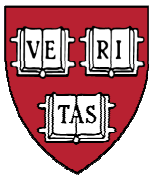

MEASURING THE NATION'S RENTAL HOUSING AFFORDABILITY PROBLEMS

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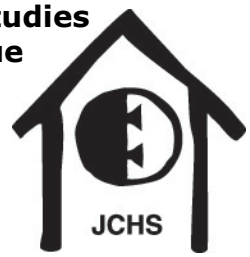

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GLOSSARY

ACS – American Community Survey
AHS – American Housing Survey
CES – Consumer Expenditure Survey
CHP – Center for Housing Policy
CPI – Consumer Price Index
CPS – Current Population Survey
EITC – Earned Income Tax Credit
FMR – Fair Market Rent
HUD – Department of Housing and Urban Development
NLIHC – National Low Income Housing Coalition
PSID – Panel Survey of Income Dynamics
RFS – Residential Finance Survey

EXECUTIVE SUMMARY

Difficulty affording housing is widely acknowledged as the most common housing problem in the United States. No matter how one chooses to measure the problem, it is clearly widespread and growing worse among the lowest income renters. But how one conceives of and measures housing affordability matters to policy making as well as public perceptions of the scope and nature of the problem.

Defining housing affordability problems is complicated and entails subjective judgments. For example, should households that spend a small fraction of their income on housing but that live in a substandard home or in an unsafe neighborhood or at great distances from their jobs be construed as having affordability problems? If so, then which such households ought to be counted? Should households with moderate incomes who spend so much on housing that they have too little leftover to save and invest be viewed as having an affordability problem? Should a low- or moderate-income household that spends a large share of their income on housing to live in an affluent neighborhood be viewed as having an affordability problem or as having just made a choice to spend more on housing? Indeed, distinguishing between who is allocating large shares of income to housing or taking long commutes out of choice and who is doing so out of necessity is a bedeviling task.

Standard measures of affordability do not engage with these issues. Importantly, standard measures fail to take into account tradeoffs that people make to lower housing costs. These tradeoffs include housing quality, neighborhood quality, and location. Making these tradeoffs can impose other costs on households. These added costs are not now captured by the simple approach of measuring only the share of income households spend on their housing. Counting a portion of those who incur such costs would *add* to counts of the number of households with housing affordability problems. For example, households in the bottom expenditure quartile that spend 30 percent or less on housing spend on average $100 more on transportation than those that allocate over half their outlays to housing. Should this $100 tradeoff get added back to housing costs when estimating who is spending more than a certain amount on housing? Should the time value of longer commutes get added in as well? Creating measures that capture such tradeoffs is possible but will require considerable research and debate over appropriate methods.

This paper explores the challenges of conceptualizing and measuring rental affordability for the purposes of formulating public policy. The strengths and weaknesses of the standard definitions of affordability are examined, suggestions for improving them are made, and reasons for differences in estimates using apparently the same definitions of affordability are explained. Given differences in estimates and

criticisms of how incomes are measured and defined in developing rental affordability measures, stylized conclusions about rental affordability problems are presented that are robust to differences in datasets used, decisions made about how to treat special cases, and decisions made upon how to define income and rents.

Conventional Measures of Housing Affordability

The standard practice is to count any household that spends more than 30 percent of its pre-tax income on housing as having an affordability problem. By convention, housing is considered "affordable" to a household if the rent (including utilities) is no more than 30 percent of its pre-tax income. Households spending more than 30 percent are labeled cost burdened and those spending more than 50 percent are labeled severely cost burdened.

This way of measuring housing affordability—in terms of the share of income spent on housing—has come to shape our collective views of how serious, how widespread, and for whom housing affordability is a problem. Most now unquestioningly use these standards and construe housing affordability as beginning and ending with how large housing costs are as a fraction of household incomes.

There are several variations on the conventional share of income approach. In one, the number of households with incomes at or below a certain level is compared to the number of housing units with costs that are 30 percent or less of that level. The gap between the two is used as a measure of the adequacy of the affordable housing supply. In another, pioneered by the National Low Income Housing Coalition, the amount of income a household would need to be able to afford a federally defined "Fair Market Rent"—the rent of a modest rental—at 30 percent of income is used as a yardstick of the gap between the "housing" wage necessary to afford it and the lower wages that workers often earn. Though different in the information each measure conveys, each derives from the same basic premise: when a household spends more than 30 percent of income on housing it is unaffordable and if it spends more than 50 percent it constitutes a serious cost burden.

Certainly these measures have intuitive appeal. They are simple to understand and easy to compute. Using federal survey data, these measures can be used to draw conclusions about the nature and distribution of housing affordability problems among households at the regional level every two years and down to the detailed place level every 10 years with tolerable margins of sampling error. Starting in 2001, it is now possible to examine affordability patterns with significant geographic detail annually using the American

Community Survey (ACS). It is for these reasons that the share of income approach — now almost always tied to the 30 percent and 50 percent standards—dominates the public discourse over housing affordability.

With a few elaborations, Congress has used this concept to target assistance and gauge the magnitude of housing problems. To target assistance and focus attention on those with the worst needs, only renter households with incomes up to half of area medians with housing affordability problems are counted. To address the fact that some households spend less but instead live in crowded conditions or physically inadequate units, Congress counts households with these problems, as well as those with severe cost burdens, as having "worst case housing needs."

Why Estimates Based on These Measures Vary

Even if the share of income approach is accepted uncritically as the right way to measure rental affordability for policy purposes, and the 30 percent standard is accepted as reasonable, estimates of the size of the problem will vary as a result of choices that analysts must inevitably make to produce these estimates. These include selection of purchasing power and housing costs measures, whether or not to adjust for income underreporting or simulate after-tax incomes, which to use, how to treat special cases, and how to deflate time series.

In most cases, analysts make similar choices about which measures of purchasing power and housing costs to use. These are reported pre-tax income and rent plus utilities. Therefore, the primary reasons for differences in estimates have more to do with the selected datasets and the treatment of special cases than how purchasing power and housing costs are measured.

But some have faulted the choice of purchasing power for overstating housing affordability problems, even though it is not clear that if the ideal measure were used—after-tax real income adjusted for income underreporting—the incidence of problems would be less overall. This is because: 1) income underreporting is greatest for investment income and it is concentrated among the wealthy; and 2) most moderate and middle-income households have higher pretax tax than after tax incomes. The exception is some low-income households that receive earned income tax credits (EITC) for working.

What Conventional Measures Tell Us about Rental Affordability

Although estimates of rental housing affordability problems using the same definition differ as a result of underlying assumptions and datasets used, it is possible to extract stylized facts about the patterns and trends in rental housing affordability. The following conclusions can be drawn with some confidence about the national scope of the problem and its distribution by income, using reported pre-tax incomes and gross rents as the variables used to calculate affordability. These are not intended to be inclusive but instead to illustrate some of the broad conclusions that can be drawn from existing measures.

- As conventionally defined, at least one-in-three renter households are moderately cost burdened and about one-in-five are severely cost burdened.

- Irrespective of the dataset used, renters in the bottom quintiles account for at least 85 percent of severely cost burdened renters. Including the impact of the EITC does not significantly reduce the measured concentration of the problem among those with low incomes.

- Both the American Housing Survey (AHS) and Census/ACS show growth in the share of cost burdened renters in the bottom household income quintile over the 1990s. The Census/ACS shows even more significant growth in this share since 1960—rising from six in 10 of these households to eight in 10 by 2000 (Quigley and Raphael 2004).

- The number of rentals with gross rents of $400 or less (in constant 2003 dollars) declined by 1.2 million between 1993 and 2003.

- The share of rentals affordable at the median income of renters in the bottom fifth of the household income distribution has been declining steadily. Quigley and Raphael (2004) found that the share of units affordable to these households fell from 15 percent in 1980 to 12 percent in 1990 to 7 percent in 2000. Yet, the share of renter households in the bottom household income quintile has remained steady at 32-33 percent.

- The Department of Housing and Urban Development's (HUD) estimate of the gap between the number of extremely-low-income households and the number of rentals affordable to them was 1.8 million in 1999. The mismatch is even larger when units affordable and available to them are

considered (that is, affordable rentals that are not already occupied by higher income households). That gap stood at 4.9 million in 1999.

- According to the National Low Income Housing Coalition (NLIHC), it takes more than 30 percent of full-time minimum wage earnings to cover the FMR of a modest two-bedroom apartment everywhere in the country.

- According to the Center for Housing Policy (CHP), the number of working families (those with incomes between the equivalent of full-time minimum wage work and 120 percent of area medians) with severe cost burdens increased by 60 percent from 1997 to 2001, and other evidence suggests further growth since then.

Given the robustness of such conclusions, it can be argued that public discourse about how much of the government's scarce resources to allocate to rental housing assistance and how to target it are reasonably well served by our conventional measures. Deviations in precise estimates notwithstanding, millions of households are effected, and the poor predictably suffer most. Certainly, the statistics convey a sense of how widespread and serious the housing affordability problems facing the nation have become.

Limitations of Conventional Measures

While simple to understand and relatively easy to calculate, the conventional approach nevertheless has several drawbacks. It likely results in *undercounting* problems and it glosses over difficult decisions about how to define and measure affordability that warrant greater public debate.

In addition to inevitable problems that stem from measurement errors in the datasets utilized to make estimates, the approach fails to take into account not just *how much people spend* on housing but *what they get in return* for it in terms of neighborhood and housing quality as well as in terms of proximity to jobs and shopping.

- *Focusing exclusively on housing costs as a share of income fails to take into account tradeoffs households can and do make to lower housing costs but that add to other costs.* These tradeoffs include taking longer commutes and living in poor quality housing, distressed neighborhoods, or crowded conditions. As a result, households that take longer commutes, double up, or live in poorer quality housing or neighborhoods to escape spending more than 30 percent or more of their income

on housing are not counted as having affordability problems. Although the worst case needs approach does recognize that living in crowded and physically inadequate housing also constitutes a problem, it does not count people living under these conditions as having affordability problems and it ignores neighborhood quality problems and higher commuting costs altogether.

- *Failure to consider when spending large shares of income on housing is more of a choice rather than a necessity dodges debate over what is minimally acceptable housing.* Some households choose to spend more on housing because they value it more. Judging when a household is spending more by choice or because they must requires subjectively defined standards of minimally acceptable housing.

- *Failure to capture housing quality changes and the changing characteristics of the supply and demand for lower cost rentals leaves important policy questions unanswered.* Existing measures do not get at the extent to which changes in rental affordability over time reflect changes in the quality of housing rather than differences in the rate of increase in rents of housing of constant quality relative to the changing incomes of the households that typically occupy these constant quality units. These measures also do not speak to how the supply of basic rentals is changing relative to the demand for them.

- *The uncritical acceptance of the 30 and 50 percent of income thresholds as the standard for measuring housing affordability problems has substituted for a debate over what ought to be viewed as an unacceptably high housing cost for households of different incomes.* While most would agree that those for whom housing cost burdens leave them too little leftover to meet basic needs have housing problems worthy of government action, it is far less clear if moderate-income households who have too little leftover to save for retirement, education and security should be construed as having a housing affordability problem.

Together, these shortcomings have hobbled the more complete analysis and measurement of rental housing affordability. Additional measures and more open public debate over the proper standards to distinguish affordable from unaffordable housing situations are indicated.

Overcoming the Limitations of the Conventional Measures

Overcoming these limitations requires developing measures that control for the price and quality of housing. It also means more actively engaging in debates about how much income leftover after meeting

housing cost (which perhaps should also include all or some fraction of transportation costs) is sufficient at different income levels given social standards.

To advance our understanding of rental affordability, the following steps are therefore indicated:

- Create constant quality rent indices and constant income indices to: 1) examine changes in rents and incomes of criterion housing and households; and 2) explore possible differences in the implicit prices paid for housing and neighborhood quality among racial and ethnic groups.

- Explore alternative definitions of minimally adequate housing, based on housing *and* neighborhood quality, and changes in the supply of such housing.

- Develop agreed upon methods to add some portion of the costs of tradeoffs made to lower gross rents into housing costs when calculating affordability problems, including transportation costs and housing and neighborhood quality costs

- Combine information from multiple datasets by using improved methods for imputing values in one based on values in another.

- Add or improve questions on housing costs and incomes in existing household and housing unit surveys.

Conclusion

Difficult choices about what measures to use, how to construct them, and how to interpret them are inherent in the concept of rental affordability. Measures of rental affordability are too important to go unexamined, however, and the proper yardsticks for judging when a rent payment is unaffordable, and to whom, are too politically charged and important not to be aired and argued over. The hope is that this paper sparks a more thoughtful debate and discussion of what yardsticks to use, and for whom, and what measures to use for what purposes.

INTRODUCTION

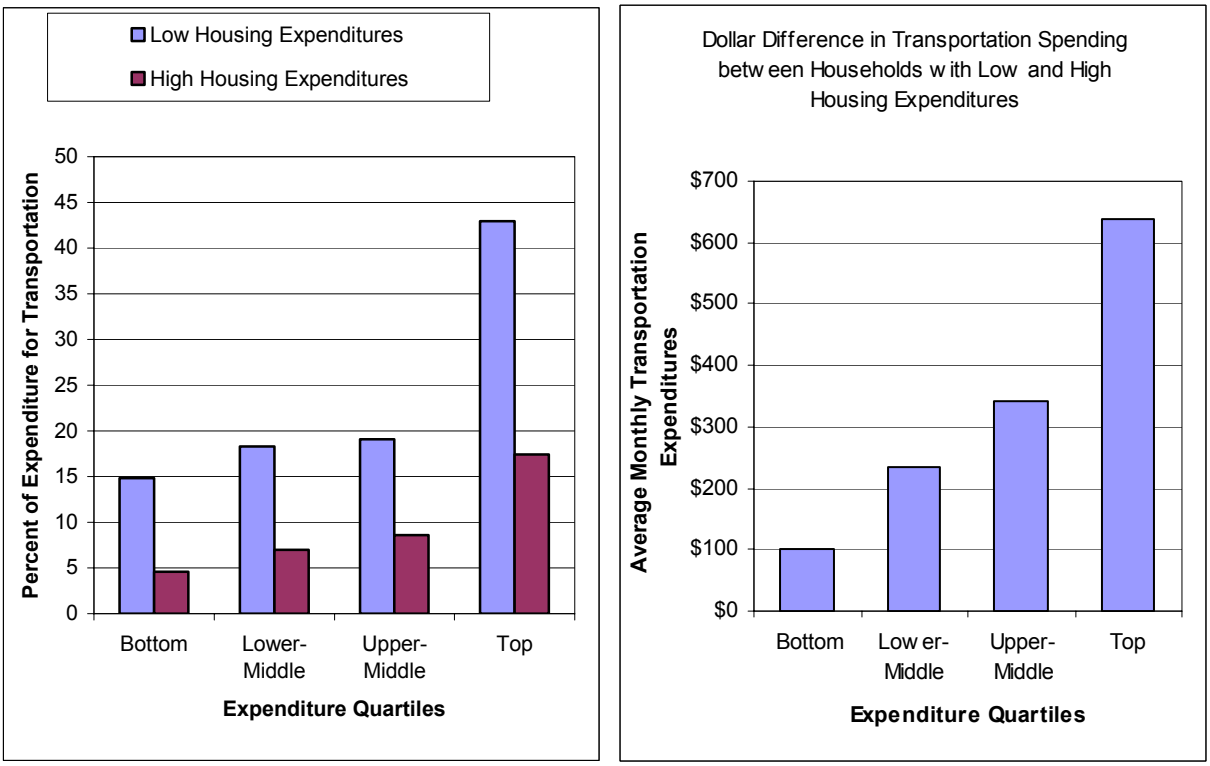
It is taken as fact by nearly all housing policy analysts that the most common housing problem facing Americans is the gap between what people can comfortably pay for housing and what it costs. Many federal, state, and local housing policies and programs over the last century have been aimed at reducing the amount of income that households, especially low-income renters, must devote to rent. In their infancy at the start of the 20th century, housing policy and programs were aimed primarily at tackling housing adequacy problems. But by the end of the century the focus had shifted decisively towards reducing the housing cost burdens of poor renters.

More recently, the impact of tradeoffs that households may be making to secure housing they can afford has begun to receive more attention (CHP 2005; Downs 2004; Levine 1999; Glaeser and Kahn 2003). In particular, the impact of longer commutes taken to lower housing costs has been studied. These long commutes are seen as reducing worker productivity, reducing regional economic competitiveness, and forcing households to substitute less family time and higher transportation costs for lower housing costs. Many believe the increase in the share of workers with long commutes is at least partially generated by low- and moderate-income households driving long distances to lower their housing costs. Indeed, the number of workers with commutes of an hour or more increased by 3.1 million in the 1990s alone.

The importance of housing affordability problems becomes obvious when one considers the large share of income that households in general and renters in particular devote to housing. The Consumer Expenditure Survey (CES) finds that housing (including utility payments) is by far the largest household expenditure. On an aggregate basis, 33 percent of household expenditures are for housing and among renters 35 percent. Distant second and third for renters are transportation at 19 percent and food at 15 percent. Furthermore, because the amount spent on transportation is so closely tied to where people choose to live there is an intimate connection between housing and transportation costs. In fact, among those in the lowest expenditure quartile, the difference in the average monthly transportation costs of those with housing outlays of less than 30 percent are fully $100 dollars higher than those with housing outlays of more than 50 percent (Exhibit 1). That $100 is equal to one-tenth of the average budget of these households. Among those in the lower-middle expenditure quartile, the difference in transportation costs amounts to an even larger 12 percent of average budgets. All-in, housing and related expenses are a remarkably large share of the typical household's budget, and for many it creates enormous strains.

Exhibit 1:

Housing and Transportation Cost Tradeoffs



Notes: Expenditure quartiles are equal fourths of all households sorted by total monthly expenditures. Low housing expenditures are defined as 30% or less of total, and high housing expenditures are defined as more than 50%.
Source: JCHS tabulations of the 2003 Consumer Expenditure Survey.

For these reasons, it is important to properly and rigorously measure not only how many households have difficulty swinging their rent payments but how these households are geographically distributed and whether the numbers or shares of such households are growing or shrinking. It is also important to know how the problems affording rental housing are distributed by income, race, family type, age and other demographic characteristics.

Interest is also keen in determining whether supply responses are adequate to meet market demand for lower cost housing absent a subsidy. Therefore it is also important to be able to measure the gap between the supply of "affordable" rental housing and the demand for it. Furthermore, it is important to determine whether rents and incomes are changing at different rates with respect to each other at different points in the distributions of each.

Despite the importance of having rigorous measures of rental housing affordability that are clearly understood by the public and policy makers, the most commonly used rental housing affordability

measures are more imprecise, limiting, and based on the application of weakly scrutinized normative standards than most people realize. In addition, even a simple share of income spent on housing approach to defining affordability is challenging to implement despite its apparent directness. It also fails to address several aspects of an ideal rental affordability measure. An ideal measure would distinguish between changes in affordability that relate to changes in the price of housing and those that relate to changes in its quality. It would account for tradeoffs that lower housing costs but add to other costs, such as transportation (as a result of long commutes) or inferior access to public services, health, and safety (as a result of lower quality housing and neighborhoods).

Equally troubling, even the ostensibly same measures can yield very different conclusions about the magnitude, distribution, and change in rental housing affordability depending on which measures of rental costs and household purchasing power are selected, and which particular assumptions are made about how to treat difficult to manage cases such as households that do not pay rent or that report zero or negative incomes.

Finally, conclusions may be different for households in different positions in the income distribution. Hence, summary averages like means and medians can be quite misleading with respect to what is occurring at points above and below them.

Ultimately, measurement of rental affordability conditions and trends requires subjective judgments and operational choices that influence the apparent magnitude, distribution, and sometimes even trend of affordability problems. Though these choices may be made on technical grounds and for logical reasons, they have enormous political implications because affordability measures drive program and policy decisions. While taking measures in the new analytical directions recommended here will add important and new insights on rental affordability, they too cannot escape the many decisions and concessions that must be made to cope with incomplete and imperfect data.

This paper inspects the concept of rental housing affordability and how it is measured. Its purpose is to lay bare the normative and empirical judgments that drive estimates and to enlarge the vision of what constitutes a problem with rental housing affordability. To that end, the strengths and weaknesses of different measures and why different measures may lead to different conclusions are pointed out. Differences in precise estimates notwithstanding, existing measure do allow important broad conclusions about rental housing affordability problems in the United States to be reached and some of the most important of these are pointed out. Lastly, the paper outlines the ways that existing measures can be

broadened The hope is that this paper sparks a more thoughtful debate and discussion of what methods to use for what purposes, and alerts policy makers and analysts to the limits of the methods they now rely upon to draw conclusions and develop strategies to address affordability problems.

CONVENTIONAL MEASURES OF HOUSING AFFORDABILITY

Housing affordability is usually measured in terms of the share of income that a household spends on its housing. Households allocating above some share of income are classified as having a housing affordability problem while the rest are not. The standard threshold is 30 percent of income spent on housing, including utilities. Above this ratio, households are often referred to as suffering from "housing cost burdens." It has also become common to refer to those households spending more than half their income on housing as "severely" or "seriously" cost burdened.

The precedent for this approach lies in federal housing policy. In 1968, Congress elected to require residents of public housing to pay 25 percent of their income for rent plus utilities. The standard was increased to 30 percent in 1981 when Congress decided to reduce discretionary spending on public housing, Section 8, voucher, and other housing programs. Later on, the share of income approach was applied to non-subsidized households to identify those with housing cost burdens, using the 30 percent benchmark. Today, HUD uses the 30 and 50 percent benchmarks in its evaluation of households with "worst case needs." HUD counts only renter households with very-low incomes (defined as 50 percent or less or area median income with special adjustments made by HUD) with cost burdens or living in crowded or seriously inadequate conditions as having worst case needs. But the 30 percent and 50 percent thresholds are now applied to owners and renters of all incomes by many policy analysts to measure the overall extent of housing affordability problems. Hence, the standard threshold for sorting households by affordability and cost burdens has its roots in political and budgetary considerations of low-income housing policy.

The primary benefits of the cost-to-income ratio are that: 1) it is simple to calculate and understand, 2) it is based on readily available data, 3) it can be applied across a range of places, to track changes over time and to explore differences in these ratios across households; and 4) it is very direct in that it measures actual outlays of households relative to their actual incomes. Only two inputs – income and housing cost – are needed to calculate the ratio. The AHS releases this information on a national level every two years and for certain metro areas every 4-6 years. The Decennial Census allows for analysis at lower levels of geography every 10 years, while more recently the ACS allows annually for geographically detailed estimates.

Supply-Based Variations

There are a number of variations on the share of income approach. Among the more common are: 1) the supply-demand mismatch approach; 2) the housing wage approach; and 3) the median ratios comparison approach.

In the mismatch approach, the number of households with incomes at or below a particular level is compared with the number of rentals with rents that are affordable at 30 percent of the threshold income. Typically, adjustments are made for household size and number of bedrooms by allowing the threshold incomes to vary with household size and threshold rents to vary with number of bedrooms (see Nelson 1994 and the Millennial Housing Commission 2002 for examples). The difference between the number of households at or below the adjusted income thresholds and the number of rentals at or below the adjusted rent thresholds is considered a measure of the mismatch between the supply and demand for affordable housing.[1] An extension of this "mismatch" approach subtracts units that are affordable but occupied by higher income households because they are not available for occupancy by households with incomes below the threshold. Typical thresholds are some fraction or area median family income (often 30, 50, 80, and 120 percent), income quartiles or quintiles, or some multiple of the minimum wage.

Although most users take these measures to be an accurate reflection of the gap between units supplied and demanded, such measures are more easily misinterpreted than measures of the share of households reporting rent burdens. First, the approach implicitly assumes that rentals affordable at 30 percent of income are considered affordable by all those who might rent them. But in fact, the average amount that households spend on housing is closer to 20 percent than 30 percent. Preferences clearly are part of the reason why many households occupy units that appear either expensive or inexpensive relative to their income. Hence, ascribing "affordability" to a rental unit based on an absolute threshold is problematic. Second, the approach implies that all the units below an income threshold are affordable to all households

[1]The application of this approach is most easily illustrated by an example. As HUD has used the approach, for example, the household income associated with earning 50 percent of the HUD adjusted median family income (HAMFI) is multiplied by 0.3 to arrive at the annual rent that a household with exactly 50 percent of HAMFI in each metropolitan area can "afford". This figure is then divided by 12 to arrive at a monthly rent. The number of units renting at or below that level as reported by the households that occupy by them or estimated by a survey taker based on information supplied by neighbors are then counted. In practice, HUD adjusts the rent threshold for number of bedrooms because it adjusts its income thresholds for the number of persons in a household. This gives at least the appearance of equating rentals with the incomes of the households most likely to live in them. This same process is repeated for other slices of the income and rent distributions—for instance, comparing the number of households with incomes between 50 and 80 percent of HAMFI adjusted for household size to the number of rental units adjusted for bedroom size with rents that fall between 30 percent of the 50 percent and 80 percent income cutoffs.

below those thresholds. But rents and incomes are unevenly distributed beneath these thresholds. A household with an income well under the threshold by definition cannot afford, at 30 percent of income, rents at the top of the rent threshold. Third, and even more potentially misleading, the measure does not take account of where "affordable" rentals are located and whether these align with where households that might "demand" them want to live. Fourth, as one moves up the income distribution, results are harder to interpret meaningfully. What does it mean, for example, to find a gap between the number of rentals "affordable" to households earning between 80 and 100 percent of area medians and the number of these households when they can, by definition, afford all the rentals below the lower threshold cutoff? All these problems render gap measures the most abstract and hard to interpret of the commonly used affordability measures, despite the fact that they seem such direct measures of supply-demand mismatches.

In the housing wage approach, the rent of a standard, modest quality rental with either 1 or 2 bedrooms in an area is compared to the multiples of full-time minimum wage work it would take to afford (at 30 percent of income) that apartment (NLIHC 2003). The rent standard commonly used is HUD's fair market rent (FMR). This standard is typically the 40th percentile rent of recently rented apartments within an entire metropolitan area or of non-metropolitan areas of a state. It is estimated using a random-digit dialing survey. Although the method used to calculate the FMR has been criticized as imprecise, and policy overrides sometime result in pegging the FMR to higher percentiles of the rent distribution, this approach has gained considerable traction in policy circles. It is a simple way to convey what turns out to be a consistent problem across all measured geographies – in every metro areas it takes more than one full-time minimum wage job to afford a unit somewhat below the middle of the rent distribution.

In the median ratios comparison approach, a ratio is formed between the rent at some point in a rent distribution and the corresponding point in an income distribution (see Goodman, 2001). For instance, the median rent in a metropolitan area is compared to the median household income in the same metropolitan area. In this example, the share of income that the median household would have to spend to rent a median rental is used as a measure of how unaffordable the housing stock is in a particular market to households in that market. It is like the other two stock approaches in that it takes a criterion household and compares it to a criterion rent instead of observing what individuals households are actually spending for their housing. It therefore also deals in the hypothetical. Further, median and average comparisons can understate the magnitude and rate of change of problems in the lower parts of the income and rent distributions where problems are concentrated and troubles mounting fastest.

Residual Income Approaches

Finally, some have tried to focus on the absolute amount leftover after housing expenses, rather than the share of income allocated to housing, to identify affordability problems. This approach was initially developed by Stone (1993) and further elaborated by Nelson and Redburn (1994). They argue that households with too little left over to meet basic needs ought to be classified as "shelter poor." This approach has appeal from a policy perspective because it hones in on the proportion of households most harmed by high housing costs. Still, it has shortcomings that Stone acknowledges, such as potentially understating the affordability problems of larger households and those with children, who may face additional necessary expenses. In Kutty's (2005) recent application of this method, the author compares her approach and results to the official "Orshansky" poverty estimates and finds that her measure results in higher counts of poor households than the official poverty estimates. She also finds that those poor by her measure are not always those poor by the official measure.

Policy Applications

Many organizations and individual policy analysts have used the common approaches to quantify and highlight the state of affordability problems over time, across locations, and within subsets of the population. The most detailed investigations of rental housing affordability over the past 10 years have been conducted by HUD. Their flagship "Worst Case Needs" series has provided periodic updates on housing conditions facing renters. Recent updates of Worst Case Needs reports have used both the share of income and mismatch approaches. In fact, these reports have been instrumental in spreading the popularity of the mismatch approach to measuring the adequacy of the supply of affordable rental housing.

Some advocacy groups use similar approaches to the HUD Worst Case Needs analysis. NLIHC also evaluates affordability as it impacts the lowest income households. As noted above, its annual "Out of Reach" publication developed and uses the housing wage approach. As described by NLIHC, "For each jurisdiction, the report calculates the amount of money a household must earn in order to afford a rental unit of a range of sizes (0, 1, 2, 3, and 4 bedrooms) at the area's FMR, based on the generally accepted affordability standard of paying no more than 30% of income for housing costs. From these calculations the hourly wage a worker must earn to afford the FMR for a two bedroom home is derived. This figure is the Housing Wage." The Out of Reach report also provides comparisons of the annual equivalent of the housing wage to the local area's AMI as estimated from HUD. The results of these tabulations are then

used to rank states, metro areas, and counties by their affordability. From time to time the NLIHC also issues reports that use the standard share of income and mismatch approaches. An innovation NLIHC helped to popularize was to extend the mismatch approach to consider units both affordable and available given the number of affordable rentals crowded out by households spending less than 30 percent of their income.

CHP takes a slightly different approach. It broadens the scope of its analysis of affordability problems by including moderate-income working households that have housing cost burdens. During the past few years, CHP has issued several studies tracking housing conditions, with an emphasis on "working families" – defined as households with wage income greater than full-time minimum wage but with total income less than 120 percent of AMI. Other recent publications have focused on immigrants' housing and on differences in housing conditions across metro areas. The topical coverage and research approach are similar to the HUD's Worst Case Needs report, though CHP also investigates homeownership affordability and trends in homeownership rates. The AHS is the principal source of data, used by CHP just as by HUD. Most recently, CHP commissioned the Economic Policy Institute to examine the transportation-housing cost tradeoffs that households make to afford housing and implications of making those tradeoffs for working families as they define them (CHP 2005).

In addition to the advocacy groups just described, many research organizations evaluate rental affordability trends, though more to inform than to further an agenda of prompting policy responses. Among them is Harvard University's Joint Center for Housing Studies, whose flagship publication is its annual State of the Nation's Housing report. Analyses of rental affordability in the report have been approached in various ways over the years. In some years, the report has placed greater emphasis on the affordability problems of lowest income households, measured by income quintiles, quartiles, or by multiples of minimum wage earned. In other years, the report has looked more closely at how affordability problems are creeping up the income scale to moderate and middle-income households. Other times, the publication has looked at the proportion of workers in select low-wage occupations spending more than 30 percent of their household income on their rental housing. Usually, the report tracks changes in these conditions over time. Like HUD, it primarily uses the AHS, though it has recently used the ACS, as has NLHIC. In recent years, the report has highlighted how little households with large housing expenses have leftover to spend on other items relative to those with smaller housing expenses. And most recently, the report examined how much more those with high housing outlays spend on transportation relative to those with low outlay ratios, controlling for household budgets.

The report of the Congressionally-chartered Millennial Housing Commission (2002) discussed the causes, consequences, and policy implications of trends in housing conditions for both owners and renters. The measure of rental housing affordability used in the report is the ratio of gross rent to household income, stratified by the HUD-defined income groups – low income, very-low income, and extremely-low income. Within each income group, the proportion of renters spending more than 30 percent, and more than 50 percent, of their income on housing was estimated, using the national AHS and the exact methods pioneered by HUD used to estimate worst case needs. It also examined trends in the supply-demand mismatch of the various income groups using the measures created by HUD. However, the data series used was more consistent and deflated both rent and income cutoffs consistently over time. This produced some differences from earlier estimates made by HUD.

In addition, a number of papers have been published in scholarly journals on housing affordability. Among the more prominent academic studies is by Lerman & Reeder (1987), which was one of the first to highlight and quantify the importance of using a standardized bundle of housing attributes in affordability analyses. The authors used AHS data to show that rent/income ratios based on actual housing expenses are considerably higher than ratios calculated using the estimated local cost of moderate quality housing meeting the Section 8 program guidelines. Nelson (1994) used the mismatch approach which she pioneered, to point out that subsidized supply programs were creating a surplus of units affordable to low- and moderate- income households, while those households with very or extremely low incomes were being underserved. Other analyses by Nelson evaluated affordability problems relative to federal subsidy allocations and across different metropolitan areas (Nelson and Khadduri 1992, Nelson 2002).

Bogdon and Can (1997) used three different variations of the standard measure of affordability to demonstrate how geographic specification can lead to differences in affordability. Using a metro area, its central city and the balance of its suburban areas, they calculated the proportion of households spending above the 30 percent standard share of income on housing, the number of units affordable to assisted renters, and the supply mismatch in each area.

Another more recent academic study of affordability by Quigley & Raphael (2004) uses micro data from decennial censuses from 1960 to 2000 to track renters' incomes and housing costs by income quintile. The micro data allow rent/income ratios, and the proportion of renters spending more than 30 percent of their income on housing, to be estimated by income quintile for each Census year. These statistics are used in analyzing time series and cross-sectional differences among renters. Also provided are estimates

of the percentage of housing units affordable to renters in different income groups, following the worst case needs approach. The authors also look at time trends in rents and incomes separately and provide estimates of the components of change in the rent income ratios.

Thus, the housing policy field is replete with applications of the common measures. These studies convey the depth of housing affordability problems and have come to shape how policy makers and the public alike perceive of rental affordability challenges.

REASONS ESTIMATES USING THE STANDARD MEASURES VARY

Despite common use of the share of income approach and the 30 percent standard, estimates of the magnitude of housing affordability problems often vary. The reason for this is that while the approach in theory is simple, application of it involves several choices and judgments that shape the outcome of the calculation. Indeed, depending on these choices, affordability measures can be made to tell seemingly conflicting stories about the depth, breadth and change over time of housing affordability problems.

In order to measure affordability, analysts must make operational decisions concerning the measure of rent cost to use, the measure of purchasing power to use, the data source to use, how to treat special cases, which points or band of the income distribution to analyze, and sometimes what index to use to deflate values for time series analysis. Each of these decisions has important implications. In many cases, analysts make similar choices about some of these elements, but different ones in others.

Selection of Housing Cost Measure

One of the two elements in calculating affordability is some measure of housing costs, or the value of the bundle of housing services provided by a specific unit. For renters, cash outlays are typically a good approximation of the economic cost of housing. Important elements of homeowners' costs are not issues for renters: capital gains, tax considerations, transactions costs, and imputed value of time spent on home maintenance. But while the cost measurement task is easier for renters than for owners, a number of decisions must be made in selecting a cost measure for renters, and conclusions about affordability are sensitive to these decisions. As with income, use of housing cost measures is complicated by differences in sources and accuracy in capturing a constant level of housing service.

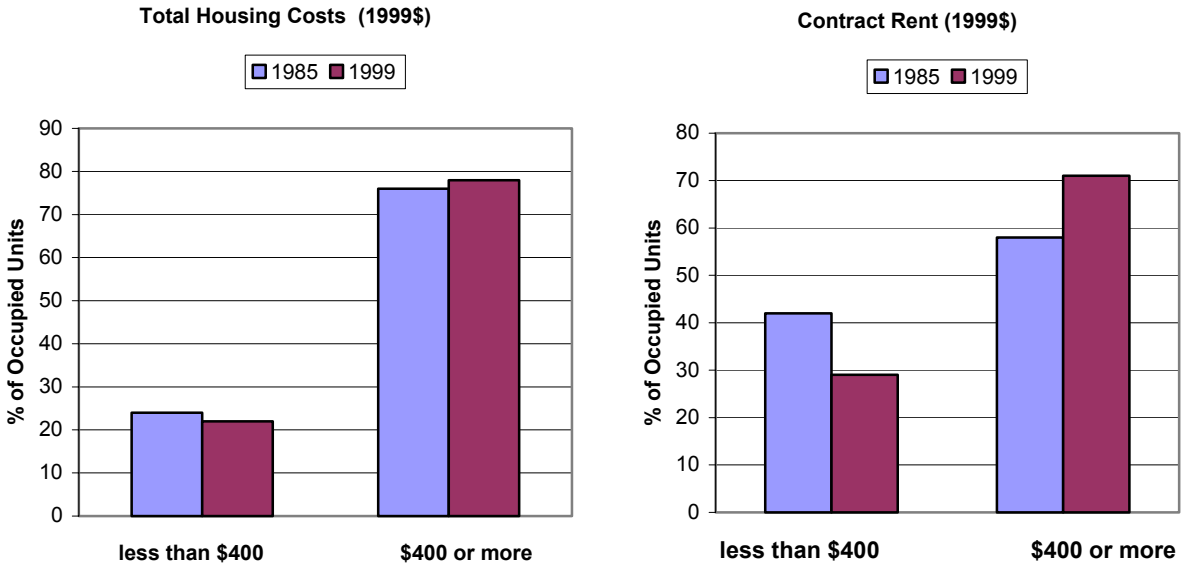
A key choice is whether to use gross rent or contract rent. Measures of gross rent (which includes all utilities payments) and contract rent (the amount paid to the property manager) differ not only in level but also in long-term growth. Level differences are influenced by the fact that contract rents may or may not include utilities while gross rents always do. Thus, gross rents are higher on average and lead to larger counts of cost burdened households than contract rents. Growth differences reflect in part the fact that utilities costs have increased less rapidly than have charges for the rental of space, at least when compared to the mid-1980s. For example, according to the CPI, residential "fuels and utilities" rose only 45 percent between 1985 and 2003, over which period the CPI rent index—a measure based on contract rents—increased 83 percent. In part, growth differences also reflect the fact that utilities have, over time,

become increasingly metered and paid for separately by residents and not included in the monthly rent check. In 1978, for example, 77 percent of renters paid separately for electricity, but by 2001 the figure was up to 84 percent. Contract rent has essentially been redefined over time to include fewer services, and this redefinition by itself should cause contract rent to increase more slowly than gross rent. Hence, the rate of change in the cost to rent space net of utilities probably accelerated even faster than 83 percent. Furthermore, the shifting of utilities to consumers means that they now bear the risks of utility increases more directly.

The choice between contract and gross rent measures makes a big difference in estimation of changes over time not only in median rent, but also at different points in the rent distribution, especially at the low end. By the contract rent measure, between 1985 and 1999 the share of units renting below an inflation-adjusted $400 fell substantially, from 42 percent to 29 percent, indicating a sharp reduction in the share of the stock available to lower income households (Exhibit 2). Yet by the more inclusive gross rent measure, the drop in this market component's share was much less—only 2 percentage points (to 22 percent) in 1999. Furthermore, it means that if the increase in the share of low-cost rentals individually metered were accounted for, the loss of lowest-cost rentals would appear even more dramatic.

Exhibit 2:

Long Term changes in the Rent Distribution: Contrasting Measures



Source: JCHS tabulations of the 1985 and 1999 American Housing Survey.

Contract rent is the preferable measure in studies of the revenues and expenses of property owners and managers. But for most consumer-oriented studies, gross rent is a logical choice. It is a more comprehensive measure of renters' costs and using it ensures that the same housing cost components are included for all renters. That said, netting out utility costs conveys a better sense of how the other factors that drive the rent equation have been changing on net.

Clearly, neither measure takes into account changes in housing quality over time. Hence, these measures do not allow quality and prices changed to be disaggregated. To do so requires a constant quality index. Unfortunately, the federal government does not estimate hedonic rent price indices, even at the national level. The closest it comes to providing a measure of constant-quality rent change is the rent component of the Consumer Price Index (CPI). But this is not a constant-quality index over the longer run because it measures increases by returning to the same unit multiple times over an 18 month period to ask about the rent. Therefore, it is influenced by how the composition of the entire rental stock changes over time as new sampled units roll in and out of the survey. Similarly, HUD produces a Fair-Market Rent (FMR) series at the metropolitan level which estimates rents at a point in the distribution each year. In the short-run quality is reasonably well controlled for (though with some measurement error because each year a

separate random-digit dialed sample is surveyed) but less so over longer periods. Neither measure provides estimates for specified bundles of attributes or for multiple points in the quality distribution.

Selection of Purchasing Power Measure

Calculations of affordability also must include some measure of purchasing power—the resources available to households to devote to their housing costs. Most frequently, current pre-tax income is used as a proxy for purchasing power. Pre-tax current household income has two key attractions as a purchasing power measure. First, it has intuitive appeal as a summary measure of economic well-being. Most people understand the concept. Second, it is routinely collected in surveys and censuses.

However, there are several drawbacks of using current pre-tax income. It does not take into account tax-related additions and subtractions to annual income, nor does it capture non-cash benefits that may add to purchasing power. Household income is not a constant quality measure because it does not control for returns to constant work effort over time. Furthermore, the use of current income cannot distinguish those with chronic poverty problems from those with temporary problems.

The fact that pretax income is not a constant quality measure makes it less the ideal for determining whether housing is becoming more or less affordable. Income is the product of work hours provided and the compensation per hour. The issue is analogous to interpreting housing expenditures, which are the product of amount of housing consumed and the price at which housing is available at that time, place, and quality level. Larger households have greater needs for spending on necessities, and they also often have more workers. Over time, average household size has been declining (from 3.1 persons in 1970 to 2.6 in 2000), although the number of workers per household has held steady or edged up. Lastly, hours worked per week have declined, for private sector production workers from 37.0 hours in 1970 to 33.7 in 2003.

For some affordability analyses, it is appropriate to control for these sources of differences in household incomes and to stipulate representative households by source of income just as true constant-quality measures on specific housing bundles stipulate representative housing units. The purest form of a constant work effort, constant household composition measure of purchasing power is average hourly compensation, although that measure is not appropriate for all uses.

Additionally, while current income measures the number of renter households with housing problems at a point in time it is a poor proxy for the number of renter households with chronic housing affordability problems. This is because household incomes are surprisingly volatile. In particular, extreme incomes – either low or high – are often transitory. The Panel Study of Income Dynamics (PSID) is a source of estimates of annual income for households that are followed and re-interviewed annually. The PSID evidence suggests that affordability measures based on current incomes may overstate the number of households with long-run affordability issues. Direct evidence supporting this conclusion is provided by recent research (Hill, 2003), which found that, of very low-income renters with a severe rent burden in one year, over a seven year period the severe rent burden was observed in only 2.6 years on average. While changes in both housing costs and incomes contributed to changes in the burden over the seven years, income changes "played a somewhat stronger role" (Hill, 2003, p.5).[2]

In the final analysis, current pre-tax income falls short of the mark but is a concession to the difficulty in adjusting income for taxes and non-cash benefits. For measures of the current number of cost burdened households the ideal measure of purchasing power is after-tax, after-benefit income. Adjustments can be made but these involve many assumptions and add measurement error. For explorations of chronic problems the ideal measure is permanent income. That measure can entail observing actual incomes and housing cost burdens over time of individual households in a longitudinal like the PSID or estimating it based on the education level and occupation of earners in the household. Available data limit the use of the direct method of identifying chronic problems, however, because these data are not available for enough places, population groups, or time periods to make the direct method usable in practice.

Simulation of after-tax incomes

The use of pre-tax income tends to overstate purchasing power and understate affordability problems for most households. After-tax income is significantly lower than pre-tax income for most households, and thus a preferable measure when calculating housing affordability. Indeed, the Census Bureau estimates that average after-tax incomes are only between 70 and 80 percent as great as average pre-tax gross

[2] The volatility of annual income is a bigger problem than simply misrepresenting the situations of individual households. As the PSID evidence indicates, entire segments of the population can be classified as having problems that are in fact transitory. The PSID also demonstrates "… the characteristics that distinguish those with higher burdens in the cross-section are not always the ones that distinguish those with chronic burdens through time" (Hill, 2003, p. 21). In short, annual income may not only overstate or understate the overall incidence of long-term rent burden (depending on which is greater: the share of households with temporarily high cost burdens or those with temporarily low ones) but also misstates its distribution across segments of the population.

income. But after-tax income is higher for the roughly 20 million lower-income households that are eligible and receive the EITC.

Stegman et al (2004) made an effort to adjust for the EITC in calculations of cost burdens. In addition to finding that estimating the impact of EITC is difficult and prone to error, they found that the impact of including the EITC on counts of worst case housing needs (very low-income household spending more than half their incomes on housing) was modest, reducing them only by 7 percent.

Despite the obvious benefit of adjusting income for taxes, it is rarely done in housing affordability measurements. The primary reason for this is lack of data availability. Pre-tax income is readily available and consistent, so few analysts bother with simulating after-tax adjustments.

Adjustment for suspected income underreporting and non-cash benefits

While use of pre-tax incomes overstates purchasing power, the absence of non-cash benefits, such as food stamps, understates purchasing power and overstates affordability problems. One study that attempted to include the value of non-cash benefits found that inclusion of these benefits resulted in a 25 percent reduction in the ratio of housing costs to income for a typical low-income renter (Koebel and Krishnawamy, 1993). Transfer payments and assistance from family members are also excluded from income estimates.

In addition, income underreporting is widespread among the datasets commonly used for measuring housing affordability, and leads to overstated affordability problems. Chakrabarty (1996) estimated, for example, that the AHS understates aggregate household income by about 14 percent. However, the most underreported elements are incomes from non-employment sources such as investments and trusts, and savings account or pensions. Hence, income underreporting is greatest for higher income households, who have significantly more investment income than others, and for elderly households who rely more on pension and investment income. However, with so many elderly counted among those with the lowest incomes, income underreporting in this group is also sizeable.

Only the Millennial Housing Commission (2002) has made efforts to account for income underreporting and its effects on affordability measurements. Its analysis found that while adjusting incomes upwards for expected underreporting would reduce the absolute magnitude and relative shares of renter households that count as cost burdened, both the magnitude and shares would still be large. In its report, it states:

"The Commission roughly simulated the impact of income undercounts. In one simulation, the Commission adjusted all incomes upward to account for the 14 percent estimated average understatement of income. This reduced the number of worst case needs by 18 percent."[3] The Commission goes on to report that another simulation that involved deleting all renters with incomes of $1,000 or less, with a rent of less than $50, or a rent greater than income, reduced worst case needs estimates by 22-31 percent, depending on the re-weighting procedure used. It concludes, however, that the actual worst case needs probably are closer to reported figures than either of these simulations would suggest.

Selection of Datasets

Yet another major consideration in measuring rental affordability that has profound consequences is which dataset to use. Affordability analyses typically take data from the decennial Census, the AHS, or the Current Population Survey (CPS). Each surveys households and asks questions about housing costs and income. However, variations in how the surveys are conducted, the specific questions asked, and the way data are tabulated result in different estimates of housing affordability.[4]

In measuring income, the U.S. Census Bureau believes the CPS to be the most accurate data source: "Because of its detailed questionnaire and its experienced interviewing staff trained to explain concepts and answer questions, the CPS is a high quality survey and is the source of official national estimates of the levels of income and poverty" (U.S. Census Bureau, 2002). The AHS in particular seems to underestimate income. In comparison to the CPS renter household income estimates for 2001, the AHS for that year significantly overstates the number of households with very-low incomes and understates the number of households in the top income groups. For example, the number of renters with incomes below $10,000 is 18 percent greater in the AHS than the CPS (Exhibit 3). A similar AHS overstatement of very low-income renters was estimated relative to the PSID (Hill, 2003).[5] For renters overall, a comparison of median incomes in 2001 indicates that the AHS understates income by 6 percent relative to the CPS.

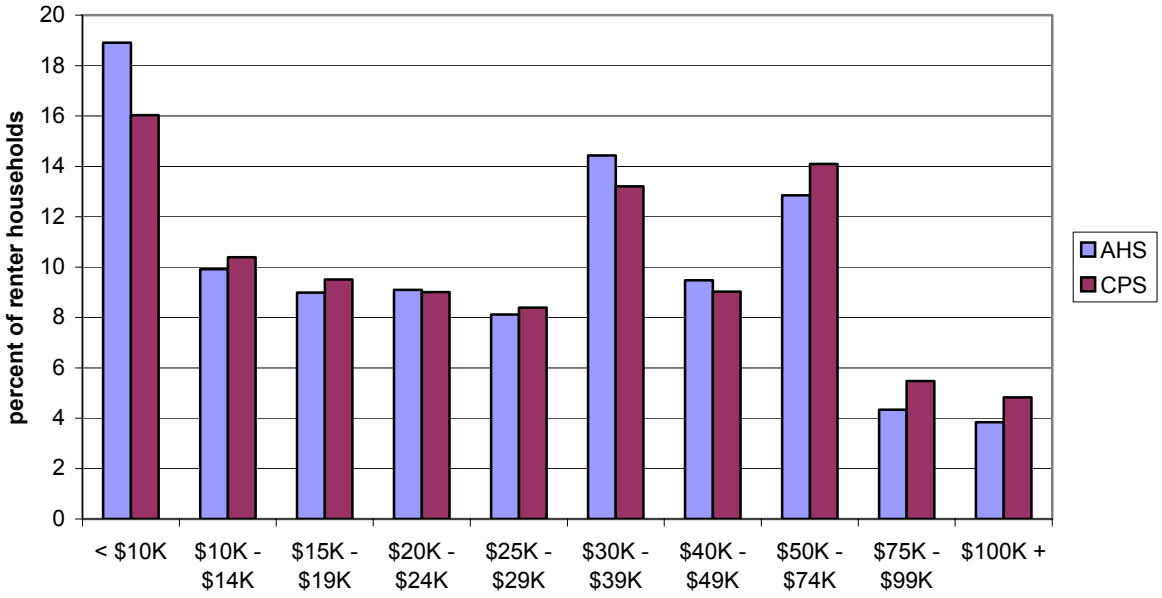
[3] MHC, p. 16

[4] In addition to differences in the ways questions are asked about income and housing costs, differences in design and implementation of the surveys and censuses from which the data are drawn also influence estimates. Although not explicitly discussed in this report, these issues – including discontinuities attributable to redrawn samples, changes in survey methods and designs, changes in survey questions, and re-benchmarking – can have substantial implications for estimates and interpretations regarding rental housing affordability.

[5] Hill (2003) found that AHS homeowners were even more likely than renters to underreport income, because homeowners have more non-labor income than do renters and this form of income is particularly likely to be underreported. Comparisons of AHS and decennial Census incomes by HUD have reached similar conclusions (HUD, 2003, Chapter 4).

Exhibit 3:

Incomes of Renter Households in 2001



Source: JCHS tabulations of the 2001 Current Population Survey and the 2001 American Housing Survey.

The AHS income understatement has significant implications for calculating the number and percent of households below any affordability threshold, as well as the estimated rent/income ratio for renters overall. Comparing against the CPS income figures, for example, the 2001 AHS ratio of median gross rent to median income for cash renters is 0.29. Substituting CPS income for AHS income would reduce that ratio to 0.27. The underestimates have implications also for comparisons across household groups, as Hill (2003, p.21) found that the income understatements in the AHS varied by household type, even controlling for income level. The errors in income measurement in the AHS appear to have grown over time, and this causes errors in estimates of time trends in affordability. The gap between income growth of low-and high income groups is much greater in the AHS versus the CPS (Exhibit 4).

Exhibit 4:

Increase in Median Renter Household Income, 1991-2001

Quintiles	CPS	AHS
Bottom	38.4	20.0
Lower-Middle	40.8	30.2
Middle	39.0	30.0
Upper-Middle	39.6	33.3
Top	48.1	40.0

Source: JCHS tabulations of the Current Population Survey and the American Housing Survey

Housing costs are also subject to misreporting. Census Bureau staff have, over the years, examined the accuracy of responses to questions in the AHS, including those related to housing costs. The conclusion is that housing cost questions are generally answered accurately. These accuracy tests are described and interpreted by Follain, Kogut, and Marshoun (2000).[6]

Though the AHS provides the most complete housing data of any federal survey, the underreporting of income has significant consequences for affordability measurement in cross-section and time series applications. For that reason, decennial Census and its annual equivalent the ACS data are preferable. However, in some applications the AHS is unavoidable, as, for example, in studies that require a matching of housing costs with incomes for individual households over a longer time frame than ACS data allow and with more frequent intervals than decennial Census data. AHS-based results in these applications need to be interpreted with particular caution.

Treatment of Special Cases

When estimating rental affordability using common methods, analysts are faced with choices over and above how to measure purchasing power and rent, and with which datasets and adjustments. They must also decide how to handle special cases that do not lend themselves easily to assessing rental costs or tenant contributions from income to cover those costs.

[6] An additional consideration regards edited and imputed values. In many surveys, including the AHS and CPS, responses to selected questions are edited for consistency. Other questions are assigned responses if the interviewee failed to answer the question but provided enough other information for a response to be imputed. Typically analysts treat these edited responses as if they are as accurate as reported and non-edited data. Whether this practice is ill-advised is unclear, but the prevalence of edited and imputed data should not be ignored. In the 2001 AHS, for example, 17 percent of the responses to the contract rent question are either edited or imputed.

No-cash renters

One such special case is the "no-cash renter." These are individuals who receive their housing free because they are relatives of the owner or provide services in lieu of rent, such as the resident manager of a rental property. These no-cash renters are found in all income groups, although their average income is below the all-renter average. Furthermore, there was little change in their overall incidence or relative income between 1985 and 1999 (Exhibit 5). Therefore, no-cash renters should have little impact on time series comparisons of affordability.[7] Still, one must decide whether to exclude them and their units altogether from analyses or not. The choice influences the estimate.

Exhibit 5

Incidence of No-Cash Renting by Income Quintiles

Quintiles	1985	1995	1999
Bottom	8	8	7
Lower-Middle	7	6	6
Middle	7	6	6
Upper-Middle	5	5	5
Top	4	4	4
All	6	6	5

Source: JCHS tabulations of the American Housing Survey

Zero, negative and implausibly low incomes

Households that report zero, negative, or an implausibly low income are also special cases. Not accounting for these observations can skew and prevent accurate measurement of affordability problems and trends. Treatment of these cases varies. The Millennial Housing Commission (2002) chose to simply delete all these cases in an effort to produce more conservative estimates of affordability problems. HUD (2003) counted those with zero or negative incomes as unburdened by housing costs. No one adjusts for or deletes households that report incomes of $1,000 or less. But treatment of the 3.7 percent of renters that report zero or negative incomes (as of 2001 in the AHS) and the 1.6 percent of renters that report between $1 and $999 income influences estimates. Inclusion of zero and negative income households also influences the thresholds of income quintiles, raising the upper limit on the lowest quintile from $16,000 to $17,800 when the AHS is used.

[7] The number of these non-cash renters may be overstated, if AHS respondents misunderstand the question (Di and Belsky, 2003, p. 9).

Subsidy recipients

Still another special case is the renter that reports receiving a rent subsidy. Should they be included in counts of cost-burdened households, and if so should the entire rent be included or just the portion paid by the resident? While the answers to these questions depend on the use of the measure, any attempt to include subsidized renters involves measurement problems. The AHS measure of assistance status is marked by misreporting and a net overstatement of the number of assisted households. HUD research cited by Shroder (2003) suggests that roughly 10 percent of those households who do receive government assistance report in the AHS that they do not, while about 20 percent of those who are eligible but not receiving assistance report that they do. Accuracy in reports of assistance status is separate from the issue of the rent reported by assisted households. Although the AHS is clear that respondents should report the rent payment they actually make, some respondents may report the entire rent going to the property owner, including assistance payments made directly to the owner.

In studies that seek to quantify the extent of housing affordability problems that are not addressed by housing assistance, then excluding subsidized renters seems appropriate. Indeed, HUD does not include subsidized households in its counts of Worst Case Needs. However, if the intent of affordability measurement is to identify the total demand for affordable housing, or to examine the financial position of specific households, it seems appropriate to include all rental households in analyses of housing affordability, regardless of their subsidy status. In examining the financial position of specific households, considering only the rent they pay may be appropriate. But if the subsidy amount brings the total rent to a market level, as broadly intended by most government programs, then for studies of market conditions the full rent amount is the preferable measure.

The homeless

Another group relevant to analysis of rental affordability is the homeless population.[8] Estimates vary with definition, time period, and researcher, but between a half a million and one million Americans are homeless at a point in time, and more than 2 million encounter a spell of homelessness at some point during a year, according to estimates for 1996 (Urban Institute, 2000). This compares with 83 million

[8] A final group that is generally excluded from consideration is the institutionalized population. About 2.8 percent of the population was in group quarters in 2000, according to the Census (2.7 percent in 1990). Of these 7.8 million individuals, approximately half were in institutions with formally authorized, supervised care or custody, such as correctional institutions, nursing homes, and juvenile institutions. The other half was living in group quarters other than institutions, such as college dormitories, military quarters, and group homes.

who are in rental housing and 199 million who are in owner-occupied housing, according to the 2003 Current Population Survey. Because most homeless individuals have little income and no assets, if they were in the rental market presumably they would be identified as cost burdened. A recent evaluation of HUD's "worst case housing needs" measure recommended that the homeless be added to the count of those with worst case needs, which by one estimate would increase that count by 13 percent (Koebel and Renneckar, 2003, p.4). The causes of homelessness are many, but housing affordability is surely one.

Vacant rentals

Finally, when assessing the supply of affordable housing judgments must be made on whether to include vacant rentals in counts. In some surveys, such as the AHS, contract rents of these vacant units are estimated and often included. In the Census, rents on vacant units are unavailable and so are excluded.

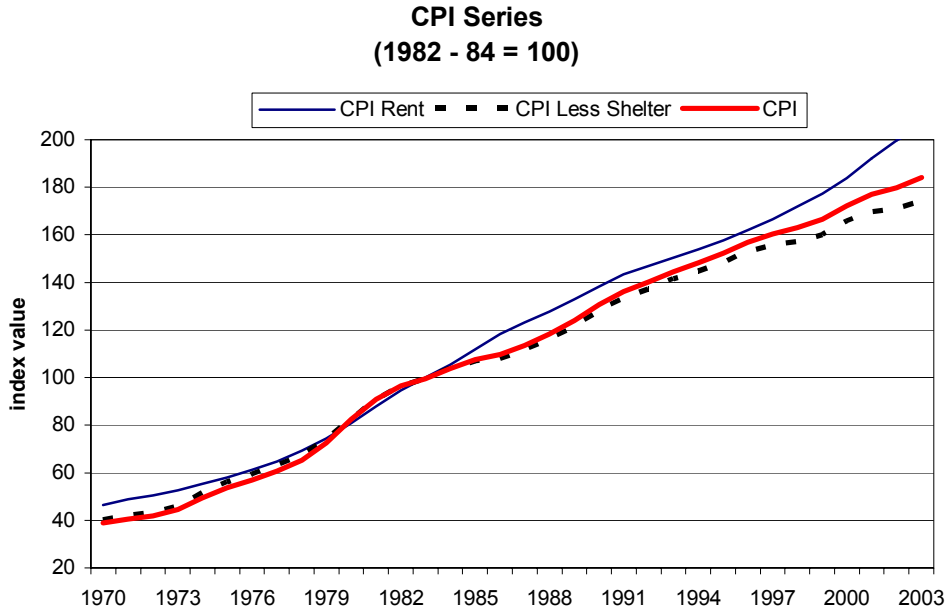
In conclusion, differences in the treatment of special cases can be expected and inevitably result in differences in reported estimates even when the same measure of purchasing power and measure of rent costs are used to quantify rental affordability problems.

Deflation of Incomes and Housing Costs

Changes in rents and incomes include both real and inflationary components. For some purposes it is important to control for inflation, such as when comparing absolute rent and income levels over long time frames. In these applications, the choice of deflator matters but not as much as one might think. Most housing research deflates dollar amounts by the CPI. In theory a preferable measure for rent inflation is the CPI less its shelter components, as this would allow comparisons of housing costs with non-housing costs.

But in practice the selection does not make much difference, because shelter is only about one-third of the whole CPI by weight and the shelter component (including both renter and homeowner costs) has not diverged greatly from non-housing costs. Between 1970 and 2003, the average annual increase of the CPI and CPI excluding shelter differed by only three tenths of a percentage point (Exhibit 6). As a result, the cumulative difference in the two indices is moderate as well.

Exhibit 6



Source: Bureau of Labor Statistics, Consumer Price Index.

However, it *does* matter what index is used to adjust rents when exploring changes in the supply of "low-cost" rentals over time. As discussed in greater detail below, it makes a difference whether rent thresholds are adjusted for general price inflation, or changes in the median income for a family of four, or some more direct measure of changes in the incomes of renters in general and low-income renters in particular. The tendency in many studies is to adjust for changes in the median income for a family of four because these are used in federal housing programs to group households into very-low and extremely-low income. But median renter incomes seldom increase as fast as family incomes. Hence, using this measure tends to overstate changes in the supply of low-cost rentals.

Navigating the Choices of Measures and Methods

With so many choices of measures and ways to construct them, the question arises as to when it make sense to use which approaches and with what caveats. A number of findings that bear on this question are suggested by the foregoing analysis. First, the share-of-income and residual income approaches are simpler and more direct than supply affordability and gap approaches because unlike the latter they do not abstract from the actual rents paid by households. Instead of being hampered by issues of whether so-called "affordable" rentals are of the type or in the locations that renter households of different incomes demand, condition measures are based on observed behavior.

Second, the share of income measures avoid issues of how, whether, and which index to use to deflate incomes and rents in time series comparisons which must inevitably be used with supply-based measures. This is because in share of income measures direct comparisons can be made between cost-to-income ratios calculated with current dollars in one year with that ratio calculated in current dollars in another.

Third, gap measures have less validity when for looking at the middle and top of the income distribution than at the bottom of the distribution. They are more difficult to interpret for the middle and top because units with rents below the floor threshold are also affordable to households above the floor income, and therefore by right ought to be added to the total supply of units affordable to a middle or top income group when comparisons are made to the number of households in those groups.

Fourth, gap measures implicitly assume that all rentals below a threshold are affordable to all households with incomes below that threshold when quite evidently those with incomes near the bottom cannot afford rentals near the top.

Fifth, share of income measures and also gap measures ought to scale the affordability standard based on income levels, though how to do so is not clear and would require normative and subjective standards.

Sixth, the FMR to minimum wage comparison has special appeal because, absent hedonic estimates and a CPI rent index available on more places, it comes closest to comparing the constant rent of a moderately priced rental to the a constant (until policy changes) household income for a household with a single earner in low-wage full-time jobs across metropolitan and non-metropolitan areas. Nevertheless, the FMR should not be viewed as a true constant quality index (nor was it designed to be one). Also, it is subject to measurement problems itself.[9]

[9] Indeed, it is not only set at a higher point in the rent distribution as a result of policy considerations but is generally criticized as understating moderate rents in many places. For purposes of program administration, HUD has developed and maintains annual estimate of "FMRs" for all metro areas and non-metro counties nationwide. They are defined as the 40th percentile of the rent distribution of standard-quality, two-bedroom rental housing units, based on gross rents paid by recent movers. Excluded from the base are public housing units and units less than two years old. In some markets, effective in 2001, the FMR was set at the 50th percentile rather than the 40th. And prior to 1995, the FMR was set at the 45th percentile. In program applications, FMRs are adjusted up and down based on family size and composition and the implied requirements for bedrooms. FMRs have several drawbacks for affordability analysis. The bundle priced differs from place to place, is for recent movers and so is not representative of all renters, and the percentile differs across markets and over time. Lastly, FMRs are administratively adjusted in some markets, most notably sparsely populated non-metropolitan counties. In 1999, for example, FMRs were set to "state minimums" in the majority of all non-metropolitan counties (HUD, 1998).

In practice, FMRs behave much as do constant quality indices when used to compare rent levels across local markets, but do not serve this role well in studying changes in rents over time or comparing changes in rents across markets. Malpezzi, Chun, and Green (1998) found that for top 50 markets the correlation between median

Seventh, the choice of contract or gross rent has profound implications for estimating both the magnitude of rental affordability problems and trends over time. While gross rent reflects what households must pay for housing, contract rent is a better, though not perfect, measure of secular trends in the non-utility costs associated with supplying rental housing.

Eighth, for explorations of chronic housing problems, permanent income or actual long-run average incomes observed in a panel study of households are best. However, current income is more widely available and gauges the incidence of problems at points in time across larger populations.

Ninth, the decennial Census and the ACS likely provide better estimates of incomes than the AHS. Thus, unless applications require the use of detailed property characteristics, these are the preferred sources. Tenth, homeless individuals ought to be included in counts of households with housing affordability problems. Although some are homeless because they are prevented from working by mental disabilities, most have incomes too small to afford housing, let alone the cost of housing plus the services they need to move them out of homeless permanently.

Eleventh, looking at a single point in the income or rent distribution does not provide an accurate reflection of what is going on at other points. Therefore, several points should be compared. The use of averages and medians should be avoided for all applications except for rank ordering areas by affordability to moderate- and middle-income households.

Finally, adjustments for income undercounting, the impact of taxes on available income, non-cash benefits, and improbably low reported incomes are possible but are difficult to execute and are subject to measurement error. Making these adjustments would nevertheless make estimates more precise.

rent as estimated by a hedonic method and the FMR is 0.92. But between 1990 and 2000, that national average FMR rose 25.5 percent compared to the CPI rent index increase of 32.8 percent. In individual markets, changes in FMRs also do not correlate highly with changes in constant quality rents. In those markets with CPI rent indices, the correlation between the1991-1998 increase in CPI rent and FMR rent was only 0.46, and in fifteen markets with hedonic estimates for 1991 and 1998, the correlation with FMR changes was only 0.35. In both comparisons, the average FMR increase was smaller than that of the constant quality index.

WHAT THE CONVENTIONAL MEASURES TELL US ABOUT RENTAL AFFORDABILITY

Despite the many problems associated with existing affordability measures and differences in estimates attributable to varying assumptions and datasets, they do allow stylized conclusions to be drawn about rental housing affordability. A few of these stylized conclusions are presented here. The focus is on top-line findings—findings that mostly relate to the level of affordability problems, the distribution of rental affordability problems by income and geography, and changes over time in rental affordability problems nationally. Of course, many others could be explored, but the purpose here is to touch on only the broadest ones as an illustration of the value of common measures in spite of their problems.

Numbers and Shares of Cost-Burdened Renter Households

No matter which measure is used and what adjustments and assumptions are made, it is clear that at any given time millions of renter households have trouble affording their housing. The actual estimates of the number and share do vary, but generally range between 12.5 and 14 million households and 35-45 percent of renters.[10] The number and share of severely cost burdened renters, those spending more than 50 percent of income on rent, is estimated to be between 6.1 and 6.8 million and 17 and 21 percent of renter households (Exhibit 7).

[10] This is based on calculations using the 2000 Census and the 2001 AHS and ACS, with gross rents and pre-tax reported income, classifying all no-cash renters as unburdened and renters with zero or negative income as severely cost burdened, with no additional adjustments for income underreporting or simulated after-tax income.

Exhibit 7:

Comparison of Affordability Trends by Data Source

Counts of Renter Households (000s)

	with Cost Burdens				with Severe Cost Burdens		
Quintiles	**Census 2000**	**ACS 2001**	**AHS 2001**	**Quintiles**	**Census 2000**	**ACS 2001**	**AHS 2001**
1	8,645	9,111	7,931	1	5,518	6,094	5,409
2	3,017	3,815	3,990	2	462	623	763
3	617	829	998	3	80	88	144
4	134	201	248	4	13	18	35
5	31	47	36	5	1	0	0
Total	12,445	14,003	13,203	Total	6,074	6,823	6,351

Shares of Renter Households (%)

	with Cost Burdens				with Severe Cost Burdens		
Quintiles	**Census 2000**	**ACS 2001**	**AHS 2001**	**Quintiles**	**Census 2000**	**ACS 2001**	**AHS 2001**
1	73	82	82	1	47	55	56
2	34	44	48	2	5	7	9
3	9	12	15	3	1	1	2
4	3	4	6	4	0	0	1
5	1	2	2	5	0	0	0
Total	36	42	43	Total	17	20	21

Source: JCHS tabulations of the 2001 AHS and ACS and the 2000 Census 1% PUMS

Concentration of Cost burdens in the Bottom Fifth of the Income Distribution

The more than one in three renter households with cost burdens are not evenly distributed by income: they are heavily concentrated among the lowest income households. Some analysts focus specifically on the lowest-income households when calculating and discussing affordability problems, under the theory that these households are least able to endure cost burdens and have the fewest alternatives for finding cheaper housing.

Using the same estimates as above, between 7.9 and 9.1 million renters in the bottom income quintile had cost burdens, which accounted for as much as 69 percent of all cost-burdened renters, and a shocking 73-82 percent of renters in the bottom quintile. On the severely cost burdened side, low-income renters again dominate, with 5.5-6 million households accounting for as much as 85 percent of all renters with severe cost burdens, and 47-56 percent of all bottom quintile renters.

Mounting Cost Burdens among the Poor

Despite slower long run growth in gross rents than contract rents, thanks to slowly growing utilities costs, cost burdens have been mounting among those at the bottom of the household income distribution. Both the AHS and Census/ ACS show growth in the share of cost burdened renters in the bottom household income quintile over the 1990s. The Census/ACS shows even more significant growth in this share since 1960—rising from six in 10 of these households to eight in 10 by 2000.

Different datasets, however, do not yield consistent estimates of the trends in rental affordability. The AHS shows a 14 percentage points change in the share of renter households in the bottom income quintile with cost burdens – twice as much as the 7 percentage points of change in the Census (Exhibit 8). Both also show growth in share cost burdened in the second income quintile of only 2-3 percentage points. However, while the AHS shows no growth in the cost burden share in the middle-income quintile and 3 percentage points of growth in the fourth quintile, the Census/ACS shows a 2 percentage point *decline* in both of these income quintiles.

Exhibit 8:

Share of Renters Households with Cost Burdens (%)

	AHS				Census/ACS		
Quintiles	1991	2001	Change		1990 Census	2000 ACS	Change
1	68	82	14		72	79	7
2	45	48	3		42	44	2
3	15	15	0		14	12	-2
4	3	6	3		5	3	-2
5	0	2	2		0	2	2
Total	37	43	6		37	40	3

Source: JCHS tabulations of the 1991 and 2001 AHS; Quigley and Raphael (2004)

Quigley and Raphael (2004) show these trends over a longer period using the 1960, 1970, 1980, and 1990 Censes and the 2000 ACS. Their results reveal that since 1960 the share of renters in the lowest household income quintile with moderate or greater cost burdens grew by 17 percentage points and in the second quintile by an even larger 23 percentage points. But most of the increase in the second quintile cost burden shares occurred from 1970-1980 while the share increases were greatest in the bottom income quintile after 1980.

The mounting problems among renters in the bottom household income quintile since 1980 are all the more striking in light of the slower growth of utilities than contract rents. The cost to lease rental space net of utility costs is clearly up more than incomes of renter households in the bottom quintile.

Increase in Problems among Moderate-Income Renters

While cost burdens are heavily concentrated at the bottom of the income distribution, they appear as well in moderate- and middle-income ranges. Recent studies by the National Housing Conference show high levels of cost burdens among working families, especially in the higher cost housing markets where incomes for some essential service occupations (including teachers, nurses, police officers and janitors) are not adequately adjusted for the local cost of living. Furthermore, trade-offs of housing and transportation costs are more acutely observed among middle-income households, who often opt to live far away from employment centers in order to find affordable housing, but end up with longer and costlier commutes as a result.

Less clear is whether cost burdens are becoming more or less common among moderate-income renter households, with the AHS suggesting that they did at least over the 1990s and the Census suggesting that perhaps they did not over that timeframe but have over one that spans back to the 1960.

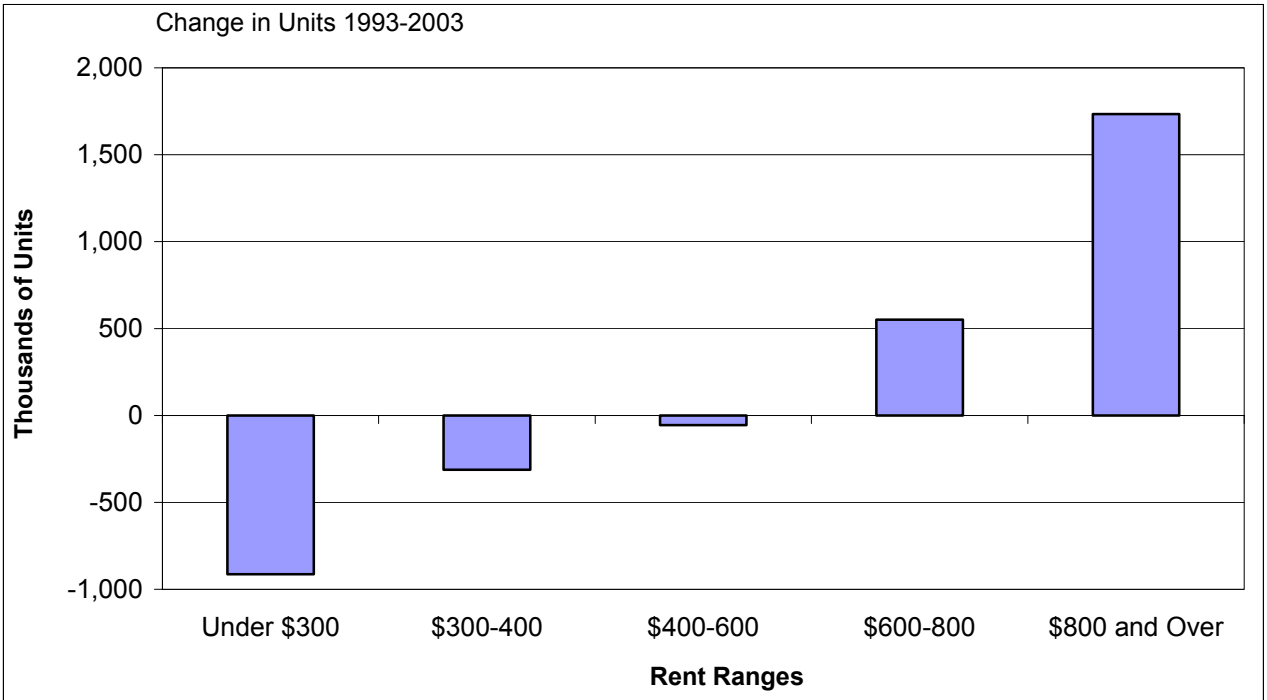
The Dwindling Number of Low-Cost Rentals

Interpreting what is happening to the "supply" of low-cost rentals is more challenging than examining the level, distribution, and change of actual cost burdens. This is because findings about losses or gains in the low-cost supply depend on how "low-cost" is defined and whether that definition is adjusted to reflect growth in incomes and, if so, which incomes—household, family, or just renters—and whether to use the change in the median income of the entire distribution or changes in incomes at some other point of the income distribution.

Two approaches have been used. One is to examine changes in the number of rentals below some threshold rent adjusted only for general price inflation. The other is to adjust the rent threshold for changes in some measure of income. Several studies have used the first approach. Apgar (1990) found that the number of units with rents of $300 or less (in constant 1985 dollars, or $465 in 1999 dollars) had declined by 1.6 million between 1974 and 1985. Goodman (2001), in a paper written for the Millennial Housing Commission, found that the number of units with rents of $400 or less (in constant 1999 dollars)

had declined from 7.26 million to 7.08 million between 1985 and 1999, for a loss of more than 250,000 rentals (Goodman, 2001). The State of the Nation's Housing report (Joint Center for Housing Studies, 2005) found that the number of units renting for $400 or less fell by 1.2 million between 1993 and 2003 (Exhibit 9). HUD (2001) set the threshold rents at what extremely low-and very low-income households could afford in 1985 and then adjusted them for general price inflation only. The HUD report also found that the number of units affordable at these real threshold rents fell significantly from 1985-1999.

Exhibit 9:
Losses from the Low-Cost Rental Stock



Notes: Includes occupied and vacant-for rent units. Ranges are based on gross 2003 rents, including utilities.

The Millennial Housing Commission, on the other hand, adjusted very low- and extremely low-income affordable rent thresholds for the change in the median family income for a family of four. This is the income used to establish HUD-Adjusted Area Median Family Incomes. Using this measure, the Commission found that the number of rental units affordable to extremely and very low-income households *increased* 1985-1995 and 1995-1999. However, this approach has the distinct disadvantage of adjusting for increases in family income rather than renter incomes or the income of renters at the

bottom of the income distribution. Because the growth in family income was greater than the growth of incomes of low-income renters, the approach exaggerated the growth in rentals affordable to these groups.

The Supply/Demand Mismatch

From a mismatch perspective, the question is whether the number of renter households with the incomes needed to afford lower cost units is shrinking as fast as the number of these units. Again, the findings are sensitive to the method used, though it does appear that the mismatch is growing worse. As noted, HUD (2001) did not adjust rent thresholds for the rate of growth in the median income of families of four. Without this adjustment, it appears that the number of units affordable to extremely low-income households fell sharply by about 4.9 million and that the number of units affordable to very low-income households fell by more than 600,000 units 1985-1999. Over the same period, however, the number of renter households as reported by HUD in each of these groups did not fall. Hence, the report found a worsening mismatch. The Millennial Housing Commission, however, which did adjust the rent thresholds for growth in median family income from 1985 to 1999, found that the number of units affordable to very low-and extremely low-income households was greater in 1999 than 1985, suggesting that the mismatch did not widen but instead narrowed.

A better approach to sorting out what fraction or number of rentals are "affordable" to renters at the bottom of the income distribution than the one taken by either HUD or the Millennial Housing Commission is to compare the median rent to the median income of bottom quintile renters in a given year. This avoids having to adjust thresholds with an income index and takes into account the fact that renter incomes go up or down in real terms just as do rents but at rates that are historically not as rapid as family median income. Furthermore, by taking 30 percent of the median of the bottom income group as the basis for setting the threshold rent, the approach avoids setting the threshold at the upper most income of the group.

This is the approach Quigley and Raphael (2004) used. Using the Census and ACS, Quigley and Raphael found that the share of all rentals affordable at the median income among renters in the bottom household income quintile fell from 15 percent in 1980 to 12 percent in 1990 and 7 percent in 2000 (Exhibit 10). Yet, the share of renter households in the bottom household income quintiles held steady at 32-33 percent of all renters in each of those years. This is probably the best measure and it clearly reveals a large and

growing mismatch between the incomes of renter households in the bottom quintile and the rents of rents in the bottom quintile.[11]

Exhibit 10:

Share of Rentals Affordable to Households in Bottom Income Quintile Falling While Share of Rental Households in it Have Not

Percent of Rental Stock Affordable to Households with the Median Renter's Household Income within Income Quintiles (%), and Percent of all Renter Households with Incomes in Each Category (in parentheses, %)

Quintiles	1980	1990	2000
1	15 (33)	12 (33)	7 (32)
2	59 (27)	53 (25)	50 (26)
3	92 (20)	87 (20)	88 (20)
4	99 (13)	97 (14)	98 (14)
5	100 (7)	100 (8)	100 (8)
Total	70 (100)	63 (100)	62 (100)

Source: Quigley and Raphael (2004)

Although estimates of the direction of change in supply/demand mismatches vary, all studies find a significant gap between the number of low-cost rentals at a variety of thresholds and the number of households that can not afford rents above those thresholds. For example, HUD (2001) estimates the gap between the number of extremely low-income households and the number of rentals affordable to them was 1.8 million in 1999. The mismatch is even larger when units affordable and available to them are considered (that is, affordable rentals that are not already occupied by higher income households). That gap stood at 4.9 million in 1999. The Joint Center for Housing Studies (2005) reported that the number of renter households with incomes up to $16,000 exceeded the supply of affordable and available rentals by about 5.2 million in 2003.

"Housing Wages" for Modest Rentals

NLIHC (2003) reports that in no state is minimum-wage full-time work sufficient to afford the FMR for a two-bedroom apartment. In fact, in several states it takes more than 3 times that wage rate. Furthermore, the federal minimum wage has not changed since 1997 while weighted average FMRs have been

[11] It is worth noting that median renter income of households in the bottom income quintile that Quigley and Raphael deploy is not much different from the median reported income of extremely low-income renters nationally.

increasing. As a result, the average national housing wage for a two-bedroom apartment has crept up from $11.08 (more than twice the minimum wage) in 1999 to $15.21 in 2003.

Of course one can argue whether the FMR is the right rent level to use in making comparisons to minimum wage. But this approach dramatically underscores that what the federal government deems as a modest rental is beyond the reach of millions of full-time working families.

LIMITATIONS OF CONVENTIONAL MEASURES

Despite the many benefits of the conventional measures of rental housing affordability, they also have several drawbacks and limitations. First, the measures fail to take into account the tradeoffs households can and do make to lower housing costs but that add to other costs or compromise on housing or neighborhood quality. Second, the measures count households spending over a threshold share of income as cost burdened whether the decision to spend that share was bred out of choice or necessity. Third, the measures do not address the role that changes in housing quality over time may be playing in driving affordability trends or how the supply of rental housing may be changing relative to the demand for it. And fourth, the reliance of the measures on the 30 and 50 percent of income thresholds has substituted for a necessary political debate over what ought to be viewed as an unacceptably high housing cost for households with different incomes to bear.

Each of these limitations is addressed in turn. Addressing them is difficult, however, and underscores the necessity of making subjective judgments about what constitutes "too much" to spend on housing, what is a minimally acceptable housing bundle, how much is too much too spend for housing and transportation combined, and how each of these varies with income. After all, the very concept of affordability turns on subjective judgments and the application of normative standards. According to the Webster's New Collegiate Dictionary to afford something is "to manage to bear without serious detriment; to be able to bear the cost of." The Oxford English Dictionary defines the act of affording something as "to have the means, be able or rich enough; to bear the expense of." Clearly there is no absolute standard for what constitutes a serious detriment, what is rich enough, or what it means to "be able to bear the cost/expense of." Instead, these are subjective, socially constructed norms with political implications.

Failure to Take Tradeoffs into Account

Housing is perhaps the most heterogeneous good. Not only does housing come in a wide array of styles, ages, sizes, shapes, and amenity packages, it also comes with a nearly infinite constellation of neighborhood and location characteristics. Therefore, what one spends is highly variable and depends at least as much on its location as the product itself.

As a result, households can tradeoff housing quality, neighborhood quality, and access to jobs and other amenities for lower housing costs. When only the cost of housing is considered in affordability measures

it misses the fact that some will choose to spend more to get more while others may spend more but not get as much in return.

Put more simply, the questions begged by housing quality differences is whether measures of rental affordability should: 1) account for what people get in quality in return for what they pay for it, as well as how this may be changing over time and varies by areas; and 2) tally up the implicit additional costs associated with their housing choices when calculating how much of their income goes to housing.

The answers to these questions are almost certainly yes. But devising methods for accounting for quality and the added expenses associated with tradeoffs is both challenging and entails subjective judgments. Tallying up at least some of the additional costs may appear simple but the trick is deciding how much of these expenditures should be attributed to trading off quality or location for lower housing costs. Take transportation costs. Some households take longer commutes purely out of choice and not necessity. Nonetheless, it is striking that households that allocate 30 percent or less of their outlays spend considerably more on average for transportation than those that allocate 50 percent or more. Still, there is appeal to controlling for quality and tradeoffs implicit in quality choices.

Thalmann (2003) is one of the few analysts to make a serious effort to deal with the quality issue in measuring affordability. Thalmann's objective was to decouple the affordability problems of Swiss households that suffer from housing-related problems from those in need of broader income assistance. He developed a set of indicators to identify over-consumption of housing and hedonic indices to account for quality differences in what housing is being consumed. The hedonic rent is a function of a unit's attributes, implicit prices, and residual determinants of rent differences, or more simply "market factors". His hedonic equation, when applied to a limited number of housing characteristics variables in a 1998 household survey, explained 54 percent of the reported rent of units. Over 55 percent of households paid within 20 percent of the expected rent for their units, and 30 percent within 10 percent. In the end, 79 percent of households were found to be spending below the standard amount prescribed by their characteristics for housing and non-housing consumption, even though 12 percent of them would otherwise have been classified as being unable to afford their housing under a 25 percent standard share of income ratio. Only 4 percent of all households fell into the category of prime candidates for targeted housing assistance – only a fifth of all households with share of income ratios over 25 percent.

The CHP study of housing and transportation costs addresses another criticism of the share of income approach by considering the trade-off many households make between spending large shares of income

on housing and living farther away and commuting long distances in order to find affordable housing. Using analysis of the CES data compiled by the Economic Policy Institute, the CHP study found that the share of total household expenditures on transportation was 3 time higher for households spending less than 30 percent on housing than for households with half their expenditures on housing (CHP 2005). Other trade-offs were also evident, including reduced spending on healthcare and food among households with higher housing expenditures.

Lastly, DiPasquale and Kahn (1999) found that locational choices can and do vary among households paying similar amounts for housing. Their analysis, based on 1990 Census data, found that blacks, whites and Hispanics in Los Angeles County had similar housing costs, even after controlling for income differences across races. But the housing and neighborhood quality blacks and Hispanics received were considerably lower than the neighborhood quality whites paying similar amounts received.

Failure to Distinguish Choice from Necessity

Housing decisions usually contain elements of both choice and constrained choice. All else equal, most people would like to live in a high quality home in a high quality neighborhood. But households make their choices subject to budget constraints while seeking to maximize their overall utility. What constitutes maximum utility varies with individual household tastes and preferences. Some value the flow of services provided by housing more than others. It is therefore difficult to distinguish between those who are spending large shares of income on housing because they cannot find a lower cost but suitable rental and those who could find a suitable lower cost rental but opt to spend more anyway.

Of course, what is minimally suitable is also in the eyes of the beholder. The debate over what constitutes minimally acceptable housing—and how this might vary with income given social expectations—is largely not joined. Hence issues of choice are generally overlooked in discussions of housing affordability. Again, an exception is Thalmann (2003). He considered households that were found to be paying above a standard amount estimated by a hedonic for different household types for their unit as "over consuming" housing. However, Thalmann admitted that some of these households might be supply-constrained and unable to find units more suitable to their needs at lower prices. Nevertheless, he excludes from his counts of those suffering with cost burdens all households spending more than the average amount predicted even though they have high rent/income ratios. As discussed above, Thalmann used a hedonic approach to decide on the appropriate housing expense. But he based his measure of standard price on only a few observed variables. He excluded many unobserved features that are

precisely the factors that are critical to making such determinations (including location and amenities). Hence, although his work is innovative, one would want a far more thorough vetting of the standards used, their normative foundations, and their political implications before considering adopting them for policy purposes.

Failure to Capture Changes in Housing Quality and Composition of Demand

The standard measures of housing affordability are often used to explore changes in housing affordability over time. Yet, they do not distinguish changes in housing affordability caused by changes in the price of housing from changes in its quality. It is important to develop and refine methods to do this because part of the reason many have argued that rents are escalating so rapidly at the bottom of the rent distribution, even though incomes at the bottom of the income distribution have not, is that land use regulations and building codes preclude the production of modest rentals at high densities per acre. To the extent this is true then a large part of the increase in rents should be attributable to quality improvements and to a constrained supply of modest rentals.

Goodman (2005) has examined this issue using hedonic techniques and found evidence that improvements in quality indeed are behind some of the increases in rents. But he also found that the role of quality improvements in explaining rent increases varies across metropolitan areas. He found too that the rate of rent inflation in the bottom third of the rent distribution relative to other two-thirds, after controlling for quality, also varies. But he noted several constraints on making effective estimations with available data.

It is also important to recognize that quality improvements may reflect the demand for higher quality housing, not a governmental constraint on what can be supplied. Demand for higher quality can simply reflect increasing expectations as living standards improve or a reduction in the costs of other goods and services relative to housing that frees up budget for housing or changing preferences for the flow of service produced by housing. For example, if people start to value public education more highly (which is plausible because returns to college degrees have been growing relative to high school degrees) then they may increase housing expenditures relative to other goods to obtain better education.

Better approaches to understanding how the supply and price of low-cost rentals is changing relative to demand, and why, are needed. Simply examining how the shares of renter households with cost burdens are changing over time does not get at this, nor does how the supply-demand mismatch is changing.

Uncritical Reliance on the 30 and 50 percent of Income Standards

The act of establishing an affordability standard for public policy decisions is an inherently political act. It governs public perceptions of how widespread and for whom housing affordability is a problem, and thus how and what ought to be done about it. In the US, it governs how much people receiving many forms of housing assistance are required to pay in rent. As a result, it also determines how costly it is to serve households at different incomes levels.[12]

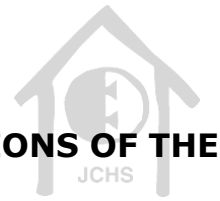
The 30 and 50 percent affordability standards are widely used but rarely questioned. As discussed earlier, the 30 percent standard emerged out of debates over how much to insist that recipients of federal assistance pay towards their rents. The decision was driven by budgetary considerations, not a debate over how much is too much to spend on housing and by whom. The 50 percent standard was selected because it was deemed that very low-income households spending more than half of income on housing causes serious detriment to these households because they would have so little left over for other basic needs.

The residual income approach was intended to narrow the definition of housing affordability problems for the purposes of targeting assistance to the poorest of the poor and making sure that they have enough leftover to meet basic needs regardless of how large a subsidy it takes. But such an absolute standard fails to capture socially constructed notions of what constitutes a hardship for moderate- and middle-income households. Surely, many households with these incomes who spend large fractions of their income on housing or commute great distances to lower their housing costs think of themselves as having housing affordability problems. It is legitimate and important to engage in serious debates and analysis of what does constitute a hardship for such households. Indeed, with housing affordability problems clearly creeping up the income scale, and the middle class an important potential constituency for housing programs, this is growing increasingly important.

What is needed is a much more engaged public policy debate over what constitutes a rental affordability problem and minimally acceptable housing (including housing quality, size, and neighborhood condition) *by income level*. It is an accounting fact that when people spend more on housing they spend less on other items. Many of these tradeoffs have significant public policy implications. Evidence suggests that

[12] Even the use of term of "affordability" is in many senses a political act. Indeed, it has become such a popular term for referring to housing because it is so vague. It gained in currency when advocates and politicians realized that by substituting the term "affordable" housing for the terms of "low-income" or "subsidized" housing, reactions to the term were less politically charged.

people spending more on housing spend less on education, health care and on pensions, insurance, and savings (Joint Center for Housing Studies 2004, 2005). This imposes greater strains on the health care system, reduces workforce productivity, increases reliance on social security payments, and leaves more households vulnerable to even temporary disruptions in income.



OVERCOMING THE LIMITATIONS OF THE CONVENTIONAL MEASURES

Several steps could be taken to overcome the limitations of conventional affordability measures. Mostly, these involve controlling for housing and neighborhood quality, building tradeoffs to lower housing costs into estimates of the problem, and grappling with the thorny political issues of what constitutes a housing cost burden, minimally acceptable housing, and minimally acceptable neighborhood quality at different income levels. We should be as concerned with what people get for what they pay for housing as how much they pay for it. There are additional opportunities to improve measures by linking available datasets and expanding the information collected by federal surveys. Any of these so-called "fixes" would be hard to accomplish, and are outside the scope of this paper. Distinguishing choice from necessity in housing consumption is especially difficult because it difficult to achieve consensus about what standards to apply in making these determinations (Thalmann 2003).

Though it is difficult to envision creating a measure or class of measures that captures all aspects of housing quality, there are concrete steps that could be taken to advance our understanding and appreciation of both the magnitude and trend in housing affordability problems. First, it is possible to create constant quality rent indices and constant income indices to examine changes in rents and incomes of typical housing and households. Second, it is possible to pair this analysis with an analysis of how the supply of units defined as minimally acceptable by some standard is changing relative to the number of households most likely to demand them. Third, it would be worthwhile to develop methods that take into account some portion of cost tradeoffs made to lower gross rents, including location, quantity, and quality of rental housing. Fourth, there are opportunities to link datasets to answer additional questions about trends in and drivers of rental affordability problems. Lastly, some limitations of existing measures can only be ameliorated by adding new questions to existing federal surveys or creating new surveys.

Create Constant Quality Rent and Household Income Indices

A key question is whether rents of housing of constant quality are growing faster than returns to constant quality labor.[13] Hedonic indices are a powerful tool for determining how the rents of specific housing

[13] Unfortunately, the federal government does not estimate hedonic rent price indices even at the national level. The closest it comes to providing a measure of constant-quality rent change is the rent component of the CPI. But this is not a constant-quality index over the longer run because it measures increases by returning to the same unit multiple times over an 18 month period to ask about the rent. Therefore, it is influenced by how the composition of the entire rental stock changes over time as new sampled units roll in and out of the survey. Similarly, HUD produces an FMR series at the metropolitan level which estimates rents at a point in the distribution each year. In the short-run

bundles of constant quality vary over time and space.[14] These techniques estimate rents as a linear aggregation of elements that make up the bundle of attributes that together govern rents. These include structural and neighborhood attributes. An index of changes in the rents for particular bundles of attributes at these different levels of geography can be created by re-estimating the equation at different points in time.

This approach also allows for estimation of the independent contribution of different attributes to overall rent levels. This helps in assessing what attributes are becoming relatively more or less expensive for renters. But the capacity of such models to capture quality differences depends on the detail and quality of data used to make the estimations. In general, detail in publicly available datasets is quite limited, especially on the neighborhood dimension but also on detailed quality differences among rentals. Yet neighborhood quality varies markedly from place to place, including noise, crime, open space, schools, and shopping. With housing so heterogeneous, it is impossible to price every bundle and to capture every factor that influences rents. In addition, hedonic rent indices also require considerable judgment in their construction and estimates are sensitive to the choice of variables, functional form, and datasets. Nevertheless, the use of hedonic methods is worthy of more attention than it has received.

On the income side, returns to labor also vary by location and importantly by type of occupation. Census does not create earnings indices for representative jobs. However, data down to the metropolitan level on incomes by occupation from the decennial census allows for direct observation of how these earnings are changing. Armed with these data, one could examine changes in the incomes of households with one or two full or part-time earners engaged in typical low-wage, moderate-wage, or middle-wage occupations.

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quality is reasonably well controlled for (though with some measurement error because each year a separate random-digit dialed sample is surveyed) but less so over longer periods. Neither measure provides estimates for specified bundles of attributes or for multiple points in the distribution.

[14] Evidence of this difference in price increases by market segment comes from the CPI. In addition to the rent component, the CPI also includes an "owners' equivalent rent" element. It is defined as the rent homeowners would have to pay, given current conditions in their local market, if they were renting rather than owning their house. Because owners on average occupy housing units with more space and amenities than the typical renter-occupied unit, the owner-occupied rent index prices a higher quality bundle than does the rent index. This higher quality bundle has apparently been inflating more rapidly than rental housing overall, as the owners' equivalent rent index rose 115 percent from its introduction in 1983 through 2003, over which period the CPI rent index rose only 105 percent. Additional evidence of price differences by quality segment comes from research by Thibodeau (1995). He found that estimated rent increases in metro markets depended on whether he priced the typical rental bundle as of the beginning of the observation period (Laspeyres price index) or as of the end (Paasche price index). For example, if the supply of rental housing is especially constrained (inelastic) for a certain bundle of structural and locational attributes, that housing will experience larger changes in rent in response to demand changes than will other bundles. Similarly if the incomes of those that demand certain bundles escalate faster in some segments or places than others over the long-run, rents for these bundles may increase faster.

Comparing rent and income indices is of special value because they are better at distinguishing housing choices that likely reflect preferences from those that involve constraints. These comparisons do this by shifting the question away from how many households have cost burdens as a result of the choices they make towards what housing they *could* choose given their incomes.

This approach can also be used to examine possible racial and ethnic differences in the quality of housing received for the price paid. One way to do this is to control for neighborhood quality in hedonic equations but also include additional controls for the racial and ethnic composition of neighborhoods. If these composition variables have a statistically significant influence on rents, then it suggests that residents of minority communities are getting back less in quality than they are paying for relative to those in other communities. An alternative is to separately model the prices paid by different racial and ethnic groups and compare the implicit prices paid for the same housing and neighborhood attributes.

Explore Changes in the Supply of Minimally Acceptable Rentals

It is important for policy makers to answer the question of what constitutes a minimally acceptable rental, especially for the poor, and how the supply of this housing is changing. The concept of minimally acceptable housing involves housing and neighborhood quality components. While it is desirable to create hedonic indices that truly capture neighborhood quality, concessions almost certainly must be made due to the lack of detailed information on neighborhood conditions and services in most datasets, as well as the exigencies of selecting only a few, representative structural/ neighborhood bundles to study.

Once a minimum standard is established, changes in the supply of housing with those minimal characteristics can be quantified. To the extent that the supply is shrinking and its rents increasing, but the incomes of households that typically occupied them are flat but their numbers are growing, this is compelling evidence of a market failure.

Account for Tradeoffs

Another new direction that would contribute to better understanding and measurement of rental affordability is to account for the costs imposed by making housing tradeoffs. Housing location determines distance from the place of work. Residential rents generally are higher, all else equal, in locations close to employment centers. So workers can conserve on rents by living farther from employment centers, but at the cost of higher transportation expenses – both time and money. This

tradeoff raises the issue, especially in large metro areas, of the appropriate way to handle these transportation expenses in estimates of rental affordability. Should the dollar cost of commutes over and above a certain length or time, or that involves a shift from lower cost mass transit to private transportation, be added to housing expense? As with neighborhood quality, the appropriate handling of commuting expense in studies of housing affordability has yet to be determined.

While it is beyond the scope of this report to offer a solution to this problem (the answer to which will rely in part on subjective judgment as well as quantitative estimations), this is clearly an area worth pursuing. Health care and lost productivity costs associated with the mental and physical stress of living in poorer quality or crowded units or units far from work may also appropriately be addressed by an approach aiming to account for tradeoffs made to lower rental costs.

Link Multiple Datasets

More generally, the quality of housing affordability analysis could be improved by combining data attributes not found in any one survey or census: detailed housing characteristics, detailed income and demographic characteristics, national representation, local area coverage, and longitudinal coverage of households and their housing. One promising strategy for overcoming the limitations of individual data sources is to combine them by assigning characteristics to records in one dataset based on related characteristics in another dataset.

Fortunately, in recent years statistical methods have been developed for imputing values to observations in one dataset based on values in another that make doing these sorts of imputations more reliable. Angrist and Krueger (1992) developed a method that allowed them to combine information on age at school entry from one data source with information on educational attainment from another. And in a recent conference paper, Bostic, Gabriel, and Painter (2003) used a different statistical method to combine wealth information from the Survey of Consumer Finance with expenditure data from the CES to analyze wealth effects on housing consumption.

The several federal datasets commonly used in housing research offer the opportunity for combinations that will allow more affordability questions to be addressed than is possible with any one survey or census. A few examples follow. The housing detail of the AHS could be allocated to individual households followed over time in the PSID. Or the housing unit detail of the AHS could be allocated to local areas identified in the ACS. Or the detailed resident and unit characteristics of the AHS could be

combined with the property-level information collected in the 2001 Residential Finance Survey (RFS) – a survey that examines the financing and ownership of rental properties. In addition, the detailed property information of the RFS could be combined with the geographic detail of the ACS.

Expand Survey Coverage

Lastly, steps to improve federal data collection and leverage existing data resources are also in order. Some improvements could be made to the AHS to increase its value for studying rental affordability, especially in the areas of housing and neighborhood quality. Another important step would be to improve the accuracy of the income responses (steps are already underway at HUD and the Census Bureau to do just that).

It would also be particularly valuable to have a federal dataset that followed households through time *and* had detailed housing characteristics—essentially an AHS but that was a survey that tracked households through time rather than housing units. Being able to track households is especially important for rental housing studies, since a third or more of all renters move in any given year. The PSID is a logical choice for achieving this objective. All that would be needed is the addition of housing questions sufficient to capture housing quality characteristics and accurately record housing expenses.[15] However, the limited sample size of the PSID precludes disaggregating the data by location or population group.

[15] Contract rent has been recorded in many PSID years, but utilities expenses are collected only occasionally (Hill, 2003, p. 23).

CONCLUSION

Several conclusions can be drawn from the foregoing discussion. First, rental affordability is a difficult concept to define, involves subjective judgments and the application of normative standards to assign the labels affordable and unaffordable to a household's condition or to a rental unit. Second measuring rental affordability involves many operational decisions that can lead to dissimilar estimates of seemingly identical or similar measures. Third, despite these differences, at least some conclusions can be drawn even if the precise estimates backing these conclusions vary. Fourth, estimates will likely continue to vary because it is unlikely that all analysts will agree upon the same set of assumptions, measures, and datasets to use when quantifying housing affordability problems. Fifth, and as a direct result of these other findings, policy makers must make an extra effort to understand the precise methods used to produce estimates and be cautious in interpreting the meaning of these estimates. Sixth, despite common failings it is likely that the measures now in common use will remain in common use, giving policy makers an imperfect but vital read on housing affordability conditions. Seventh, there are several ways that the analysis of affordability could be expanded and improved. Chief among them are to create hedonic indices so that changes in constant quality rent indices can be compared with changes in constant income indices, to better account for tradeoffs made that lower housing costs but add to other costs, and to try to exploit information in multiple datasets by linking them together using imputations.

The reality is that difficult choices about what measures to use, how to construct them, and how to interpret them are inherent in the concept of rental affordability. Measures of rental affordability are too important to go unexamined, however, and the proper yardsticks for judging when a rent payment is unaffordable, and to whom, are too politically important not to be aired and argued over.

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