

Consumer Expenditure Survey compared with the American Community Survey

This article compares methods and data from the Bureau of Labor Statistics Consumer Expenditure Survey (CE) with those of the U.S. Census Bureau American Community Survey (ACS). Because of the reliability of the ACS in terms of response rates and sample size, CE expenditure data were compared with the expenditure data collected by ACS. The ACS collects and publishes nationwide statistics on socioeconomic and housing indicators/characteristics. ACS data are used by numerous organizations to evaluate social and economic changes among communities. These data have been used for measuring childhood poverty, public transportation usage, and the need for new roads and other infrastructure and services.

The ACS, which replaces the decennial census long-form, was fully implemented in 2006. The ACS surveys over 3 million addresses per year, resulting in 2 million final interviews. (Addresses in the sample that are not valid residential addresses are not interviewed.) Participation in the ACS is required and response rates hover in the mid-90-percent range. With such a large sample and high response rate, the ACS survey is subject to less sampling error than is the Consumer Expenditure Interview Survey, whose yearly sample is about 28,000 completed interviews. The CE Interview Survey was used for this comparison, as it is the primary source of published data on the expenditure items compared here. Though the ACS is not designed as an expenditure survey, some expenditure questions are asked on rent, utilities, property taxes, property insurance, and mortgages. The ACS also includes questions on income and food stamp receipt. Before proceeding with the comparison, numerous methodological differences between the CE Interview Survey and ACS should be noted.

Methods used in the surveys

Sample universe differences. ACS is a survey of all residential addresses including both owned and vacation homes, while CE includes only those residential addresses where at least one individual is a usual resident. Addresses which for CE are out of scope (because all individuals staying there have a usual residence elsewhere) are included in the ACS survey; thus, the ACS sample universe is both larger and different from that of CE.

Another difference between the sample universes of the two surveys is the treatment of group quarters. CE does not include State prisons, local jails, institutional halfway houses, military on-post barracks, and correctional institutions,

whereas ACS does. Because the two surveys sample different universes, they are expected to have different results.

Residency requirements. For ACS, an individual is considered a resident if he/she is currently staying in that household and has been or will be staying at that address for more than 2 months of the year. For CE, to be considered a resident, an individual must reside in the address for more than 6 months out of a year. The difference in residency requirements has two significant impacts on the comparability of the surveys. The first is that ACS includes more individuals as members of the household. The resulting expectation is that ACS will have higher estimates for both household income and food stamp receipt.

The second significant impact results because fewer individuals are considered usual residents by CE than by ACS. Since CE restricts its sample universe to households with at least one usual resident, the stricter definition of usual resident serves to further decrease CE's sample universe. The expectations regarding the inclusion of additional properties by ACS are ambiguous. While ambiguous, this difference may affect all expenditure comparisons but especially mortgages, which for CE are broken down into primary and vacation home. For ACS, mortgages are not differentiated into primary and vacation.

Household definition. ACS includes all individuals within a housing unit as one household while CE divides residents of a housing unit into consumer units. A consumer unit is defined as any of the following: (1) All members of a particular household who are related by blood, marriage, adoption, or other legal arrangements; (2) a person living alone or sharing a household with others or living as a roomer in a private home or lodging house or in permanent living quarters in a hotel or motel, but who is financially independent; or (3) two or more persons living together who use their incomes to make joint expenditure decisions. Financial independence is determined by spending behavior with regard to the three major expense categories: Housing, food, and other living expenses. To be considered financially independent, the respondent must provide at least two of the three major expenditure categories, either entirely or in part.

Therefore, multiple CUs may exist in each CE housing unit. CE households are smaller on average: the ACS household size averages 2.6 persons, compared with 2.5 persons in the average CE consumer unit.

Expenditures. Expenditures collected by CE include all expenditures made by the individuals who constitute that consumer unit. This includes expenditures for primary residences, vacation homes, and also expenditures made on behalf of someone else for properties not owned by the CU. Expenditures collected by ACS refer only to those expenditures made with respect to that housing unit; for example, utilities, rent, mortgage, and fuel all refer to expenditures for only the specific property in the sample. ACS does not differentiate whether the individuals in the housing unit were the individuals who made the expenditures. ACS collects the expenditures made with regard to that housing unit regardless of who made them. CE, however, collects expenditures by all members of the consumer unit. These expenditures may or may not include those expenditures for the housing unit in the CE sample. For instance, if a CE consumer unit member did not pay the mortgage for the housing unit in which he/she reside, the expenditure would not be collected in the CE survey, while it would be collected in ACS. However, if a CE consumer unit member paid the mortgage for someone outside their CU, that expenditure would be collected by CE and not by ACS.

The CE and ACS also differ in their treatment of business expenses. In CE expenditures for rent, mortgage, and utilities are reduced by the percentage reported as business expenses. The ACS does not reduce reported expenditures for the portion of expenses incurred for a business.

Other methodological differences. Collection and reference period differences exist between the two surveys. The ACS interviews each housing unit only once, while the CE Interview Survey is administered over a period of five quarters. Data for an entire year are collected by CE, while ACS collects data at one point for the previous year. ACS uses the date of the interview as the reference point or as the end of the reference period; CE collects expenditures made during the reference period, generally the previous 3 months prior to the interview month. ACS income data are then inflation adjusted using the difference between the average Consumer Price Index (CPI) for the 12 months in the survey year and the average CPI for each respondent's 12-month reference period as the adjustment factor; CE data are not inflation adjusted.

Administration differs between the surveys, as well. The ACS is intended as a self-administered survey, however, if no response is received, a telephone interview is attempted. If the telephone interview is unsuccessful, an interview in person is attempted. The CE is primarily a personal interview survey and is not designed to be self-administered.

Finally, differences exist in question wording and the level of detail requested from the respondent. Because ACS is not designed as an expenditure survey, the categories tend to be broader and more inclusive than those collected by CE. The CE utilizes an Information Booklet which provides specific examples of what should be included and excluded as well as detailed question wording. For example, the CE question on rent directs survey participants to "include any extra charges

for garage or parking facilities, but to exclude direct payments by local, state or federal agencies." ACS questions are less specific. For instance, the ACS question for rent asks the monthly rent for the property without any additional information on inclusions and exclusions.

In addition to methodological differences between the two surveys, there are differences in the way in which the estimates are produced which will result in differences in estimates. Expenditures collected by ACS for real estate taxes are reported on the micro data file as a range. In calculations, the mid-point of the range was used; values were then weighted and averaged. It should be noted that there is no reason to assume an even distribution across the range of values (0-\$50, \$51-\$100, etc.).

Results from the surveys

The ACS data used in the comparisons in table 1 are calculated using the ACS microdata file which is top coded, imputed, and corrected through data adjustment. The published CE microdata are also topcoded, imputed, and data adjusted, however, the data used in this article are taken from detailed, internal use expenditure tables that are not subject to topcoding. For this report, ACS estimates were calculated using the provided ACS weights, averaged, and in some cases annualized. Additionally, data were subset for housing units that are not vacant. (Vacant households are defined as units that have no residents according to ACS residency rules stated earlier.)

Text table 6 shows that the Consumer Expenditure Survey average annual sample expenditure estimates of rented dwellings, water and sewerage maintenance, electricity, fuel oil and other fuels, second mortgages, property taxes, and household income are 88 to 120 percent of those from ACS. For 2006 and 2007, estimates of natural gas are 72 percent and 74 percent of ACS, respectively. The difference in estimates from CE and ACS for natural gas could be the result of the specificity of the questions in CE, compared with the broader questions asked by ACS. Differences could also have resulted from the price fluctuation of gas and its derivatives considering the time period differences between the two surveys and the adjustment of values by ACS using the CPI.

Income estimates, which are impacted by the differences in household residency rules and the inclusion of all members of an address by ACS, compared with only members of the CU by CE, are 94 percent and 93 percent of ACS estimates.

Estimates of mortgages, including mortgages for vacation homes and other properties not owned by the CU but for which the CU makes a payment, are 84 percent of ACS. As mentioned above, the ACS estimates for mortgages include vacation homes if the home is occupied by at least one individual for 2 months out of the year. ACS and CE estimates for mortgages both include property taxes and insurance, but only if the respondent included these items in the mortgage payment that they reported.

Overall, CE estimates compare well with ACS, when controlling for the expected differences between the estimates due to differences in household definition. Furthermore,

differences between the two estimates are greatest where methodological differences have the greatest impact, primarily with regards to mortgages. Unfortunately, because of the

sharp methodological differences between the two surveys, it cannot be definitively concluded whether CE underestimates expenditures by comparing estimates with ACS.

Text table 6. **Comparison of characteristics and average annual expenditures for selected items, Consumer Expenditure Survey (CE) and American Community Survey, (ACS) 2006–07**

Item	2006			2007		
	CE	ACS	Ratio of CE to ACS	CE	ACS	Ratio of CE to ACS
Consumer unit characteristics:						
Number of persons per unit.....	2.5	2.6	0.96	2.5	2.6	0.96
Average annual income.....	\$60,533	\$64,487	0.94	\$63,091	\$68,106	0.93
Expenditures:						
Rent.....	\$2437	\$2639	0.92	\$2491	\$2776	0.89
Utilities.....	2241	2556	0.95	2250	2551	0.88
Water.....	328	311	1.05	317	321	0.99
Electricity.....	1266	1406	0.90	1302	1449	0.90
Natural gas.....	509	709	0.72	480	652	0.74
Fuel oil and other fuels.....	138	130	1.06	151	129	1.17
All mortgages.....	5831	6909	0.84	6278	7404	0.85
Mortgage.....	5052	6299	0.80	5432	6733	0.81
Second mortgages.....	779	610	1.27	846	671	1.26
Property tax.....	1648	1373	1.20	1708	1376	1.24
Homeowner's/ renter's insurance...	352	542	0.66	350	567	0.62

SOURCE: ACS data for 2006–07 are calculated from the Public Use Microdata Samples (PUMS) file available on the Internet at www.census.gov/acs/www/Products/PUMS/index.html.