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## 4. CONSIDERATIONS WHEN WORKING WITH ACS DATA

The greatest strength of the ACS is that it provides access to estimates on an annual basis, but this also results in an array of options that affect how data can be used effectively by federal agencies.

Many agencies require data for relatively small geographic areas that must rely on ACS 5-year estimates. Of the approximately 69,000 states, counties, cities, towns, townships, villages, other minor civil divisions, and census designated places, more than 90 percent rely exclusively on 5-year estimates. About 8 percent of these small geographic areas have populations of 20,000 or more and receive 1-year Supplemental Estimates.

Among counties and county equivalents, 41 percent rely on 5-year estimates exclusively, while 59 percent receive 1-year Supplemental Estimates and 26 percent meet the 65,000-population threshold needed to receive 1-year estimates.<sup>11</sup> Data users interested in ACS estimates for areas with populations of 65,000 or more have a choice between the 1-year and 5-year data series.

### Which Data Should Be Used?

The 1-year estimates for an area reflect the most current data but they have larger margins of error (MOEs)—indicating less reliability or precision—than the 5-year estimates because they are based on a smaller sample. The 5-year estimates for an area have larger samples and smaller MOEs than the 1-year estimates. However, they are less current because the larger samples include data that were collected in earlier years. The main advantage of using multiyear estimates is the increased statistical reliability for smaller geographic areas and small population groups.<sup>12</sup>

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<sup>11</sup> Percentages include data for municipios in Puerto Rico. For more information, see the Census Bureau's ACS Web page on Areas Published, available at <[www.census.gov/programs-surveys/acs/geography-acs/areas-published.html](http://www.census.gov/programs-surveys/acs/geography-acs/areas-published.html)>.

<sup>12</sup> U.S. Census Bureau, *When to Use 1-year, 3-year, or 5-year Estimates*, <[www.census.gov/programs-surveys/acs/guidance/estimates.html](http://www.census.gov/programs-surveys/acs/guidance/estimates.html)>.

In the end, what makes the most sense is a matter of judgment regarding the balance between the period covered by an estimate and its level of reliability or precision. The key is to strive to use the most reliable estimates, where the period covered best suits the question at hand.

### Using ACS Estimates as Building Blocks for Larger Geographic Areas

In some cases, data users will need to construct custom ACS estimates by combining data across multiple geographic areas or population subgroups, or it may be necessary to derive a new percentage, proportion, or ratio from published ACS data. One way to address the issue of unreliable estimates for individual census tracts or block groups is to aggregate geographic areas, yielding larger samples and estimates that are more reliable. In such cases, additional calculations are needed to produce MOEs and standard errors, and to conduct tests of statistical significance for the derived estimates. For more information, see the section on “Calculating Measures of Error for Derived Estimates” in the Census Bureau's handbook on *Understanding and Using American Community Survey Data: What All Data Users Need to Know*.<sup>13</sup>

### Measuring Change Over Time With ACS Data

Finally, there is the issue of how to use multiyear characterizations of an area to measure change over time. As the ACS program has moved forward, a whole series of multiyear estimates for various time intervals has become available. Data users now have access to nonoverlapping ACS 5-year estimates that have increased the value and utility of the data for monitoring trends in local communities. However, it is more challenging to capture rapid change in areas where only ACS 5-year estimates are available.

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<sup>13</sup> U.S. Census Bureau, *Understanding and Using American Community Survey Data: What All Data Users Need to Know*, <[www.census.gov/programs-surveys/acs/guidance/handbooks/general.html](http://www.census.gov/programs-surveys/acs/guidance/handbooks/general.html)>.

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Consider the example of a natural disaster, like Hurricane Harvey that caused major flooding in Texas in 2018. Because data collection is ongoing, the ACS can provide essential information about population and housing characteristics in Texas both before and after the storm. The 1-year ACS estimates are particularly useful in this case because they are based on data from the past year. In contrast, 5-year estimates provide less current information because they are based on both data from the previous year and data that are 2 to 5 years old. For areas experiencing major changes over a given time period, the 5-year estimates may be quite different from the 1-year estimates for any of the individual years.

For more information about ACS multiyear estimates and sampling error, see the sections on “Understanding and Using ACS Single-Year and Multiyear Estimates” and “Understanding Error and Determining Statistical Significance” in the Census Bureau’s handbook on *Understanding and Using American Community Survey Data: What All Data Users Need to Know*.<sup>14</sup>

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<sup>14</sup> U.S. Census Bureau, *Understanding and Using American Community Survey Data: What All Data Users Need to Know*, <[www.census.gov/programs-surveys/acs/guidance/handbooks/general.html](http://www.census.gov/programs-surveys/acs/guidance/handbooks/general.html)>.