use "hys23 census dataset.dta", clear
keep if esdrec==1
svyset [pweight=esdwt], psu(esdpsu) strata(conum)
```

*if you only want to analyze one ESD then also use, designate the ESD number for "X"

```
keep if esdnum==x
```

```
*drops ESD and grades without 40% participation

    drop if esdnum==101 & grade==12
    drop if esdnum==113 & grade==12
    drop if esdnum==171 & grade==12

*ANALYSIS of MULTIPLE COUNTIES using a Complete State Data Set (Census 2023)

    *use "hys23 census dataset.dta", clear

*drops counties and grades that cannot be reported

    drop if conum==1 & grade==6
    drop if conum==4 & grade==12
    drop if conum==7 & (grade==8 |  grade==10)
    drop if conum==10 & (grade==6 | grade==10 | grade==12)
    drop if conum==11
    drop if conum==12 & grade==12
    drop if conum==17 & grade==12
    drop if conum==19 & grade==12
    drop if conum==21 & grade==12
    drop if conum==23 & grade==12
    drop if conum==24 & (grade==10 | grade==12)
    drop if conum==26 & (grade==10 | grade==12)
    drop if conum==30 & (grade==6 | grade==8)
    drop if conum==32 & grade==12
    drop if conum==33
    drop if conum==35
    drop if conum==36 & grade==12
    drop if conum==37 & grade==12
    drop if conum==38 & (grade==6 | grade==8)

*generates psu that takes sampling into account

    keep if corec==1
    gen id=_n
    gen psu=id +10000
    replace psu=schgrd if (conum==17)
    replace psu=schgrd if (conum==27)
    replace psu=schgrd if (conum==31)
    replace psu=schgrd if (conum==32 & grade==6)
    replace psu=schgrd if (conum==32 & grade==8)
    gen fakewt=1
    svyset [pweight=fakewt], psu(psu)

*SCHOOL DISTRICT ANALYSIS - Never conduct without permission from school district

    *use "hys23 census dataset.dta", clear
    keep if distnum==x
    keep if distrec==1
```

```
gen fakewt=1
svyset [pweight=fakewt]
```

*SCHOOL BUILDING ANALYSIS - Never conduct without permission from school district

```
*use "hys23 census dataset.dta", clear
keep if schnum==x
gen fakewt=1
svyset [pweight=fakewt]
*============================================================
```

*Analysis Examples

```
*============================================================
*use "hys23 state dataset.dta", clear
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
```

*For crosstabs, the coding after the comma helps format your STATA output. Only include the options you need:

```
*col for column percentages
*row for row percentages
*per if you want the point estimates in percentage format
*ci for confidence intervals
*obs for "n"
*format(%3.2f) designates the numbers before and after the decimal (3 before the decimal, 2 after the decimal)
```

Current marijuana use by grade

To run one variable, d21_16use (current marijuana – already coded as no use or any use 0,1) by grade and include the following formatting options after the comma.

- col for column percentages
- per for results displayed in %
- se for standard error (to convert se to 95% ci, you need to *1.96)
- ci for upper/lower confidence intervals
- obs for "n"
- format(%3.2f) to designate the numbers before and after the decimal

```
svy:tab d21_16use grade, col per se ci obs format(%3.2f)
```

*Current marijuana use by grade and sex assigned at birth

Generate a binary (1,0) sex dummy variable for subpopulations for marijuana use by grade among a specific sex.

```
tab g05_18, gen(sex)
rename sex1 female
rename sex2 male
svy:tab d21_16use grade, subpop(girl) col per se ci obs format(%3.2f)
```

```
svy:tab d21_16use grade, subpop(boy) col per se ci obs format(%3.2f)
```

Generate a binary (1,0) grade dummy variable for subpopulations for marijuana use by sex at birth for a specific grade.

```
tab grade, gen (gradecat)
svy:tab d21_16use g05_18, subpop(gradecat1) col per se ci obs format(%3.2f)
svy:tab d21_16use g05_18, subpop(gradecat2) col per se ci obs format(%3.2f)
svy:tab d21_16use g05_18, subpop(gradecat3) col per se ci obs format(%3.2f)
svy:tab d21_16use g05_18, subpop(gradecat4) col per se ci obs format(%3.2f)
```

**Current marijuana by grade and chronic absenteeism*

Create a chronic absenteeism variable (absent 3 or more days) with recode, then define and attach the new response option labels and add the new variable with a description. Crosstab marijuana by race and grade.

```
codebook g27
gen chronicabsent= g27
recode chronicabsent 1/2=0 3=1
lab def chronicabsent 1 "Yes-3 or more days" 0"No"
lab val chronicabsent chronicabsent
lab var chronicabsent "Absent from school on 3 or more days in past month for any reason"
svy:tab d21_16use chronicabsent, subpop(gradecat2) col per se ci obs format(%3.2f)
svy:tab d21_16use chronicabsent, subpop(gradecat3) col per se ci obs format(%3.2f)
svy:tab d21_16use chronicabsent, subpop(gradecat4) col per se ci obs format(%3.2f)
```

**Current marijuana use by depressive feelings*

Crosstab marijuana by depressive feelings and grade.

```
svy:tab d21_16use h53, subpop(gradecat2) col per se ci obs format(%3.2f)
svy:tab d21_16use h53, subpop(gradecat3) col per se ci obs format(%3.2f)
svy:tab d21_16use h53, subpop(gradecat4) col per se ci obs format(%3.2f)
```

**Current marijuana use by depressive among chronic absentee students*

Generate binary (0,1) for chronic absenteeism and grade subpopulations and crosstab marijuana use by depressive feelings among chronically absent students.

```
gen absent8=1 if chronicabsent==1 & grade==8
replace absent8=0 if chronicabsent==0 & (grade==10 | grade==12)
gen absent10=1 if chronicabsent==1 & grade==10
replace absent10=0 if chronicabsent==0 & (grade==8 | grade==12)
gen absent12=1 if chronicabsent==1 & grade==12
replace absent12=0 if chronicabsent==0 & (grade==8 | grade==10)
svy:tab d21_16use h53, subpop(absent8) col per se ci obs format(%3.2f)
svy:tab d21_16use h53, subpop(absent10) col per se ci obs format(%3.2f)
svy:tab d21_16use h53, subpop(absent12) col per se ci obs format(%3.2f)
```

**Current marijuana use by depressive feelings among boys*

Generate binary (0,1) for boys and grade subpopulations and crosstab marijuana use by depressive feelings among boys.

```
gen boy8=1 if g05_18==2 & grade==8
replace boy8=0 if g05_18==1 &  (grade==10 | grade==12)
gen boy10=1 if g05_18==2 & grade==10
replace boy10=0 if g05_18==1& (grade==8 | grade==12)
gen boy12=1 if g05_18==2 & grade==12
replace boy12=0 if g05_18==1 & (grade==8 | grade==10)
svy:tab d21_16use h53, subpop(boy8) col per se ci obs format(%3.2f)
svy:tab d21_16use h53, subpop(boy10) col per se ci obs format(%3.2f)
svy:tab d21_16use h53, subpop(boy12) col per se ci obs format(%3.2f)
```

NOTE: Use caution with crosstabs of variables with low prevalence, or when you are using small subpopulations. Do NOT report results if there are less than 5 observations per cell when running state level data or less than 10 observations per cell when running sub-state-level analysis.

Appendix E: Do File – Making Bar Graphs with Error Bars in STATA

*The following "do file" runs through see the Displaying Results section

*Select the proper set up according to your data, to replicate the results in the manual – use the 2023 state sample dataset

*To run a line of command highlight the command text and hit the icon above that looks like a page with text on it

*Instructions for this file are preceded by an asterisk, they are just informational. Actual STATA commands are indented and don't have an asterisk

*The commands and instructions presented here are suggestions and one method in which STATA can be used to analyze survey data

*Modified from UCLA/s STATA website at:
http://www.ats.ucla.edu/stat/STATA/faq/barcap.htm

*===

*Chart Example

*===

use "E:\1 Data\HYS\HYS 2021\hys2021state04152022.dta", clear

```
*use "hys21 state dataset.dta", clear
gen fakewt=1
svyset [pweight=fakewt], psu(schgrd)
```

*generate a race variable with the groups you want in the graph

```
gen newrace=g06_23
recode newrace 1=2 2=1 3=3 4=. 5=1 6=5 7=. 8=.
replace newrace=4 if g31==1
lab def newrace 1"API" 2"AI/AN" 3"Black" 4"Hispanic" 5"White"
lab val newrace newrace
```

*create a mean current marijuana use prevalence

```
collapse (mean) d21_16use= d21_16use (sd) sdd21_16use=d21_16use (count) n=d21_16use,
by(grade newrace)
```

*create the high and low values of the confidence interval

```
gen hi_d21_16use = d21_16use + invttail(n-1,0.025)*(sdd21_16use/sqrt(n))
gen lo_d21_16use = d21_16use - invttail(n-1,0.025)*(sdd21_16use/sqrt(n))
```

*generate a simple two-way bar graph

```
graph bar d21_16use, over(newrace) over(grade)
```

*add some color to the graph and make it a bit easier to read by adding asyvars

```
graph bar d21_16use, over(newrace) over(grade) asyvars
```

*add error bars to the graph

```
graph twoway (bar d21_16use newrace) (rcap hi_d21_16use lo_d21_16use newrace), by(grade)
```

*to make a color two-way bar graph with error bars set up single variables for each race and grade

```
gen graderace=newrace if grade==6
replace graderace=newrace+10 if grade==8
replace graderace=newrace+20 if grade==10
replace graderace=newrace+30 if grade==12
sort graderace
list graderace grade newrace, sepby(grade)
```

*create a single graph with all of the data

```
twoway (bar d21_16use graderace)
```

*add confidence intervals

```
twoway (bar d21_16use graderace) (rcap hi_d21_16use lo_d21_16use graderace)
```

*to add color overlay four separate graphs

```
twoway (bar d21_16use graderace if newrace==1) ///
(bar d21_16use graderace if newrace==2) ///
(bar d21_16use graderace if newrace==3) ///
(bar d21_16use graderace if newrace==4) ///
(bar d21_16use graderace if newrace==5) ///
(rcap hi_d21_16use lo_d21_16use graderace)
```

*add a legend and labels

```
twoway (bar d21_16use graderace if newrace==1) ///
(bar d21_16use graderace if newrace==2) ///
(bar d21_16use graderace if newrace==3) ///
(bar d21_16use graderace if newrace==4) ///
(bar d21_16use graderace if newrace==5) ///
(rcap hi_d21_16use lo_d21_16use graderace), ///
legend(order(1 "API" 2 "AI/AN" 3 "Black" 4 "Hispanic" 5 "White")) ///
xlabel(2.5 "6th Grade" 12.5 "8th Grade" 22.5 "10th Grade" 32.5"12th Grade", noticks) ///
xtitle(Grade) ytitle(Mean Current Marijuana Use Prevalence) ///
title(Current Marijuana Use) subtitle(by Race and Grade) note(Source: 2023 HYS)
```