Module 4: Guidance for American Community Survey (ACS) Data Users Transcript

Hi. I'm Mary Leisenring and I'm here today with Vicki Mack from the American Community Survey Office. Today's lesson will help you understand the basics of using the ACS 1-year and 5-year data.

Oftentimes, data seekers have more complex questions about when to use the 1-year versus the 5-year data; how to compare ACS estimates over time, or how to compare them with decennial census data. We will address those questions and introduce resources for answering those questions, such as sample ACS questionnaires, subject definitions, handbooks, and important information webpages. We will also quickly introduce you to a variety of data tools.

After today's video, you will be able to determine when to use the 1-year versus 5-year estimates; determine what the margin of error is, and how it factors into making comparisons of estimates; learn the do's and don'ts of making comparisons with the ACS estimates; locate and access resources such as sample questionnaires, subject definitions, and other important ACS webpages, and learn about a variety of data tools for accessing ACS statistics.

Single-year and multi-year estimates from the ACS are all period estimates derived from a sample collected over a period of time as opposed to a point-in-time. Period estimates are produced by combing data collected across a specific period. The ACS is an ongoing survey that collects responses every day of the year. Those responses are combined over a single year to produce 1-year estimates and over 5 years to create 5-year estimates.

The image shown here, illustrates the time periods for each. People often refer to the 5-year estimates as an average of the 5 1-year estimates, and that is not correct. The Census Bureau does not take 5 separate 1-year estimates, add them up, and divide them by 5 to get a 5-year estimate.

Rather, the data for the 5 years are pooled together, weighted, and processed as a whole dataset.

Module 4: Guidance for American Community Survey (ACS) Data Users Transcript

The link to more information about this topic and all of the webpages we discuss or show today, are provided below the video.

Now, let's discuss the differences between 1-year and 5-year estimates. When data users are selecting data for a specific geography, they may be confused as to whether they should use the 1-year or 5-year estimates. First, data users must remember that 1-year estimates are only available for geographic areas of population sizes of 65,000 or more and represent 12 months of collected data.

The 5-year estimates are available for all geographic areas regardless of the population size and represent 60 months of collected data. Next, if the data user is looking for the most recent or current data, he or she must select the most recent 1-year data. Again, that is only an option if the geographic area has a population of 65,000 or more.

Next, the data user may be concerned about statistical reliability. As we explain in our ACS Handbook, the primary advantage of using multi-year estimates is to increase statistical re-liability of the data compared with that of single-year estimates, particularly for small geographic areas and small population subgroups.

Because ACS is based on a sample rather than all housing units and people, ACS estimates have a degree of uncertainty associated with them called "sampling error," in general, 1 the larger the sample, the smaller the level of sampling error.

To learn more about assessing the reliability of ACS estimates, see the tutorial provided by the Population Reference Bureau on assessing the reliability of ACS estimates. We are often asked how to tell if an estimate is accurate or not.

To help users, the Census Bureau provides a margin of error for each published ACS estimate. The margin of error, combined with the ACS estimate, give users a range of values within which the actual real-world value is likely to fall.

Module 4: Guidance for American Community Survey (ACS) Data Users Transcript

This is called the “confidence interval.” As our handbook explains, there are no hard-and-fast rules for determining an acceptable range of error in ACS estimates. Instead, data users must evaluate each application to determine the level of precision that is needed for an ACS estimate to be useful.

Let’s take a break for a knowledge check.
Suppose the ACS estimate for the number of households with a computer in Adams County, Colorado in the 2021 1-year estimate is 176,442 with a margin of error of 2199. What is the confidence interval? The confidence interval is 174,243 to 178,641 which is created by subtracting 2199 from 176,442 and adding 2199 to 176,442. This is the 90% confidence interval.

One of the main benefits of the ACS is the ability to make comparisons over time across different geographic areas and across different population subgroups. The Census Bureau recommends that users compare population statistics for percents, means, medians, and rates rather than estimates of population totals.

Now, if you’re looking for population totals, we recommend using the Decennial Census or Population Estimates Program. In general, the Census Bureau recommends that you do compare estimates from non-overlapping periods.

For example, compare a 2010 to 2014 ACS 5-year estimate to a 2015 to 2019 ACS 5-year estimate. Don’t compare overlapping periods. For example, 2014 to 2018 ACS 5-year estimates to the 2015 to 2019 ACS 5-year estimates. Do compare similar period lists, for example, 1-year to 1-year or 5-year to 5-year. Don’t compare estimates from different period lengths.

For example, don’t compare 1-year to 5-year. It is also important to keep in mind that all ACS data are estimates. We collect data from a sample of the population in the United States and Puerto Rico rather than from the whole population. To interpret the reliability of the estimates, the Census Bureau publishes a margin of error for every ACS estimate.

Module 4: Guidance for American Community Survey (ACS) Data Users Transcript

Unless you take into account the margins of error, you cannot conclude that the estimates are statistically different from one another. Instead, you have to conduct statistical testing when making comparisons between estimates to check for any differences.

Looking at estimates alone to decide if they are higher or lower than one another is not sufficient. We will talk more about how to do that in the next module. However, if you want to learn more now, there are links to more information and a tutorial video provided below.

Now, we will discuss some issues to be aware of when making comparisons with ACS data.

Because ACS variables and geographies may change over time, comparisons may need to be made with caution or maybe not made at all. Please use the 2 years in the tabs on our Comparison Guidance page shown here to get yearly guidance on specific topics and subjects.

This example shows what the comparison guidance looks like for the subject of "fertility." If someone is interested in comparing the 2021 1-year data with previous 1-year data, they will see that the data are comparable with 2019. Note that due to the impact of COVID on data collection, the 2020 data are not generally comparable. The 2021 1-year data are also not comparable with the 2020 or 2010 census data, because the question was not asked.

The 2017 to 2021 5-year data are comparable with the previous non-overlapping 5-year data which are the 2012 to 2016 data. Comparing ACS estimates involves more than determining which estimate is higher or lower.

For example, you may look at the median household income for two different cities and one is higher than the other. Just because the two estimates are different, does not mean they are statistically different.

Module 4: Guidance for American Community Survey (ACS) Data Users Transcript

Users should conduct statistical testing to determine if the differences are statistically significant. This testing takes into account the margins of error, or MOEs, associated with survey estimates. The Census Bureau provides an easy way to conduct statistical testing with its Statistical Testing Tool along with a tutorial guided video.

The tool allows you to input estimates you'd like to test and receive a visual notification of whether the estimates are statistically different or not; learn more at the link below.

Let's talk about resources that can help you better understand ACS data. Data users are often curious about what topics are collected in the ACS. Data users can access samples of the ACS forms so they can see what data are collected and how the questions look on the form.

You can browse Sample American Community Survey and Puerto Rico Community Survey forms or questionnaires in English and Spanish with instruction guides at the link provided below. There are two types of forms on this page. The household form asks about the people at the address on the mailing label and their house, apartment, or mobile home.

While the group quarters form is for people living in group housing facilities such as college or university student housing, nursing or skilled nursing facilities, military barracks, and correctional facilities.

We also get questions about the specific variables produced from the ACS estimates. So, another very helpful resource is the Subject Definitions. They provide the definitions of all the population and housing variables to help you understand the results of the American Community Survey.

The Information by User Pages provides resources and information by ACS user type, like businesses, congress, and Spanish speakers.

Module 4: Guidance for American Community Survey (ACS) Data Users Transcript

Each one of our several downloadable PDF handbooks helps a particular data user type with specific “how-to” instructions and some include case studies.

Data users can learn more about issues impacting the ACS, including design, collection, production, and data release by viewing the ACS User Notes page. All the links to these resources can be found below.

Let’s take another break for a knowledge check.
The ACS Household form asks about the people at the address on the mailing label and their house, apartment, or mobile home.

The Group Quarters 3 form is for people living in group housing facilities such as blank. The answer is the Group Quarters form is for people living in group housing facilities such as, college/university student housing, nursing or skilled nursing facilities, military barracks, and correctional facilities.

In this final section, we will review some Census Bureau tools that you can use to access ACS data.

Catering to a variety of data users with unique needs, we have a variety of data access tools. This is a list of many of those tools.

You can learn more about these tools to figure out which one fits your needs best by going to the link provided below the video. There are several data gems which are short how-to videos or webinars on using most of these tools on a Census Academy page.

Here is what you’ve learned today. Today, you’ve learned there are several there are several considerations to make when determining whether to use 1-year versus 5-year data, like the geographic area’s population size, the currency or reliability of the data, and sample sizes of the datasets.

Module 4: Guidance for American Community Survey (ACS) Data Users Transcript

The margins of error are provided to help us create confidence intervals and how they factor into making comparisons with ACS estimates.

There are several considerations to make when comparing ACS data and one should utilize the ACS Comparison Guidance to make those decisions. About helpful resources to learn more about ACS data, such as our ACS forms, subject definitions, user notes, and handbooks.