

Overview

To assess rental housing problems and shortages of affordable housing as currently as available data allow, this report uses micro-data from the 2005 and 2006 American Community Surveys (ACS). The Census Bureau has been phasing in the ACS since 1996 to provide economic, social, demographic, and housing data annually. The 2005 ACS survey was the first to represent a full sample for the United States, including approximately 3 million housing units.¹

Because ACS data provide a valuable new resource for assessing rental housing affordability between decennial censuses, a major purpose of this report is to explore the usefulness of ACS data for counties within Pennsylvania.² The main advantage of the ACS is that data are provided annually. But because the sample size for ACS data is much smaller than that for the decennial census housing and population long form, annual ACS results are not as accurate for small regions.³ Therefore, rather than identifying each county, the ACS public use micro-data files now available identify public use micro-data areas, or PUMAs. For our interests, a further disadvantage is that ACS data are not yet released in a format that is as easy to use as CHAS to assess rental housing affordability. Instead, as is the case with standard census products, the ACS data do not group households by HAMFI low-income categories. To use the ACS to assess the affordability of rental housing to ELI, VLI, and LI renters, or the housing problems of households in these income groups, we had to combine them with data on HUD's official HAMFI cutoffs.

To overcome or reduce these limitations, we tabulated ACS micro-data to approximate the summary data we used from the 1990 and 2000 comprehensive housing affordability strategies (CHAS) tabulations on renters by income and rental housing units by affordability category. The result is that our ACS tabulations are not exactly comparable to the 1990 and 2000 CHAS tabulations in several respects, including available geography and sample size.

In tabulating the ACS micro-data, we followed the approach advocated and used by the NLIHC in its 2008 study,⁴ in order to use all available data elements to calculate housing-cost-to-income ratios for

¹ The Census Bureau's Technical Paper 67, "Design and Methodology: American Community Survey," discusses the ACS and its history: <http://www.census.gov/acs/www/Downloads/tp67.pdf>. In 2006, the ACS added data on group quarters, but they are not included in the analysis of rental housing in this study.

² HUD is now planning to fund CHAS tabulations from the ACS for the years 2005-07. These data have not yet been released.

³ The 2006 ACS PUMS files sample 1 percent of housing units, while the 2000 census housing and population long form was generally collected for a sample of 17 percent (one in six). See American Factfinder for additional information on sample sizes. Census: <http://www.census.gov/prod/cen2000/doc/sf3.pdf>. ACS: <http://www.census.gov/acs/www/Downloads/2006/AccuracyPUMS.pdf>

⁴ See Pelletiere and Wardrip (2008).

as many renters as possible. We believe this approach provides more accurate and complete counts of renters with housing cost burdens in 2005-06 than the standard Census Bureau procedures used for past CHAS tabulations, and thus it provides better and more complete estimates of current conditions for renters and their housing. As discussed below, however, it does mean that differences between our 2000 and 2005-06 estimates of the number and incidence of households with housing cost burdens must be interpreted with care.

Relating ACS PUMAs to Pennsylvania Counties to Define Comparable Geographic Areas

The 2005 and 2006 ACS data come from smaller samples (averaging 1 percent of the housing units each year) than the one-in-six “long form” samples in the 1990 and 2000 decennial censuses that underlie the CHAS tabulations. The smallest geographical areas identified on the ACS micro-data are the public use micro-data areas (PUMAs) developed for the 2000 census micro-data. According to the U.S. Census Bureau, “PUMAs are special non-overlapping areas that partition a state, and each PUMA contains a population of about 100,000. State governments drew the PUMA boundaries at the time of the 2000 census.”⁵

Because PUMAs must each have a population of at least 100,000 to meet Census Bureau confidentiality requirements, PUMA boundaries do not always match county boundaries.⁶ In many instances in Pennsylvania, particularly in populous urban areas, several PUMAs are located within a single county, most notably in Philadelphia and Allegheny counties. In other instances, several counties with low population are combined into a single PUMA, such as Cameron, Elk, McKean, and Potter counties within PUMA 400.

To be able to compare county-level CHAS data from 1990 and 2000 to the 2005-06 ACS data, we had to collapse both PUMAs and counties. The following table details the consolidated PUMAs and counties used to analyze sub-state differences and changes since 2000 in this study.

⁵ See the U.S. Census Bureau’s website for additional details on the use of PUMAs for ACS data http://www.census.gov/acs/www/Products/users_guide/acs_2006_reference_maps.htm.

⁶ See the U.S. Census Bureau’s website for maps on PUMAs: <http://www.census.gov/geo/www/maps/puma5pct.htm>.

Pennsylvania	
PUMAs	County
2801, 2802	Adams and Franklin Counties
1701, 1702, 1703, 1801, 1802, 1803, 1804, 1805, 1806, 1807	Allegheny County
2400	Armstrong and Indiana Counties
2001, 2002	Beaver and Lawrence Counties*
2700	Bedford, Fulton, and Huntingdon Counties
3401, 3402	Berks County
2600	Blair County
500	Bradford, Sullivan, and Tioga Counties
3901, 3902, 3903, 3904	Bucks County
1900	Butler County

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Pennsylvania	
PUMAs	County
2501, 2502	Cambria and Somerset Counties
400	Cameron, Elk, McKean, and Potter Counties
3600, 3701, 3702	Carbon and Lehigh Counties
1300	Centre County
4301, 4302, 4303	Chester County
1500	Clarion, Forest, and Venango Counties
1400	Clearfield and Jefferson Counties
1200	Clinton, Juniata, Mifflin, Snyder, and Union Counties
901, 902, 903	Columbia and Luzerne Counties*
300	Crawford and Warren Counties
3101, 3102	Cumberland and Perry Counties
3001, 3002	Dauphin County
4201, 4202, 4203, 4204	Delaware County
100, 200	Erie County
2300	Fayette County
2201, 2202	Greene and Washington Counties
801, 802	Lackawanna and Wyoming Counties
3301, 3302, 3303	Lancaster County
2900	Lebanon County
1000	Lycoming County
1600	Mercer County
700	Monroe County
4001, 4002, 4003, 4004, 4005, 4006	Montgomery County
1100	Montour and Northumberland Counties
3801, 3802	Northampton County
4101, 4102, 4103, 4104, 4105, 4106, 4107, 4108, 4109, 4110, 4111	Philadelphia County
600	Pike, Susquehanna, and Wayne Counties
3500	Schuylkill County
2101, 2102, 2103	Westmoreland County
3201, 3202, 3203	York County

*We also report the 2005-06 ACS data by DCED regions, as described in the main report, and tabulate the 1990 and 2000 CHAS data into DCED regions for comparisons over time. Thus, when we collapsed PUMAs to more closely align with counties, we also had to consider DCED regional boundaries. In two instances, we modified the DCED boundaries so that our DCED regions could be aggregated from the ACS PUMAs. Specifically, we placed Lawrence County in Region 5 because it was included in PUMA 2001 with part of Beaver County. Similarly, we put Columbia County in DCED Region 2 because it was included in PUMA 903 with part of Luzerne County.

Procedures Used in Preparing 2005 and 2006 ACS Data for Analysis

The 2005-06 ACS data we analyzed in this study are available as micro-data, which provide individual housing unit records. We combined two years of ACS data to increase the size of our sample and, thus, the accuracy of our results. This aggregation is particularly important for the smaller regions of Pennsylvania, in which fewer sample records are available. Even when combining two years of data, results are inevitably more precise at the larger state and DCED region levels than in the smaller consolidated PUMA levels presented in the study.

To transform the ACS data into tabulations of renter households and rental units similar to the 1990 and 2000 CHAS data, we compared both income and gross rent for each household to its location's HUD-adjusted area median family income (HAMFI) threshold, making the statutorily required adjustments for household size or number of bedrooms. Specifically, we determined whether renter household income qualified as ELI, VLI, or LI based on HUD's official very low-income limits for metropolitan statistical areas and counties, incorporating the required adjustments for family size.⁷ We used the MSA and county-level very low-income thresholds as the base for our classifications, which does not always equal exactly half of the median family income.⁸ More specifically, for the 2005 data, we applied HUD's 2005 very low-income limits and for the 2006 data, we applied the 2006 very low-income limits.⁹ When an area contained multiple MSAs and/or counties, we weighted the HAMFIs by total households in each MSA and/or county.¹⁰ To determine the income ranges to which each unit is "affordable" (assuming that 30 percent of income is affordable), the income thresholds were adjusted by HUD's required bedroom factors.¹¹

Estimates of Rental Housing Costs and Housing-Cost-to-Income Ratios

For one key indicator, we decided to calculate gross rents from ACS data, and thus housing-cost-to-income ratios, in a way different from the usual Census Bureau approach that underlies both the 1990 and 2000 CHAS tabulations. This procedural difference means that our ACS estimates of households with moderate or severe housing cost burdens in 2005-06 tend to be somewhat higher than would result from estimates that strictly followed CHAS procedures.

⁷ HUD's income limits are available through the HUD User website for each year. 2005: http://www.huduser.org/Datasets/IL/IL05/pa_fy2005.pdf and 2006: http://www.huduser.org/Datasets/IL/IL06/pa_fy2006.pdf.

⁸ The major exception is that in nonmetropolitan counties the very low-income threshold must be no lower than half of the average median family income for all nonmetropolitan counties. HUD's "Fiscal Year 2008 HUD Income Limits Briefing Materials" discuss the differences between an area's median family income and its very low-income thresholds and all the adjustments that are required. ELI and LI income thresholds were calculated as three-fifths and eight-fifths, respectively, of the VLI threshold.

⁹ In June 2003, the Office of Management and Budget announced MSA boundary changes, including within Pennsylvania; see http://www.whitehouse.gov/omb/bulletins_b03-04/. HUD's 2005 income limits were based on the previous MSA boundaries and are directly comparable to boundaries in 2000; however, the 2006 income limits were based on the new MSA boundaries. The OMB boundary changes should not have any significant impact on the findings of this study, particularly at the state and DCED regional levels.

¹⁰ Within the CHAS data, both household income and housing unit affordability are based on HUD's HAMFI income groups. When we aggregated county-level 1990 and 2000 CHAS data so that they were comparable to 2005-06 ACS data at the PUMA level, the weighting of HAMFIs was inherent in the aggregation process.

¹¹ As described in HUD's "Affordable Housing Needs 2005: A Report to Congress" the bedroom adjustment procedure "is similar to, but distinct from, the adjustment of income limits." To summarize, it assumes that an efficiency unit houses one person and a one-bedroom unit houses 1.5 persons, and that each bedroom houses an additional 1.5 persons. See <http://www.huduser.org/Publications/pdf/AffHsgNeeds.pdf> (pp. 90-91) for additional information on adjustment factors.

We followed the methodology used by the National Low Income Housing Coalition (NLIHC) when it analyzed national and state-level 2005 ACS data in its report *Housing at the Half: A Mid-Decade Progress Report from the 2005 American Community Survey*, because this methodology provides more complete estimates of renters with cost burdens.¹² NLIHC researchers provide more information on this approach and its effects in an article in HUD's *Cityscape* journal.¹³ Most relevant to our research, the authors estimate that the standard bureau approach failed to count the housing affordability experience of almost 8 percent of U.S. renters, and that almost one-third of the uncounted renters actually had severe housing cost burdens.¹⁴

Cost Burden Calculations

In order to determine if a renter household is cost burdened, we must compare two measures: gross rent and household income. If gross rent exceeds 30 percent of household income, the renter is considered cost burdened; if rent exceeds 50 percent of household income, the renter has a severe cost burden.

Differences between the Census Bureau and NLIHC measures of gross rent and household income when not all data are present within the ACS micro-data are detailed below, as well as our approach.

1. *Utility Costs and Monthly Rent* - If a housing unit record indicates that a renter does not pay monthly rent but does have utility costs, such as electric, gas, heating, or water, the Census Bureau does not calculate gross rent or determine if this renter is cost burdened within the PUMS files. The Census Bureau leaves the data field blank.¹⁵ The NLIHC recommends calculating gross rent based only on utilities' costs and using this alternative number as a measure of the renter's cost burden. Our analysis follows the NLIHC's approach of calculating cost burden based on utility costs when possible, even if no monthly rent is paid.

2. *No Reported Household Income* - The Census Bureau does not include households that report no household income or a negative household income in its cost burden calculations. But if housing costs (rent and utilities) are greater than zero, the NLIHC argues that these renters with no household income or negative household income have severe cost burdens. We followed the NLIHC's methodology.

Housing Affordability Calculations

The methodology we use to calculate housing unit shortages with the ACS data is the same as the methodology used with CHAS data. To our knowledge, no procedural differences exist that would have any significant impact on comparing the data between years.

¹² See Pelletiere and Wardrip (2008).

¹³ See Wardrip and Pelletiere (2008). To quote from its abstract: "Researchers often use the housing cost-to-income ratios (HCIRs) provided in the ACS Public Use Microdata Sample housing file to evaluate the level of housing cost burden for renters and owners and to estimate the proportion of households spending more than a specified level of income, often 30 percent or 50 percent, on shelter. In this article, we show that these variables should be used with caution, identifying 3.2 million households in the 2006 ACS for which the Census Bureau does not calculate an HCIR, even though useful housing cost and income data are available for these households... This article explores these issues, explains how researchers can develop an alternative HCIR, and describes the resulting distribution of households by housing cost burden."

¹⁴ See Wardrip and Pelletiere (2008), Exhibit 5, p. 338.

¹⁵ The data field is GRPIP – or gross rent as a percentage of household income.

Implications for Data Analysis in This Study

The results of the report show that the incidence of cost burden was rather substantially higher in 2005-06 than in 2000 at the state and most local levels. Part of those increases undoubtedly results from our choosing the NLIHC methodology to measure housing-cost-to-income ratios in analyzing the 2005-06 ACS data. However, shortages in affordable housing also worsened, and the methodology used to assess these shortages was the same in 2000 and 2005-06. Because the increases in cost burden are consistent with the worsening shortages of affordable housing, we conclude that they are basically real rather than merely an artifact of our different procedure. To emphasize, however, that our 2005-06 methodology improves upon that used in 2000 rather than following it exactly, the text refers to “differences” between the 2000 and 2005-06 estimates of cost burden. For each of the other variables studied, our methodology is the same as that used to prepare the 1990 and 2000 CHAS data, and we examine “changes” between 2000 and 2005-06.