

Using American Community Survey Data Local-level Data Considerations for Rhode Island

The American Community Survey (ACS) is the primary means by which the U.S. Census Bureau collects information about a variety of social and economic characteristics of populations. ACS products are an excellent resource for Rhode Island communities, but there are several important considerations to bear in mind while using them.

Transition from the “Long Form” to the American Community Survey

The 2010 Decennial Census data release was different from that of previous Censuses. In the past, detailed demographic information such as income levels, poverty status, occupation, nativity, and housing costs was estimated through the “Long Form” questionnaire of the Decennial Census, sent to one in six households every ten years. The U.S. Census Bureau eliminated the Long Form in 2010, and over the past decade, the Bureau has implemented the American Community Survey (ACS). The ACS samples a smaller number of households (approximately three million annually) on a continual basis, and is intended to provide more timely demographic information.

The ability to have relevant data every year instead of once every ten years has tradeoffs. If you are a person who focuses on the “big picture” – what is happening nationwide or statewide – particularly if you want to understand changes that are occurring over short periods of time, then the ACS provides many benefits over the Long Form questionnaire. However, if you need data for smaller areas – many municipalities, census tracts, and block groups, for example – ACS data may present challenges that the Long Form data did not. For example, you will need to look at multi-year estimates and consider the margin of error for these estimates.

ACS 1-year, 3-year, and 5-year estimates

The ACS disseminates data in three formats: 1-year, 3-year, and 5-year datasets. The 1-year estimates provide data only for geographic areas with populations exceeding 65,000. In Rhode Island, that means that the 1-year estimates will provide data for the state, for four counties (Kent, Newport, Providence, and Washington), and for four communities (Cranston, Pawtucket, Providence, and Warwick). The 3-year estimates will provide data for areas with populations exceeding 20,000. In Rhode Island, that means 3-year ACS estimates will be available for the state, for all five counties, and for the 18 municipalities with populations over 20,000.

Municipalities with fewer than 20,000 residents will need to use 5-year ACS estimates. In 2010, the U.S. Census Bureau released the first 5-year ACS data (2005-2009). This is the first time municipal-level social and economic data has been available for *all* communities since Census 2000. This 5-year ACS data provides an insight into income, poverty, housing costs, educational attainment, ancestry, and other selected topics for all geographies in Rhode Island, including the state, all counties, all thirty-nine cities and towns, census tracts, block groups, blocks, etc.

The 5-year ACS data result from the culmination of survey responses gathered over the previous five years. Updated 5-year ACS data products will be presented each year as a rolling calculation of data collected during the previous five years by eliminating data collected from the oldest year and

including data collected from the most recent year. 2007-2011 5-year ACS data is expected to be released in fall of 2012.

Is This an Average?

The Census Bureau has advised that the 5-year ACS data is not a mathematical average, but instead represents “pooled estimates” for a specified five-year period. The process of combining each year’s sample into one 5-year product is more complicated than a simple average because it must smooth out exceptionally high or low observations that occur with random sampling. However, the *concept* of an average over five years is a fairly accurate way of thinking about 5-year ACS data.

Margins of Error

Because the ACS surveys a sample of the population (unlike the Decennial Census), ACS data are estimates, not population counts, and are subject to sampling variability. This was also true of the old Long Form. To account for this variability, the ACS provides a margin of error (MOE) with each estimate that corresponds to a 90 percent confidence level. In other words, there is a 90 percent probability that the true value is within an interval defined as the estimate minus the MOE to the estimate plus the MOE.

Especially at smaller geographies, the ACS margins of error sometimes get quite large. A rule of thumb suggested by the Census Bureau is not to use estimates for which there is a margin of error greater than one quarter of the estimate.

Margins of error can help you determine if a change in estimates over time or a difference in estimates between geographies is statistically significant (that is, if the change is unlikely to have occurred due to pure chance). There are a number of spreadsheets available online that can help you calculate statistical significance and margins of error for combined estimates (e.g. for combining different age groups for a particular variable). You can search for “census ACS margin of error calculator” to find them. The Census has also provided formulae and explanations, available in Appendix 3 and Appendix 4 of the *Compass* guidebook listed at the end of this document, and Division of Planning staff can assist in using these resources.

Important Considerations

ACS datasets are different in many ways from Long Form datasets. In addition to multi-year estimates and margins of error, important considerations for using 5-year ACS data include:

- The 5-year ACS is *not* an appropriate source for actual population or housing counts; that is the primary function of the decennial census. The ACS total population and total housing unit counts are best used as denominators for calculating ratios of selected data sets.
- The ACS data are weighted in such a way that they conform to the *official* Census Bureau annual population estimates (known as postcensal estimates) that are generated by adding births, deaths, and net migration to the most recent Decennial Census. *Official* does not always mean reliable, and if the annual estimates are not accurate, then the ACS data will reflect that.

- For anyone needing reliable socio-economic information for smaller communities, census tracts, block groups, and blocks, ACS data are always going to be somewhat “fuzzy”. Because these data are based on a sample taken over a five-year period, it will be impossible to use the ACS data pinpoint specific changes within the defined period. It is also possible that some tables will be unusable due to sampling error and/or suppression based on sampling issues.
- Tracking changes with multiyear estimates is complicated because the data overlap for successive years. For example, the 5-year estimates released in December 2010 reflect data collected from 2005 through 2009, and the 5-year estimates released in 2011 reflect data collected from 2006 through 2010. Both estimates share data collected in 2006, 2007, 2008, and 2009. Therefore, only twenty percent of the data released in 2011 will really be new.
- Most ACS characteristics are similar in definition to their counterparts from the now-defunct Long Form questionnaire, but some significant differences do exist. For example, when dealing with ACS income data, it is important to keep in mind that the dollar amounts are inflation adjusted to reflect changes in the national consumer price index – with results expressed in dollar values of the most current data collection year. Other questions have different answer choices than previous surveys did. The best resource for checking the comparability of data from recent ACS products, Census 2000, and Census 2010 is http://www.census.gov/acs/www/guidance_for_data_users/comparing_2010/

The decision to use decennial census data, ACS single-year estimates, or ACS multi-year estimates will depend on the type of data you need, the availability of data for your selected level of geography, and the need for timely data versus need for precision. In most instances, the 5-year ACS datasets will provide the user with timely data for all Rhode Island cities and towns. For statewide data or larger local geographies, 1-year data will provide the most timely data, while 5-year data will provide the most accurate data (smallest margin of error). 3-year data might be seen as a compromise between accuracy and timeliness. The Decennial Census is always more accurate than ACS data, but provides fewer topical datasets and is conducted only every ten years.

Additional Resources

A Compass for Understanding and Using American Community Survey Data is a detailed, fairly accessible, resource on using ACS data, available at www.census.gov/acs/www/Downloads/handbooks/ACSGeneralHandbook.pdf

For more information about the American Community Survey or other Census data resources, contact Amanda Martin at amanda.martin@doa.ri.gov.