City of MOUNT VERNON

Appendix C

SELECTED HOUSING ELEMENT ARTICLES AND INFORMATION

Your Gateway to the History of the Federal Reserve System

2007–2010 Subprime Mortgage Crisis

The expansion of mortgages to high-risk borrowers, coupled with rising house prices, contributed to a period of turmoil in financial markets that lasted from 2007 to 2010.

by John V. Duca, Federal Reserve Bank of Dallas

Sections

- How and Why the Crisis Occurred
- Steps to Alleviate the Crisis

How and Why the Crisis Occurred

The subprime mortgage crisis of 2007–10 stemmed from an earlier expansion of mortgage credit, including to borrowers who previously would have had difficulty getting mortgages, which both contributed to and was facilitated by rapidly rising home prices. Historically, potential homebuyers found it difficult to obtain mortgages if they had below average credit histories, provided small down payments or sought high-payment loans. Unless protected by government insurance, lenders often denied such mortgage requests. While some high-risk families could obtain small-sized mortgages backed by the Federal Housing Administration (FHA), others, facing limited credit options, rented. In that era, homeownership fluctuated around 65 percent, mortgage foreclosure rates were low, and home construction and house prices mainly reflected swings in mortgage interest rates and income.

In the early and mid-2000s, high-risk mortgages became available from lenders who funded mortgages by repackaging them into pools that were sold to investors. New financial products were used to apportion these risks, with private-label mortgage-backed securities (PMBS) providing most of the funding of subprime mortgages. The less vulnerable of these securities were viewed as having low risk either because they were insured with new financial instruments or because other securities would first absorb any losses on the underlying mortgages (DiMartino and Duca 2007). This enabled more first-time homebuyers to obtain mortgages (Duca, Muellbauer, and Murphy 2011), and homeownership rose.

The resulting demand bid up house prices, more so in areas where housing was in tight supply. This induced expectations of still more house price gains, further increasing housing demand and prices (Case,

Shiller, and Thompson 2012). Investors purchasing PMBS profited at first because rising house prices protected them from losses. When high-risk mortgage borrowers could not make loan payments, they either sold their homes at a gain and paid off their mortgages, or borrowed more against higher market prices. Because such periods of rising home prices and expanded mortgage availability were relatively unprecedented, and new mortgage products' longer-run sustainability was untested, the riskiness of PMBS may not have been well-understood. On a practical level, risk was "off the radar screen" because many gauges of mortgage loan quality available at the time were based on prime, rather than new, mortgage products.

When house prices peaked, mortgage refinancing and selling homes became less viable means of settling mortgage debt and mortgage loss rates began rising for lenders and investors. In April 2007, New Century Financial Corp., a leading subprime mortgage lender, filed for bankruptcy. Shortly thereafter, large numbers of PMBS and PMBS-backed securities were downgraded to high risk, and several subprime lenders closed. Because the bond funding of subprime mortgages collapsed, lenders stopped making subprime and other nonprime risky mortgages. This lowered the demand for housing, leading to sliding house prices that fueled expectations of still more declines, further reducing the demand for homes. Prices fell so much that it became hard for troubled borrowers to sell their homes to fully pay off their mortgages, even if they had provided a sizable down payment.

As a result, two government-sponsored enterprises, Fannie Mae and Freddie Mac, suffered large losses and were seized by the federal government in the summer of 2008. Earlier, in order to meet federally mandated goals to increase homeownership, Fannie Mae and Freddie Mac had issued debt to fund purchases of subprime mortgage-backed securities, which later fell in value. In addition, the two government enterprises suffered losses on failing prime mortgages, which they had earlier bought, insured, and then bundled into prime mortgage-backed securities that were sold to investors.

In response to these developments, lenders subsequently made qualifying even more difficult for high-risk and even relatively low-risk mortgage applicants, depressing housing demand further. As foreclosures increased, repossessions multiplied, boosting the number of homes being sold into a weakened housing market. This was compounded by attempts by delinquent borrowers to try to sell their homes to avoid foreclosure, sometimes in "short sales," in which lenders accept limited losses if homes were sold for less than the mortgage owed.

In these ways, the collapse of subprime lending fueled a downward spiral in house prices that unwound much of the increases seen in the subprime boom.

The housing crisis provided a major impetus for the recession of 2007-09 by hurting the overall economy in four major ways. It lowered construction, reduced wealth and thereby consumer spending, decreased the ability of financial firms to lend, and reduced the ability of firms to raise funds from securities markets (Duca and Muellbauer 2013).

Steps to Alleviate the Crisis

The government took several steps intended to lessen the damage. One set of actions was aimed at encouraging lenders to rework payments and other terms on troubled mortgages or to refinance "underwater" mortgages (loans exceeding the market value of homes) rather than aggressively seek foreclosure. This reduced repossessions whose subsequent sale could further depress house prices. Congress also passed temporary tax credits for homebuyers that increased housing demand and eased the fall of house prices in 2009 and 2010. To buttress the funding of mortgages, the Congress greatly increased the maximum size of mortgages that FHA would insure. Because FHA loans allow for low down payments, the agency's share of newly issued mortgages jumped from under 10 percent to over 40 percent.

The Federal Reserve, which lowered short-term interest rates to nearly 0 percent by early 2009, took additional steps to lower longer-term interest rates and stimulate economic activity (Bernanke 2012). This included buying large quantities of long-term Treasury bonds and mortgage-backed securities that funded prime mortgages. To further lower interest rates and to encourage confidence needed for economic recovery, the Federal Reserve committed itself to purchasing long-term securities until the job market substantially improved and to keeping short-term interest rates low until unemployment levels declined, so long as inflation remained low (Bernanke 2013; Yellen 2013). These moves and other housing policy actions—along with a reduced backlog of unsold homes following several years of little new construction—helped stabilize housing markets by 2012 (Duca 2014). Around that time, national house prices and home construction began rising, home construction rose off its lows, and foreclosure rates resumed falling from recession highs. By mid-2013, the percent of homes entering foreclosure had declined to pre-recession levels and the long-awaited recovery in housing activity was solidly underway.

Bibliography

Bernanke, Ben S., "A Century of U.S. Central Banking: Goals, Frameworks, Accountability," Speech given at "The First 100 Years of the Federal Reserve: The Policy Record, Lessons Learned, and Prospects for the Future," a conference sponsored by the National Bureau of Economic Research, Cambridge, MA, July 10, 2013.

Bernanke, Ben S., "Challenges in Housing and Mortgage Markets," Speech given at the Operation HOPE Global Financial Dignity Summit, Atlanta, GA, November 15, 2012.

Board of Governors of the Federal Reserve Board. "Federal Financial Regulatory Agencies Issue Final Statement on Subprime Mortgage Lending." June 29, 2007.

Case, Karl E., Robert J. Shiller, and Anne K. Thompson, "What Have They Been Thinking? Homebuyer Behavior in Hot and Cold Markets," *Brookings Papers on Economic Activity*, Fall 2012, 265-98.

DiMartino, Danielle, and John V. Duca. "The Rise and Fall of Subprime Mortgages," Federal Reserve

Bank of Dallas *Economic Letter* 2, no. 11 (November 2007): 1-8.

Duca, John V. "The Long-Awaited Housing Recovery," Federal Reserve Bank of Dallas *Annual Report*, 2013.

Duca, John V., John Muellbauer, and Anthony Murphy. "House Prices and Credit Constraints: Making Sense of the U.S. Experience." *Economic Journal* 121, no. 552 (May 2011): 533-51.

Duca, John V., and John Muellbauer, "Tobin LIVES: Integrating Evolving Credit Market Architecture into Flow of Funds Based Macro-Models," Working Paper Series 1581, European Central Bank, Frankfurt, Germany, 2013.

Yellen, Janet L., "A Painfully Slow Recovery for America's Workers: Causes, Implications, and the Federal Reserve's Response," Speech given at "A Trans-Atlantic Agenda for Shared Prosperity" conference in Washington, DC, February 11, 2013.

Written as of November 22, 2013. See disclaimer.

VOL. 2, NO. 11
NOVEMBER 2007

EconomicLetter

Insights from the
FEDERAL RESERVE BANK OF DALLAS

The Rise and Fall of Subprime Mortgages

by Danielle DiMartino and John V. Duca

Past behavior suggests that housing markets' adjustment to more realistic lending standards is likely to be prolonged.

After booming the first half of this decade, U.S. housing activity has retrenched sharply. Single-family building permits have plunged 52 percent and existing-home sales have declined 30 percent since their September 2005 peaks (*Chart 1*).

A rise in mortgage interest rates that began in the summer of 2005 contributed to the housing market's initial weakness. By late 2006, though, some signs pointed to renewed stability. They proved short-lived as loan-quality problems sparked a tightening of credit standards on mortgages, particularly for newer and riskier products. As lenders cut back, housing activity began to falter again in spring 2007, accompanied by additional rises in delinquencies and foreclosures. Late-summer financial-market turmoil prompted further toughening of mortgage credit standards.

The recent boom-to-bust housing cycle raises important questions. Why did it occur, and what role did subprime lending play? How is the retrenchment in lending

activity affecting housing markets, and will it end soon? Is the housing slowdown spilling over into the broader economy?

Rise of Nontraditional Mortgages

Monitoring housing today entails tracking an array of mortgage products. In the past few years, a fast-growing market seized upon such arrangements as "option ARMs," "no-doc interest-onlys" and "zero-downs with a piggyback." For our purposes, it's sufficient to distinguish among prime, jumbo, subprime and near-prime mortgages.

Prime mortgages are the traditional—and still most prevalent—type of loan. These go to borrowers with good credit, who make traditional down payments and fully document their income. Jumbo loans are generally of prime quality, but they exceed the $417,000 ceiling for mortgages that can be bought and guaranteed by government-sponsored enterprises.

Subprime mortgages are extended to applicants deemed the least creditworthy because of low credit scores or uncertain income prospects, both of which reflect the highest default risk and warrant the highest interest rates. Near-prime mortgages, which are smaller than jumbos, are made to borrowers who qualify for credit a notch above subprime but may not be able to fully document their income or provide traditional down payments. Most mortgages in the near-prime category are securitized in so-called Alternative-A, or Alt-A, pools.

Some 80 percent of outstanding U.S. mortgages are prime, while 14 percent are subprime and 6 percent fall into the near-prime category. These numbers, however, mask the explosive growth of nonprime mortgages. Subprime and near-prime loans shot up from 9 percent of newly originated securitized mortgages in 2001 to 40 percent in 2006.[1]

The nonprime boom introduced practices that made it easier to obtain loans. Some mortgages required little or no proof of income; others needed little or no down payment. Homebuyers could take out a simultaneous second, or piggyback, mortgage at the time of purchase, make interest-only payments for up to 15 years, skip payments by reducing equity or, in some cases, obtain a mortgage that exceeded the home's value.

These new practices opened the housing market to millions of Americans, pushing the homeownership rate from 63.8 percent in 1994 to a record 69.2 percent in 2004. Although low interest rates bolstered homebuying early in the decade, the expansion of nonprime mortgages clearly played a role in the surge of homeownership.

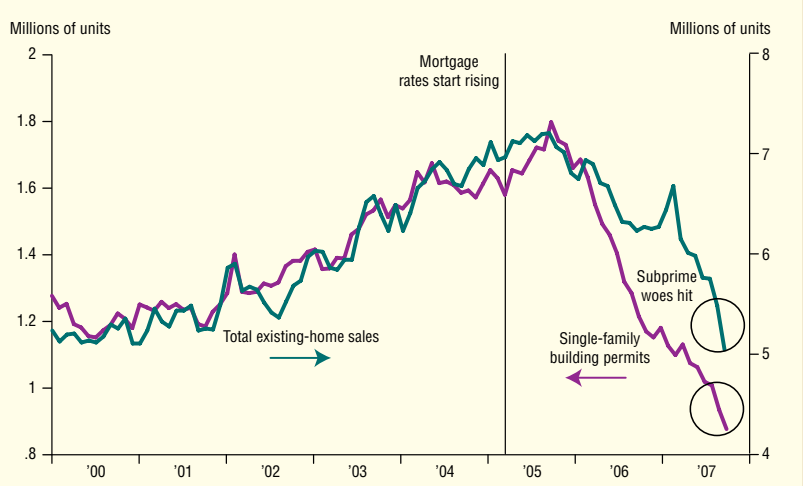
Two crucial developments spurred nonprime mortgages' rapid growth. First, mortgage lenders adopted the credit-scoring techniques first used in making subprime auto loans. With these tools, lenders could better sort applicants by creditworthiness and offer them appropriately risk-based loan rates.

By itself, credit scoring couldn't have fostered the rapid growth of nonprime lending. Banks lack the equity capital needed to hold large volumes of these risky loans in their portfolios. And lenders of all types couldn't originate and then sell these loans to investors in the form of residential mortgage-backed securities, or RMBS—at least not without added protection against defaults.

The spread of new products offering default protection was the second crucial development that fostered subprime lending growth. Traditionally, banks made prime mortgages funded with deposits from savers. By the 1980s and 1990s, the need for deposits had eased as mortgage lenders created a new way for funds to flow from savers and investors to prime borrowers through government-sponsored enterprises (GSEs) (*Chart 2, upper panel*).

Fannie Mae and Freddie Mac are the largest GSEs, with Ginnie Mae being smaller. These enterprises guarantee the loans and pool large groups of them into RMBS. They're then sold to investors, who receive a share of the payments on the underlying mortgages. Because the GSEs are federally chartered, investors perceive an

Chart 1
Housing Activity Drops Off



SOURCES: National Association of Realtors; Census Bureau; authors' calculations.

implicit government guarantee of them. Fannie Mae and Freddie Mac, however, haven't packaged many nonprime mortgages into RMBS.

Lacking the same perceived status, nonagency RMBS—those not issued by Fannie Mae, Freddie Mac and Ginnie Mae—faced the hurdle of paying investors extremely large premiums to compensate them for high default risk. These high costs would have pushed nonprime interest rates to levels outside the reach of targeted borrowers.

This is where financial innovations came into play. Some—like collateralized debt obligations (CDOs), a common RMBS derivative—were designed to protect investors in nonagency securities against default losses. Such CDOs divide the streams of income that flow from the underlying mortgages into tranches that absorb default losses according to a preset priority.

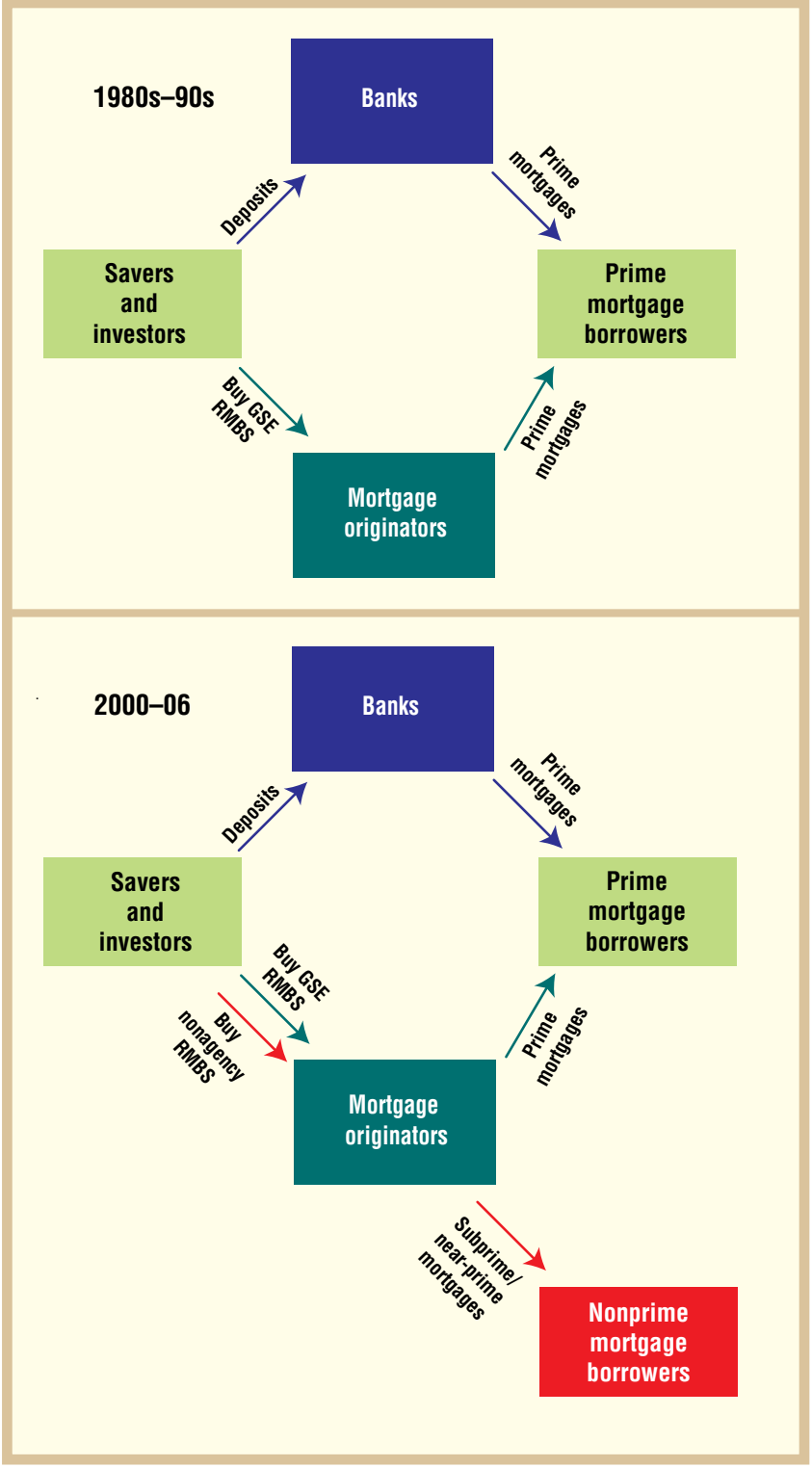
The lowest-rated tranche absorbs the first defaults on the pool of underlying mortgages, with successively higher ranked and rated tranches absorbing any additional defaults. If defaults turn out to be low, there may be no losses for higher-ranked tranches to absorb. But if defaults are much greater than expected, even higher-rated tranches may face losses.

Having confidence in the ability of quantitative models to accurately measure nonprime default risk, a brisk market emerged for securities backed by nonprime loans. The combination of new credit-scoring techniques and new nonagency RMBS products enabled nonprime-rated applicants to qualify for mortgages, opening a new channel for funds to flow from savers to a new class of borrowers in this decade (*Chart 2, lower panel*).

Nonprime Boom Unravels

As problems began to emerge in late 2006, investors realized they had purchased nonprime RMBS with overly optimistic expectations of loan quality.[2] Much of their misjudgment plausibly stemmed from the difficulty of forecast-

Chart 2
Mortgage Financial Flows



Failure to appreciate the risks of nonprime loans prompted lenders to overly ease credit standards. The result was a huge jump in origination shares for subprime and near-prime mortgages.

ing default losses based on the short history of nonprime loans.

Subprime loan problems had surfaced just before and at the start of the 2001 recession but then rapidly retreated from 2002 to 2005 as the economy recovered (*Chart 3*). This pre-2006 pattern suggested that as long as unemployment remained low, so, too, would default and delinquency rates.

This interpretation ignored two other factors that had helped alleviate subprime loan problems earlier in the decade. First, this was a period of rapidly escalating home prices. Subprime borrowers who encountered financial problems could either borrow against their equity to make house payments or sell their homes to settle their debts. Second, interest rates declined significantly in the early 2000s. This helped lower the base rate to which adjustable mortgage rates were indexed, thereby limiting the increase when initial, teaser rates ended.

Favorable home-price and interest rate developments likely led models that were overly focused on unemployment as a driver of problem loans to underestimate the risk of nonprime mortgages. Indeed, swings in home-price appreciation and interest rates may also explain why prime and subprime loan quality have trended together in the 2000s. This can be seen once we account for the fact that past-due rates—the percentage of mortgages delinquent or in some stage of foreclosure—typically run five times higher on subprime loans (*Chart 3*). When the favorable home-price and interest rate factors reversed, the past-due rate rose markedly, despite continued low unemployment.

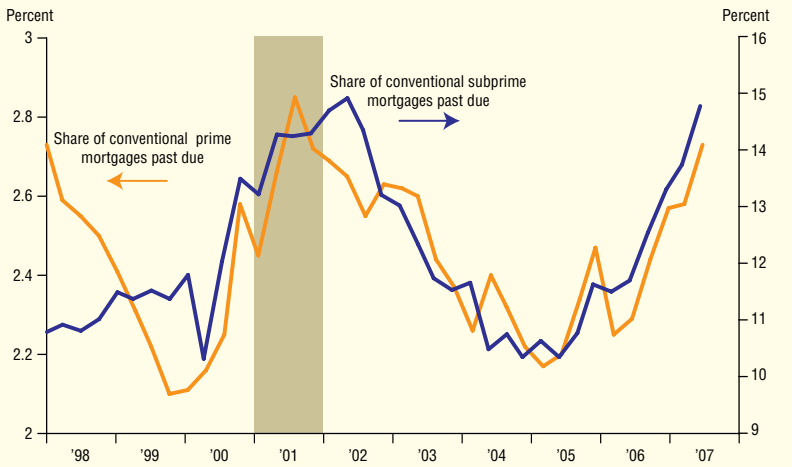
Failure to appreciate the risks of nonprime loans prompted lenders to overly ease credit standards.[3] The result was a huge jump in origination shares for subprime and near-prime mortgages.

Compared with conventional prime loans in 2006, average down payments were lower, at 6 percent for subprime mortgages and 12 percent for near-prime loans.[4] The relatively small down payments often entailed borrowers' taking out piggyback loans to pay the portion of their home prices above the 80 percent covered by first-lien mortgages.

Another form of easing facilitated the rapid rise of mortgages that didn't require borrowers to fully document their incomes. In 2006, these low- or no-doc loans comprised 81 percent of near-prime, 55 percent of jumbo, 50 percent of subprime and 36 percent of prime securitized mortgages.

The easier lending standards coincided with a sizeable rise in adjustable-rate mortgages (ARMs). Of the mortgages originated in 2006 that were later securitized, 92 percent of subprime, 68 percent of near-prime, 43 percent of jumbo and 23 percent of prime mortgages had adjustable rates. Now, with rates on one-year adjustable and 30-year fixed mortgages close, ARMs' market share has dwindled to 15 percent, less than half its recent peak of 35 percent in 2004.

Chart 3
Quality of Prime and Subprime Mortgages Deteriorates



NOTES: Conventional mortgages are those not insured by the Federal Housing Administration or guaranteed by the U.S. Department of Veterans Affairs. Data are seasonally adjusted. Shaded area indicates recession.

SOURCE: Mortgage Bankers Association.

In early 2007, investors and lenders began to realize the ramifications of credit-standard easing. Delinquency rates for 6-month-old subprime and near-prime loans underwritten in 2006 were far higher than those of the same age originated in 2004.

Other signs of deterioration also surfaced. The past-due rate for outstanding subprime mortgages rose sharply and neared the peak reached in 2002, with the deterioration much worse for adjustable- than fixed-rate mortgages. In first quarter 2007, the rate at which residential mortgages entered foreclosure rose to its fastest pace since tracking of these data began in 1970.

Lenders reacted to these signs by initially tightening credit standards more on riskier mortgages. In the Federal Reserve's April 2007 survey of senior loan officers, 15 percent of banks indicated they had raised standards for mortgages to prime borrowers in the prior three months, but a much higher 56 percent had done so for subprime mortgages. Responses to the July 2007 survey were similar.

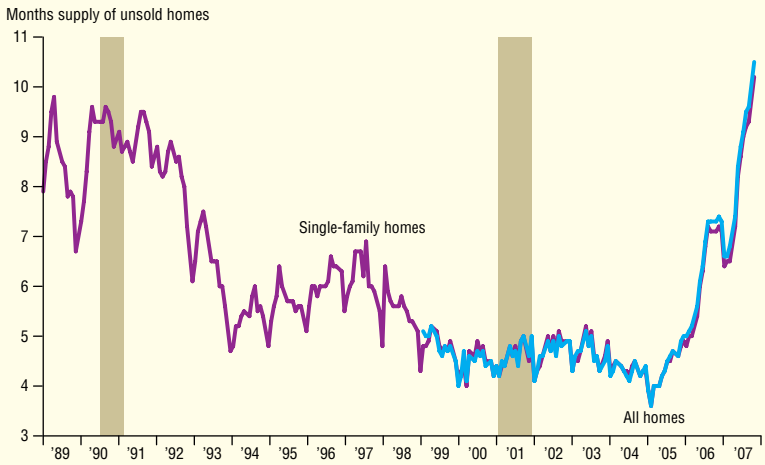
However, in the October 2007 survey the share of banks tightening standards on prime mortgages jumped to 41 percent, while 56 percent did so for subprime loans. Many nonbank lenders have also imposed tougher standards or simply exited the business altogether. This likely reflects lenders' response to the financial disruptions seen since last summer.

The stricter standards meant fewer buyers could bid on homes, affecting prices for prime and subprime borrowers alike. Foreclosures added to downward pressures on home prices by raising the supply of houses on the market. And after peaking in September 2005, single-family home sales fell in September 2007 to their lowest level since January 1998.

The number of unsold homes on the market has risen, sharply pushing up the inventory-to-sales ratio for existing single-family homes from their low in January 2005 to their highest level since the start of this series in 1989 (*Chart 4*). Condominium supply, which is reflected in the all-home numbers, has experienced an even sharper increase since early 2005.

Chart 4

Existing-Home Inventories Rise from Late-2004 Lows



NOTE: The all-homes category covers single-family homes, condominiums and nonrental apartments. Shaded areas indicate recession.

SOURCE: National Association of Realtors.

In the absence of home-price appreciation, many households are finding it difficult to refinance their way out of adjustable-rate mortgages.

These high inventories will likely weigh on construction and home prices for months to come. After peaking in early 2005, the Standard & Poor's/Case-Shiller index of year-over-year home-price appreciation in 10 large U.S. cities was down 5 percent in August—its biggest drop since 1991. While a Freddie Mac gauge of home prices posted a small year-over-year gain in the second quarter, the pace was dramatically off its highest rate, reported in third quarter 2005 (*Chart 5*).

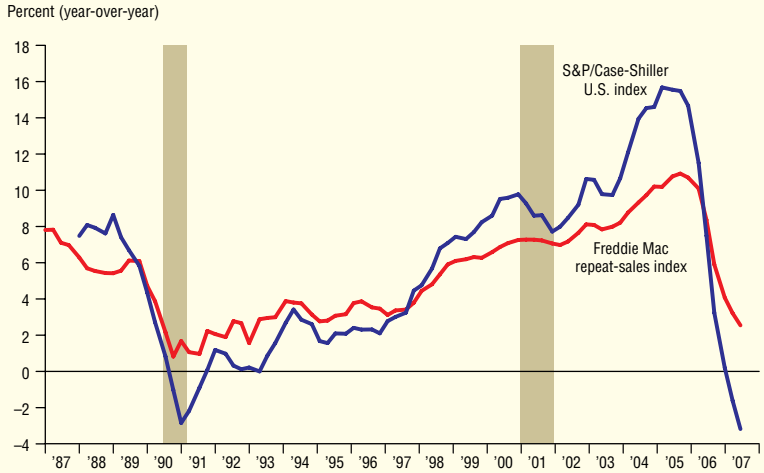
In the absence of home-price appreciation, many households are finding it difficult to refinance their way out of adjustable-rate mortgages obtained at the height of the housing boom. Larger mortgage payments could exacerbate delinquencies and foreclosures, especially with interest rate resets expected to remain high for the next year (*Chart 6*). This suggests mortgage quality will likely continue to fall off for some time.

Financial Turmoil

By August 2007, the housing market's weaknesses were apparent: loan-quality problems, uncertainty about inventories, interest rate resets and spillovers from weaker home prices. These, coupled with ratings agencies' downgrading of many subprime RMBS, led to a dramatic thinning in trading for subprime credit instruments, many of which carried synthet-

Chart 5

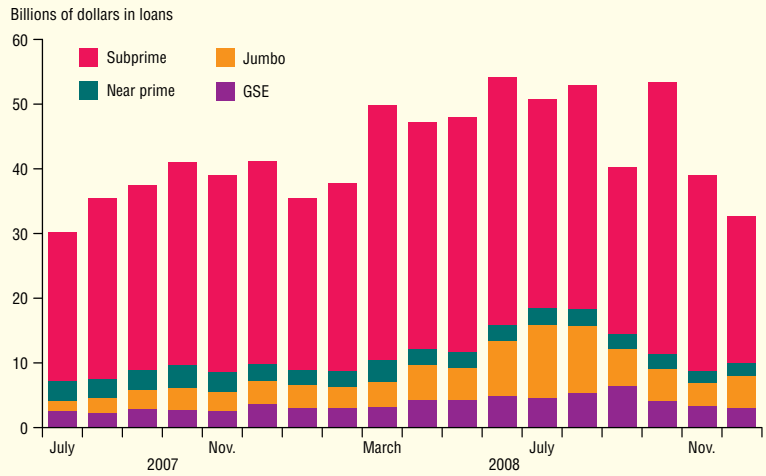
Home-Price Appreciation Plunges into Negative Territory



NOTE: Shaded areas indicate recession.
SOURCES: Freddie Mac; Standard & Poor's/Case-Shiller.

Chart 6

Scheduled Resets on Adjustable-Rate Mortgages Remain High



SOURCE: Bank of America estimates based on LoanPerformance data.

ic, rather than market, values based on models because of the instruments' illiquidity.

On Aug. 14, the paralysis in the capital markets led three investment funds to halt redemptions because they couldn't reasonably calculate the prices at which their shares could be valued. This event triggered widespread concern about the pricing of many new instruments, calling into question many financial firms' market values and disrupting the normal workings of the financial markets.

Investors sought liquidity, putting upward pressure on overnight interest rates and sparking a sharp upward repricing of risk premiums on assets, particularly those linked to nonprime mortgages. One outcome was an interest rate spike for both mortgage-backed commercial paper and jumbo mortgages, which heightened financial market uncertainty. In this environment, nonagency RMBS were viewed as posing more liquidity and default risk than those packaged by Fannie Mae and Freddie Mac.

Facing greater perceived default risk, investors began demanding much higher risk premiums on jumbo mortgage securities, pushing up the cost of funding such loans via securitization and encouraging lenders to incur the extra cost of holding more of these loans in their portfolios. This contributed to a 1 percentage point jump in jumbo interest rates between June and late August, an especially important increase given that jumbos accounted for about 12 percent of mortgage originations last year.

Although spreads between jumbo and conforming loan rates have fallen off their late-summer highs, they're still elevated. The higher rates have dampened the demand for more expensive homes, just as tighter credit standards reduced the number of buyers for lower-end homes.

Macroeconomic Effects

A housing slowdown mainly affects gross domestic product by curtailing

housing construction and home-related spending. It also reins in spending by consumers who have less housing wealth against which to borrow.[5]

Residential construction likely exerted its largest negative effect in third quarter 2006, when it subtracted 1.3 percentage points from the annual pace of real GDP growth. Last year, many forecasts predicted home construction would stop restraining GDP growth by the end of 2007 and the industry would start recovering in 2008. These predictions were made before the tightening of nonprime credit standards began in late 2006. The change in standards will likely prolong the housing downturn and delay the recovery, although it's hard to tell precisely for how long. Since single-family permits have already fallen 52 percent from their September 2005 peak, however, the worst of the homebuilding drag may be behind us.

The same may not be true for housing's indirect effect on consumption. Since the late 1990s, many homeowners have borrowed against housing wealth, using home equity lines of credit or cash-out refinancing or not fully rolling over capital gains on one house into a down payment or improvements on the next one. These mortgage equity withdrawals gave people access to lower cost, collateralized loans, which bolstered spending on consumer goods. By one measure, these withdrawals were as large as 6 to 7 percent of labor and transfer income in the early to mid-2000s.

The magnitude and timing of these withdrawals may have changed in hard-to-gauge ways. New research suggests housing wealth's impact on consumer spending grew as recent financial innovations expanded the ability to tap housing equity.[6] This is consistent with prior research on housing's connection to U.S. consumer spending.[7] Aside from the interest-rate-related refinancing surge of 2002 and 2003, mortgage equity-withdrawal movements have become increasingly sensitive to swings in home-price appreciation since a 1986 law granted a federal income tax deduction for home equity loans (*Chart 7*).

Compounding the uncertain outlook for consumption is the likely reversal of the early 2000s' mortgage credit liberalization.[8] This will put further downward pressure on home prices and housing wealth and may curtail home equity loans and cash-out refinancings. Finally, the homebuying enabled by the easing of credit standards in recent years may have been at the expense of later sales, further dampening the market going forward.

The timing of housing wealth's impact on consumption may have also changed. For example, before the advent of equity lines and cash-out refinancings, housing wealth increases may have affected U.S. consumption mainly by reducing homeowners' need to save for retirement. Since then, such financial innovations have enabled households to spend their equity gains before retirement. It's unclear how much this may be reversed by the 2007 retrenchment in mortgage availability.

Looking Ahead

The rise and fall of nonprime mortgages has taken us into largely uncharted territory. Past behavior, however, suggests that housing markets' adjustment to more realistic lending standards is likely to be prolonged.[9]

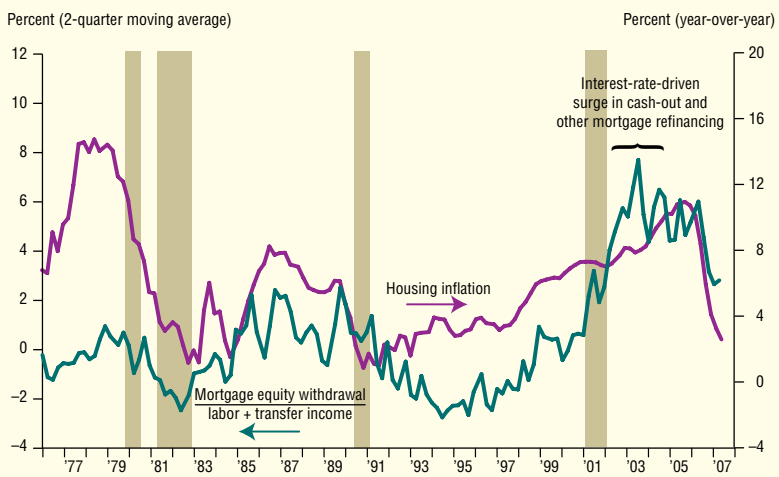
One manifestation of the slow downward adjustment of home prices and construction activity is the mounting level of unsold homes. The muted outlook for home-price appreciation, coupled with the resetting of many nonprime interest rates, suggests foreclosures will increase for some time.

The sharp reversal of trends in home-price appreciation will also dampen consumer spending growth, an effect that may worsen if the pullback in mortgage availability limits people's ability to borrow against their homes.

Although recent financial market turmoil will likely add to the housing slowdown, there are mitigating factors.

Chart 7

Mortgage Equity Withdrawals Increasingly Move with Housing Inflation and Mortgage Refinancings



NOTE: Shaded areas indicate recession.

SOURCES: Freddie Mac; Bureau of Economic Analysis; Federal Reserve, flow of funds data; authors' calculations.

First, the effect of slower home-price gains on consumer spending is likely to be drawn out, giving monetary policy time to adjust if necessary.

Second, the Federal Reserve has been successful in slowing core inflation while maintaining economic growth. This gives policymakers inflation-fighting credibility, which enables them to coax down market interest rates should the economy need stimulus.

Third, even if the tightening of mortgage credit standards undesirably slows aggregate demand, monetary policy could still, if need be, help offset the overall effect by stimulating the economy via lower interest rates. This would bolster net exports and business investment and help cushion the impact of higher risk premiums on the costs of financing for firms and households.[10]

DiMartino is an economics writer and Duca a vice president and senior policy advisor in the Research Department of the Federal Reserve Bank of Dallas.

Notes

The authors thank Jessica Renier for research assistance.

[1] See "The Subprime Slump and the Housing Market," by Andrew Tilton, *US Economics Analyst*, Goldman Sachs, Feb. 23, 2007, pp. 4–6. Securitized mortgages account for roughly 70 to 75 percent of outstanding, first-lien U.S. residential mortgages, according to estimates in "Mortgage Liquidity du Jour: Underestimated No More," Credit Suisse, March 13, 2007, p. 28.

[2] See, for example, Federal Reserve Chairman Ben Bernanke's remarks, "Housing, Housing Finance, and Monetary Policy," at the Federal Reserve Bank of Kansas City's Economic Symposium, Jackson Hole, Wyo., Aug. 31, 2007.

[3] Part of the reason lenders eased credit standards was that they planned to sell, rather than hold, the mortgages. The earlier easing of standards may have partly owed to the potential moral hazard entailed when nonconforming loans are originated with the intent to fully sell them to investors. Bernanke discusses this in his remarks at the 2007 Jackson Hole symposium (note 2).

[4] The figures are for securitized mortgages. See "Mortgage Liquidity du Jour" (note 1).

[5] "Making Sense of the U.S. Housing Slowdown," by John Duca, Federal Reserve Bank of Dallas *Economic Letter*, November 2006.

[6] See "How Large Is the Housing Wealth Effect? A New Approach," by Christopher D. Carroll, Misuzu Otsuka and Jirka Slacalek, National Bureau of Economic Research Working Paper no. 12746, December 2006; and "Housing, Credit and Consumer Expenditure," by John Muellbauer, paper presented at the Federal Reserve Bank of Kansas City's Economic Symposium, Jackson Hole, Wyo., Aug. 31–Sept. 1, 2007. Also see "Booms and Busts in the UK Housing Market," by John Muellbauer and Anthony Murphy, *Economic Journal*, vol. 107, November 1997, pp. 1701–27; and "House Prices, Consumption, and Monetary Policy: A Financial Accelerator Approach," by Kosuke Aoki, James Proudman and Gertjan Vlieghe, *Journal of Financial Intermediation*, vol. 13, October 2004, pp. 414–35.

[7] "Estimates of Home Mortgage Originations, Repayments, and Debt on One-to-Four-Family Residences," by Alan Greenspan and James Kennedy, Finance and Economics Discussion Series Working Paper no. 2005-41, Board of Governors of the Federal Reserve System, September 2005; and "Mutual Funds and the Evolving Long-Run Effects of Stock Wealth on U.S. Consumption," by John V. Duca, *Journal of Economics and Business*, vol. 58, May/June 2006, pp. 202–21.

[8] This is a possibility to which Muellbauer (2007, note 6) alludes.

[9] See Duca (note 5).

[10] For a discussion of the channels of monetary policy, see "Aggregate Disturbances, Monetary Policy, and the Macroeconomy: The FRB/US Perspective," by David Reifschneider, Robert Tetlow and John Williams, *Federal Reserve Bulletin*, January 1999, pp. 1–19.

Next EconomicLetter

Related Article: **From Complacency to Crisis: The Rise and Fall of Risk Taking in the Early 21st Century**

EconomicLetter is published monthly by the Federal Reserve Bank of Dallas. The views expressed are those of the authors and should not be attributed to the Federal Reserve Bank of Dallas or the Federal Reserve System.

Articles may be reprinted on the condition that the source is credited and a copy is provided to the Research Department of the Federal Reserve Bank of Dallas.

Economic Letter is available free of charge by writing the Public Affairs Department, Federal Reserve Bank of Dallas, P.O. Box 655906, Dallas, TX 75265-5906; by fax at 214-922-5268; or by telephone at 214-922-5254. This publication is available on the Dallas Fed web site, www.dallasfed.org.

Richard W. Fisher
President and Chief Executive Officer

Helen E. Holcomb
First Vice President and Chief Operating Officer

Harvey Rosenblum
Executive Vice President and Director of Research

W. Michael Cox
Senior Vice President and Chief Economist

Robert D. Hankins
Senior Vice President, Banking Supervision

Executive Editor
W. Michael Cox

Editor
Richard Alm

Associate Editor
Monica Reeves

Graphic Designer
Ellah Piña

FEDERAL RESERVE BANK OF DALLAS
2200 N. PEARL ST.
DALLAS, TX 75201

MEASURING THE NATION'S RENTAL HOUSING AFFORDABILITY PROBLEMS

Prepared by Eric S. Belsky, Jack Goodman, and Rachel Drew

JOINT CENTER FOR HOUSING STUDIES
HARVARD UNIVERSITY

June 2005

Measuring the Nation's Rental Housing Affordability Problems

This report was prepared for the Joint Center for Housing Studies' Rental Dynamics Initiative, supported by the MacArthur Foundation. Principal authors of the report are Eric S. Belsky, Jack Goodman and Rachel Drew.

© 2005 President and Fellows of Harvard College. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Any opinions expressed do not necessarily represent the views of Harvard University, the MacArthur Foundation, or any of the persons or organizations providing support to the Joint Center for Housing Studies.

Acknowledgements

This report was funded by the MacArthur Foundation's grant to Harvard's Joint Center for Housing Studies for their Rental Dynamics Initiative. The Joint Center and Center Director, Nicolas Retsinas, gratefully acknowledge the guidance and support of Debra Schwartz and Erika Poethig of the MacArthur Foundation, and thank them for their continuing efforts on behalf of renters and rental housing.

In the spring of 2004, the authors convened a focus session of key individuals in the academic, policy, advocacy and development fields that have studied housing affordability issues. This session examined the issues raised in this report, and fostered a discussion of current measures of rental affordability, their strengths and weaknesses, and opportunities for improving upon those measures. The authors wish to thank the participants in the focus session for their input and participation: Marty Abravenel, Bill Apgar, Bob Avery, Amy Bogdon, Don Bradley, Chip Case, Denise DiPasquale, Cushing Dolbeare, Tony Downs, Paul Emrath, Dan Garcia, Richard Green, David Hardiman, Joe Harkness, Jill Khadduri, Barbara Lipman, George McCarthy, Sandra Newman, Mark Obrinsky, Ed Olsen, Danilo Pelletiere, Erika Poethig, Bob Reid, Dave Rodda, Ann Schnare, and David Vandenbroucke. The authors would also like to thank Kathy Nelson for her comments on an earlier draft of the report.

We would also like to acknowledge the members of the Initiative's Advisory Committee, who provided helpful comments on earlier drafts of this report. The Advisory Committee includes senior officials from rental housing and mortgage lending companies, as well as nationally recognized experts drawn from trade organizations and advocacy groups involved in rental housing.

Joint Center for Housing Studies
1033 Massachusetts Avenue
5th Floor
Cambridge, MA 02138
617.495.7908
617.496.9957 F
www.jchs.harvard.edu

JCHS

TABLE OF CONTENTS

Executive Summary ..... **i**

Introduction **9**

Conventional Measures of Housing Affordability **13**

Supply-Based Variations 14

Residual Income Approaches 16

Policy Applications 16

Reasons Estimates Using the Standard Measures Vary **21**

Selection of Housing Cost Measure 21

Selection of Purchasing Power Measure 24

Selection of Datasets 27

Treatment of Special Cases 29

Deflation of Incomes and Housing Costs 32

Navigating the Choices of Measures and Methods 33

What the Conventional Measures Tell Us About Rental Affordability **37**

Numbers and Shares of Cost-Burdened Renter Households 37

Concentration of Cost burdens in the Bottom Fifth of the Income Distribution 38

Mounting Cost Burdens among the Poor 39

Increase in Problems among Moderate-Income Renters 40

The Dwindling Number of Low-Cost Rentals 40

The Supply/Demand Mismatch 42

"Housing Wages" for Modest Rentals 43

Limitations of Conventional Measures **45**

Failure to Take Tradeoffs into Account 45

Failure to Distinguish Choice from Necessity 47

Failure to Capture Changes in Housing Quality and Composition of Demand 48

Uncritical Reliance on the 30 and 50 percent of Income Standards 49

Overcoming the Limitations of the Conventional Measures **51**

Create Constant Quality Rent and Household Income Indices 51

Explore Changes in the Supply of Minimally Acceptable Rentals 53

Account for Tradeoffs 53

Link Multiple Datasets 54

Expand Survey Coverage 55

Conclusion **57**

References **59**

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

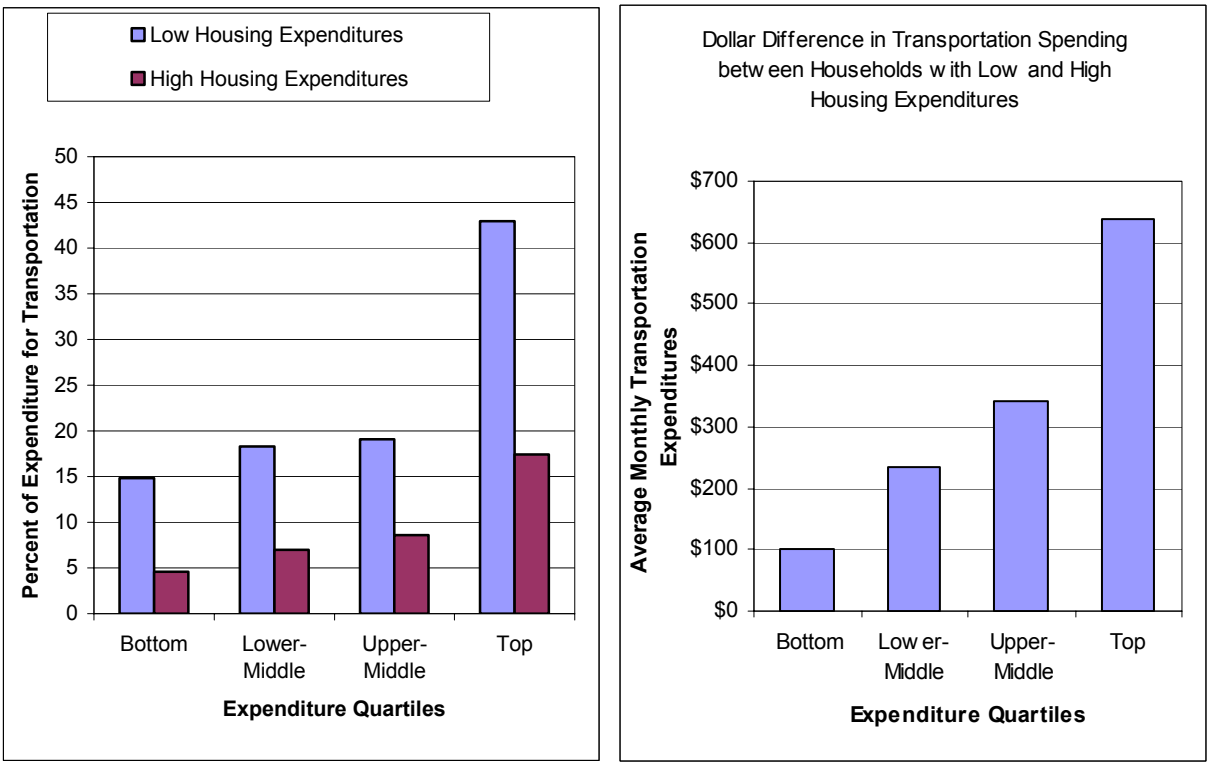
It is taken as fact by nearly all housing policy analysts that the most common housing problem facing Americans is the gap between what people can comfortably pay for housing and what it costs. Many federal, state, and local housing policies and programs over the last century have been aimed at reducing 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.

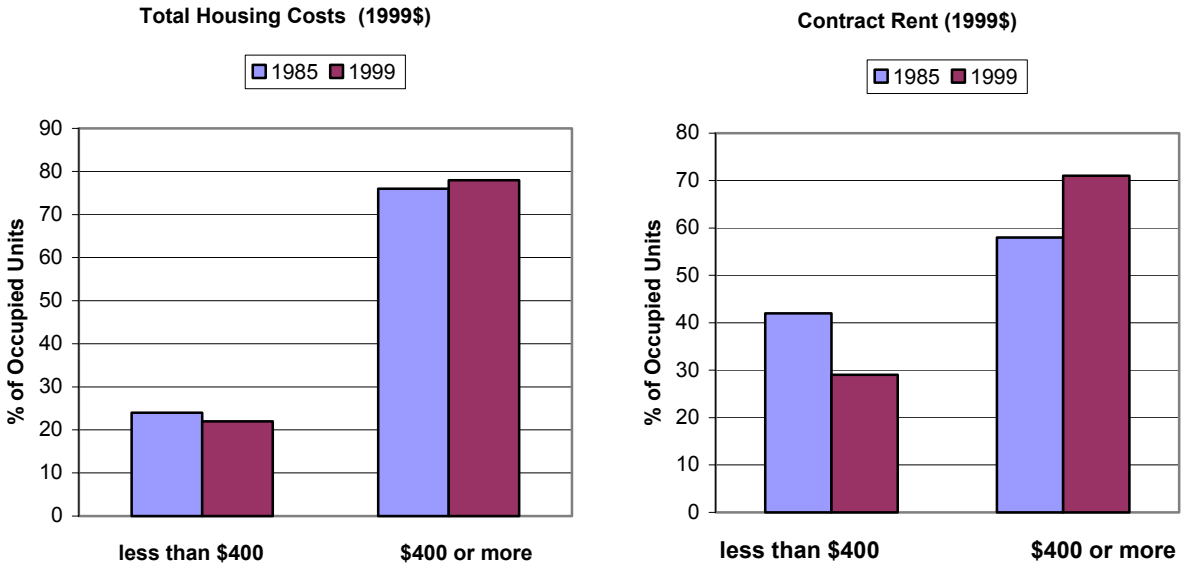
A key choice is whether to use gross rent or contract rent. Measures of gross rent (which includes all utilities payments) and contract rent (the amount paid to the property manager) differ not only in level but also in long-term growth. Level differences are influenced by the fact that contract rents 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.

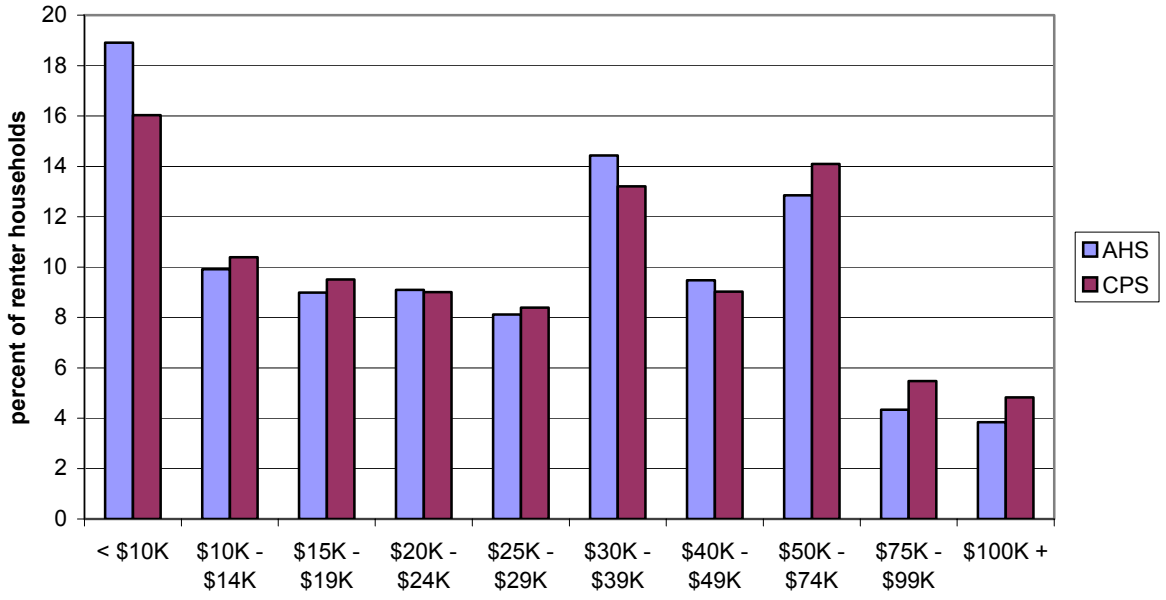
[3] MHC, p. 16

[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.

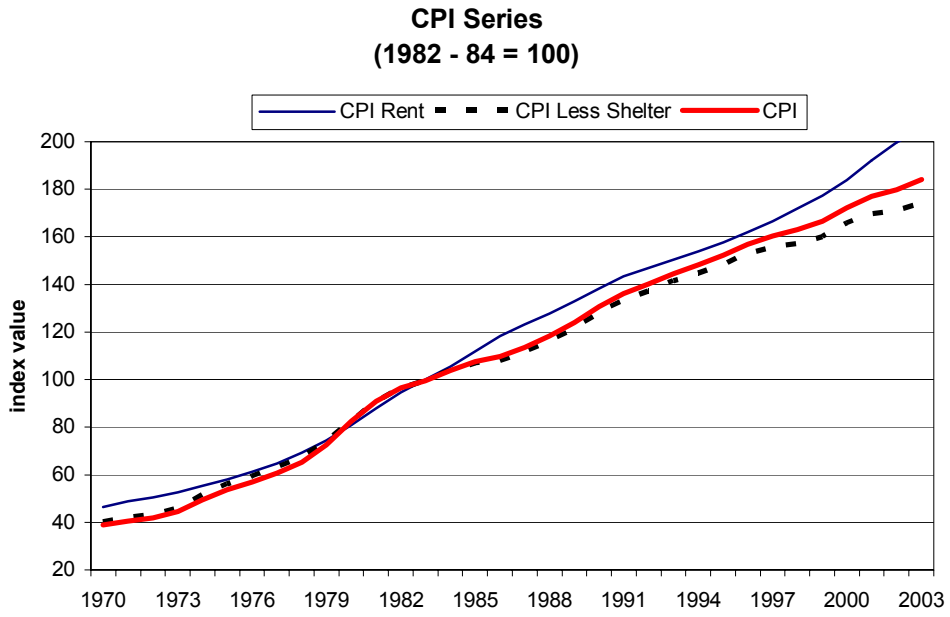
In conclusion, differences in the treatment of special cases can be expected and inevitably result in differences in reported estimates even when the same measure of purchasing power and measure of rent costs are used to quantify rental affordability problems.

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.

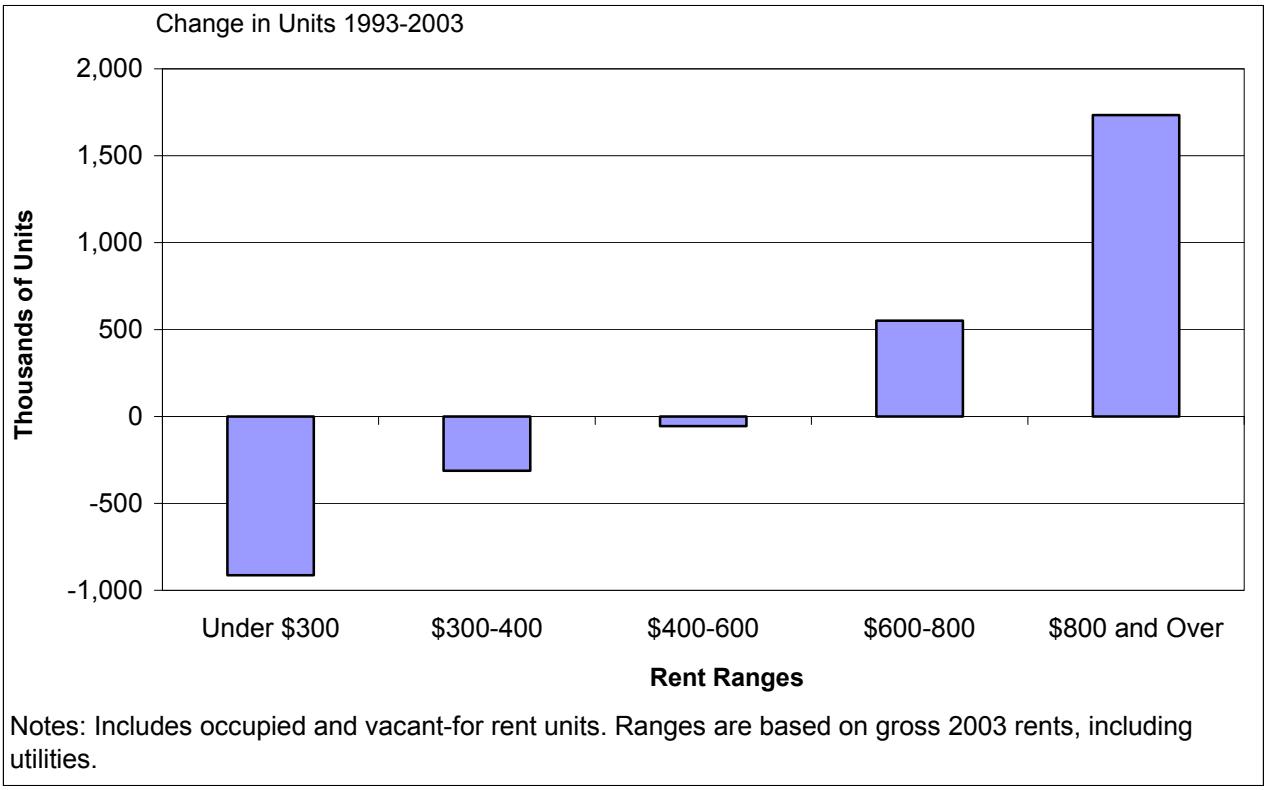
The Dwindling Number of Low-Cost Rentals

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.

---

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.

REFERENCES

Angrist, J. and Krueger, A., 1992. "The Effect of Age at School Entry on Educational Attainment: An Application of Instrumental Variables with Moments from Two Samples," *Journal of the American Statistical Association* 87, no. 418, p. 328-336.

Apgar, W. Jr. 1990. "The Nation's Housing: A Review of Past Trends and Future Prospects for Housing in America". In *Building Foundations*, Denise DiPasquale and Langley C. Keyes, editors, University of Pennsylvania Press, p. 25-59.

Belsky, E., and Di, Z. 2002. "How Great Are the Nation's Worst Case Housing Needs? A Plea for Cautious Interpretation," working paper series, Joint Center for Housing Studies, Harvard University.

Bogdon, A., and Can, A. 1997. "Indicators of Local Housing Affordability: Comparative and Spatial Approaches," Real Estate Economics, Vol. 25:1, p. 43-80.

Bostic, R., Gabriel, S., and Painter, G. 2003. "Housing Wealth, Financial Wealth, and Consumption: New Evidence from Micro Data," working paper series, Lusk Center for Real Estate Studies, University of Southern California.

Center for Housing Policy, 2005 "Something's Gotta Give: Working Families and the Cost of Housing," New Century Housing, Vol. 5-1.

Chakrabarty, R. 1996. "American Housing Survey: A Quality Profile," prepared for the U.S. Census Bureau, Current Housing Reports, H121/95-1.

DiPasquale, D. and Kahn, M. 1999. "Measuring Neighborhood Investments: An Examination of Community Choice," Real Estate Economics, Vol. 27-3, p. 389-424.

Downs, A. 2004. *Still Stuck in Traffic*. Brookings Institution Press, Washington, D.C.

Follain, J., Kogut, D., and Marschoun, M. 2000. "Analysis of the Time-Series Behavior of Rents of Multifamily Housing Units," unpublished manuscript.

Glaeser, E., and Kahn, M. 2003. "Sprawl and Urban Growth," National Bureau of Economic Research Working Papers: 9733.

Goodman, J. 2001. "Housing Affordability in the United States: Trends, Interpretations and Outlook", consultant's report prepared for the Millennial Housing Commission.

Goodman, J. 2005. "Constant Quality Rent Indexes for Affordable Housing," unpublished.

Hill, M. 2003. "Who Has Severe Housing Cost Burdens and How Persistent Over Time Are They? Using Panel Study of Income Dynamics Data to Assess American Housing Survey Income Data" project report, Survey Research Center, Institute for Social Research, University of Michigan.

Joint Center for Housing Studies of Harvard University. 2005. *State of the Nation's Housing 2004*. Cambridge, MA.

Koebel, C.T., and Krishnawamy, A. 1993. "The Impact of Noncash Transfers on Rental Affordability," Journal of Urban Affairs, 15:6 p. 507-513.

Koebel, C.T., and Renneckar, P. 2003. "A Review of the Worst Case Housing Needs Measure," a report to the U.S. Department of Housing and Urban Development.

Kutty, N. 2005. "A New Measure of Housing Affordability: Estimates and Analytical Results," Housing Policy Debate, Vol. 16.1.

Lerman, D. and Reeder, W. 1987. "The Affordability of Adequate Housing," *AREUEA Journal*, 15:4, p. 389 – 404.

Levine, N. 1999. "The Effects of Local Growth Controls on Regional Housing Production and population Redistribution in California," Urban Studies 36 p. 2047.

Malpezzi, S., Chun, G., and Green, R. 1998. "New Place-to-Place Housing Price Indexes for U.S. Metropolitan Areas, and Their Determinants," Real Estate Economics, 26:2, p. 235-274.

Millennial Housing Commission. 2002. Meet Our Nation's Housing Challenges. Report of the Bipartisan Millennial Housing Commission Appointed by the Congress of the Unites States.

National Low Income Housing Coalition. 2004. "Out of Reach 2003: America's Housing Wage Climbs". Washington, D.C.

Nelson, K. 1994. "*Whose* Shortage of Affordable Housing?" Housing Policy Debate, Vol. 5:4, p. 401-442.

Nelson, K. 2002. "Housing Needs and Effective Policies in High-Tech Metropolitan Economies," Housing Policy Debate, Vol. 13:2.

Nelson, K. et al. 1998. "Affordable Rental Housing: When to Build, When to Preserve, and When to Subsidize?" Office of Policy Development and Research, Department of Housing and Urban Development, unpublished.

Nelson, K., and Khadduri, J. 1992. "To Whom Should Limited Housing Resources Be Directed?" Housing Policy Debate, Vol. 3:1.

Quigley, J., and Raphael, S. 2004. "Is Housing Unaffordable? Why Isn't It More Affordable?" Journal of Economic Perspectives, vol. 18:1, p. 191-214.

Shroder, M. 2002. "Does Housing Assistance Perversely Affect Self-Sufficiency? A Review Essay" Journal of Housing Economics, Vol. 11, p. 381–417.

Stegman, M., Davis, W., and Quercia, R. 2003. "Tax Policy as Housing Policy: The EITC's Potential to Make Housing More Affordable for Working Families," Brookings Institution, Center on Urban and Metropolitan Policy, Survey Series.

Stone, M. 1993. *Shelter Poverty: New Ideas on Housing Affordability*, Philadelphia: Temple University Press.

Thalmann, P. 2003. House poor' or simply 'poor'? *Journal of Housing Economics* 12 (2003) 291-317.

U.S. Department of Housing and Urban Development, 1998. *U.S. Housing Market Conditions*, Vol. 4.

U.S. Department of Housing and Urban Development, 2001. "A Report on Worst Case Housing Needs in 1999: New Opportunity Amid Continuing Challenges," Office of Policy Development and Research.

U.S. Department of Housing and Urban Development, 2002. "The American Community Survey: Challenges and Opportunities for HUD," submitted by ORC Macro.

U.S. Department of Housing and Urban Development. 2003. "Trends in Worst Case Needs for Housing: A Report to Congress on Worst Case Housing Needs Plus Update on Worst Case Needs in 2001," Office of Policy Development and Research.

Thibodeau, T. 1995. "House Price Indices from the 1984 – 1992 MSA American Housing Surveys," Journal of Housing Research, Vol. 6:3 p. 439-481.

The Urban Institute. 2002. *America's Homeless II: Populations and Services*.

The Housing Affordability Gap for Extremely Low-Income Renters in 2013

Josh Leopold, Liza Getsinger, Pamela Blumenthal, Katya Abazajian, and Reed Jordan

June 2015

Since 2000, rents have risen while the number of renters who need low-priced housing has increased. These two pressures make finding affordable housing even tougher for very poor households in America. Nationwide, only 28 adequate and affordable units are available for every 100 renter households with incomes at or below 30 percent of the area median income. Not a single county in the United States has enough affordable housing for all its extremely low-income (ELI) renters. The number of affordable rental homes for every 100 ELI renters ranges from 7 in Osceola County, Florida, to 76 in Worcester County, Maryland.[1]

This brief provides information on national trends in housing affordability for ELI renter households, as well as insights into which major counties are making the most and least progress on closing the housing affordability gap. The findings are based on data from the 2000 Census as well as three-year averages from the 2005, 2006, and 2007 and the 2011, 2012, and 2013 1-year American Community Surveys. For the sake of simplicity we refer to data averaged from 2011–13 estimates as 2013.

This brief is the first publication on housing affordability to combine detailed county-level data on ELI renter households (those with incomes at or below 30 percent of the area median) and the impact of US Department of Housing and Urban Development (HUD) rental assistance. Its four key findings:

- **Supply is not keeping up with demand.** Between 2000 and 2013, the number of ELI renter households increased 38 percent, from 8.2 million to 11.3 million. At the same time, the supply

of adequate, affordable, and available rental homes for these households increased only 7 percent, from 3.0 million to 3.2 million.

- **The gap between ELI renter households and suitable units is widening over time.** From 2000 to 2013, the number of adequate, affordable, and available rental units for every 100 ELI renter households nationwide declined from 37 to 28.
- **Extremely low-income renters increasingly depend on HUD programs for housing.** More than 80 percent of adequate, affordable, and available homes for ELI renter households are HUD-assisted, up from 57 percent in 2000.
- **The supply of adequate, affordable, and available units varies widely across the country.** Among the 100 largest US counties, Suffolk County, which includes Boston, comes closest to meeting its area's need, with 51 units per 100 ELI renter households. Denton County, part of the Dallas-Ft. Worth metropolitan area, has the largest housing gap, with only 8 units per 100 ELI renters. Rust Belt areas (e.g., Detroit, MI; Chicago, IL, and Milwaukee, WI) have seen large declines in adequate, affordable, and available units. Most counties had fewer units available in 2013 than 2000. Notable exceptions to this trend include Suffolk, MA; Los Angeles, CA; and Miami, FL, which have expanded their number of available units since 2000.

To expand on the well-documented challenges of housing affordability for low-income renters, our brief provides county-level estimates of housing affordability, as well as national and state estimates.[2] Our integration of household-level data on assisted households from HUD allows us to show the impact, by county, of federal rental assistance programs on addressing housing needs for ELI renters. It also allows for a more detailed trend analysis of changes in affordability driven by changes in the economy, the rental market, and the availability of rental assistance.

These county estimates provide useful information to national and local policymakers, the media, practitioners, and the public. Local decisionmakers can use this analysis to help guide policymaking and programing toward the housing needs of ELI households.

The Affordability Crisis for Extremely Low-Income Renters

The nationwide lack of sufficient affordable housing for poor households is well documented (see, e.g., HUD 2013 and JCHS 2014). Affordability is a particular challenge for extremely low-income households. HUD sets income limits for its programs, adjusting for household size. In 2013, the ELI limit for a household of four ranged from $12,600 to $32,800, depending on location. In most counties the income limit was $22,000 or less.

Without subsidies, it is nearly impossible to build and operate rental housing that is affordable to ELI renters in most markets (JCHS 2014). Developers cannot make developments targeted to ELI renters "pencil out," meaning that the expected revenue stream from rents is too low to cover the costs of maintaining the property and to pay back the debt incurred in development. The largest subsidy

source for low-income housing development—the Low-Income Housing Tax Credit—is designed to make units affordable to households with incomes at 50–60 percent of area median income (AMI)—up to twice the ELI limit. The assistance available through federal block grant programs (such as the Community Development Block Grant) and most state and local programs cannot keep housing affordable to ELI renters over the long term (Cunningham, Leopold, and Lee 2014).

Meanwhile, the stock of nonsubsidized housing that is affordable to ELI renters has steadily declined. Thirteen percent of unassisted units with rents at or below $400 in 2001 had been demolished by 2011. Nearly half (46 percent) of the remaining units were built before 1960, putting them at high risk of demolition (JCHS 2013).

HUD's rental assistance programs are increasingly the only source of affordable housing for ELI renters in many areas. Unlike other safety net programs—like Social Security, food stamps, Medicaid, or Medicare—housing assistance is not available to all eligible applicants; only 24 percent of the 19 million eligible households receive assistance (JCHS 2013). As a result, millions of low-income individuals and families face serious challenges ranging from severe cost burdens to overcrowding to homelessness.

HUD's biennial Worst Case Needs report documents housing needs for very low income renters (people with incomes no greater than 50 percent of AMI) who do not receive rental assistance. HUD considers two forms of worst-case housing needs: severe rent burden, which means spending 50 percent or more of household income on rent and utilities; and severely inadequate housing, which refers to housing with one or more serious heating, plumbing, and electrical or maintenance problems. HUD found 7.7 million very low income unassisted renters, or 42 percent of renters in this group, had worst-case housing needs in 2013. Severe rent burdens accounted for more than 97 percent of these cases (Steffen et al. 2015). Incidences of worst-case needs have decreased from their peak in 2011, as renters' incomes have risen; still, the number of such needs is 49 percent greater in 2013 than in 2003 (Steffen et al. 2015).

Severe housing needs are so common partly because low-wage workers do not earn enough to afford adequate housing. A worker earning the federal minimum wage would need to work 104 hours a week to afford a typical two-bedroom apartment. Renters on average earn $14.64 an hour, while full-time wage earners on average need to earn $18.92 an hour to afford a two-bedroom apartment (Arnold et al. 2014). At the state level, the average hourly wage a full-time worker needs to earn to afford a two-bedroom apartment range from $12.56 in Arkansas to $31.54 in Hawaii.

BOX 1

An Overview of Federal Rental Assistance

The **Section 8 Housing Choice Voucher Program** (HCV) is the dominant federal program, with over $19 billion in spending in 2014. Through vouchers, it provides households the opportunity to find eligible housing in the private rental market. Approximately 2.1 million low-income families use these tenant-based vouchers, administered by a network of 2,230 public housing authorities (Rice 2014). Vouchers typically help pay the difference between what a family can afford and the actual rent of a unit that meets HUD's health and safety standards, up to a locally determined rent limit. Families are expected to contribute the larger amount of either 30 percent of family income or the minimum rent amount of up to $50. The program particularly targets extremely low-income families; by law, 75 percent of newly admitted households must be ELI. Public housing authorities, or PHAs, can dedicate up to 20 percent of their vouchers for linking vouchers to a specific unit; these "project-based" units are sometimes embedded in affordable multifamily buildings funded through the Low-Income Housing Tax Credit or dedicated to supportive housing to provide an ongoing operating subsidy.

Section 8 Project-Based Rental Assistance operates through an agreement between a private property owner and HUD. The program serves 1.2 million families (CBPP 2013). Tenants must contribute the greater of 30 percent of their income or a minimum rent of $25, while the subsidy compensates the landlord for the remaining costs of operating and maintaining the property. Like the HCV program, project-based rental assistance targets ELI households: by law, at least 40 percent of the assisted units in a development must be designed for ELI households. However, approximately 73 percent of units with project-based assistance are occupied by ELI households. The vast majority of developments were built between the 1960s and 1990s, and the program hasn't added to the supply of new rental homes in many years (Treskon and Cunningham forthcoming).

Public housing units are owned and operated by local public housing agencies. The program currently serves 1.2 million households, 72 percent of which have extremely low incomes. Some public housing developments have been redeveloped as mixed-income properties, primarily through HOPE VI and the Choice Neighborhoods Initiative. Absent these efforts, new public housing is not being developed, and many existing developments have large capital investment needs following years of use and deferred maintenance. HUD's Rental Assistance Demonstration provides a mechanism by which public housing can be converted to property-based Section 8 contracts.

The National Trend Shows Economic Improvements for Renters but Continued Loss of Affordable Rental Housing

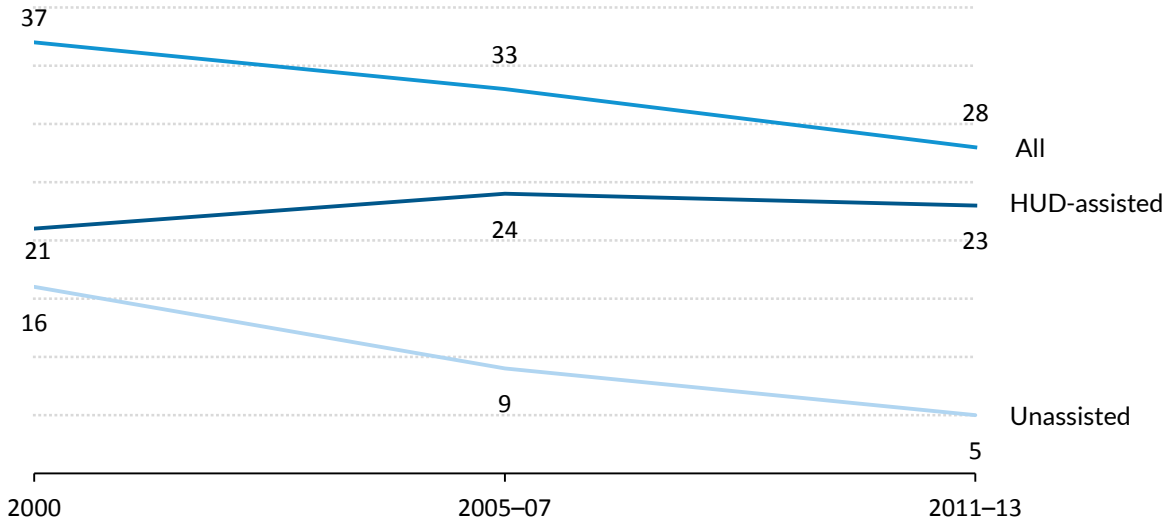
From 2000 to 2013, the share of rental housing that was adequate, affordable, and available to ELI renters went from 37 units per 100 ELI renters to 28—a 24 percent decrease. The change in units is primarily the result of losing unassisted affordable units. While the number of HUD-assisted units for every 100 ELI renters has increased slightly during this period, from 21 to 23, the number of unassisted units has fallen from 16 to 5.

This analysis underscores that the private market alone does not provide enough affordable housing. Federal rental assistance is an important mechanism to preserve affordable and available units, but it is far from keeping pace with need.

FIGURE 1

Available Housing for Extremely Low-Income Renters Has Declined between 2000 and 2013

Affordable units per 100 extremely low-income renter households



Sources: 2000 Decennial Census, and three-year averages from the 2005,2006, and 2007 and 2011, 2012, and 2013 ACS 1-year sample data from the Integrated Public Use Microdata Series merged with data from HUD on income limits and households receiving rental assistance.

HUD Rental Assistance Programs Are the Predominant Source of Affordable Housing for ELI Renters

In 2013, nearly 4.6 million households received rental assistance from HUD. Seventy-five percent of these households (3.4 million) had extremely low incomes, ranging from 72 percent in public housing to 76 percent in the HCV program. The number of families HUD assists and the prevalence of each assistance type has changed between 2000 and 2013 (table 1). Nearly half of assisted ELI renters (1.6 million) participate in the Housing Choice Voucher program, which provides participants with a voucher to rent housing in the private market. More than 750,000 ELI renters live in public housing, and nearly 900,000 live in project-based Section 8 housing.

TABLE 1

ELI Households in HUD-Assisted Housing Have Increased since 2000

	2000	2006	2013
Housing Choice Voucher program	839,420	1,364,437	1,609,798
Multifamily Section 8 program	701,519	857,415	893,257
Public housing	497,019	692,354	769,864
Other HUD programs	811,378	986,448	1,048,131
All	**2,147,817**	**3,043,239**	**3,427,793**

Source: Data provided by the US Department of Housing and Urban Development from the Public and Indian Housing Information Center and the Tenant Rental Assistance Certification System.

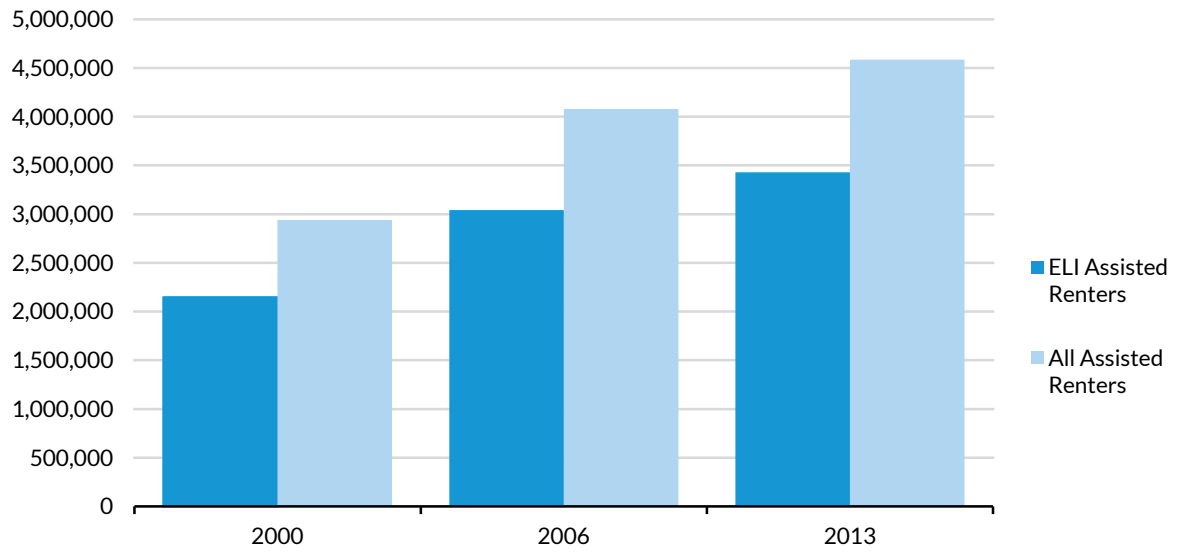
The growth in all programs reflects HUD's strategic goal of increasing housing assistance by 224,000 units, which it mainly achieved by pressing public housing authorities (PHAs) to use their full budget authority and fix uninhabitable units. For example, the American Recovery and Reinvestment Act provided $3 billion for capital improvements to public housing. Some jurisdictions constructed mixed-income developments, shifting some of the public housing stock to vouchers. Progress was made, as indicated in table 1, but sequestration was a major disruption.

Figure 2 shows the total number of renter households and ELI renter households receiving HUD assistance in 2000, 2006, and 2013. The numbers rise steadily, even with a decline in assisted households stemming from the 2013 budget sequestration (Rice 2014). The proportion of HUD-assisted renters that have extremely low incomes has stayed more or less the same during this period.

FIGURE 2

Renters Receiving HUD Assistance Have Risen Steadily since 2000

Total and extremely low-income (ELI) renters receiving HUD rental assistance, 2000–13



Source: Data provided by the US Department of Housing and Urban Development from the Public and Indian Housing Information Center and the Tenant Rental Assistance Certification System.

HUD rental assistance does not guarantee affordability. As shown in figure 3, 26 percent of HUD-assisted ELI renters pay more than 30 percent of their monthly income on housing. The HCV program had the highest percentage of rent-burdened households (42 percent). Rent burden was much lower in public housing (14 percent) and the multifamily Section 8 program (9 percent).

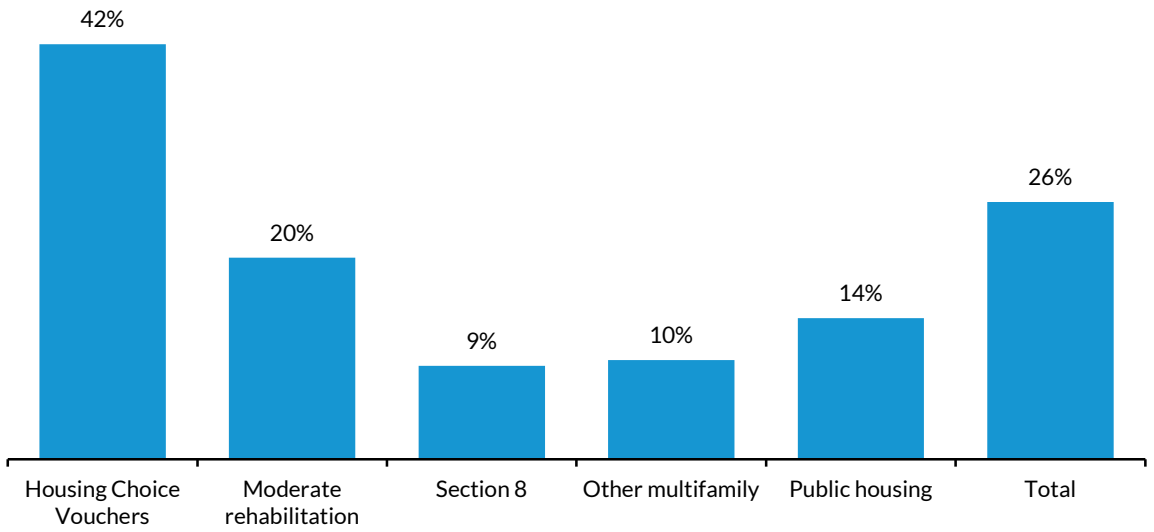
HUD programs provide assistance on a sliding scale, with assisted renters paying 30 percent of their monthly income, after certain adjustments, on housing. However, assisted households can still be rent-burdened for several reasons:

- Minimum rents: PHAs can, and most do, establish a minimum monthly rent of up to $50.
- Alternative rents: Some PHAs have been given the flexibility to implement alternative rents like flat rents, tiered rents, or rents that require households to pay higher percentages of their incomes.
- Renting above the payment standard: Households may rent units that cost more than the local payment standard.

FIGURE 3

A Quarter of HUD-Assisted ELI Renters Are Rent-Burdened

Share of ELI renters paying more than 30% of their income on rent



Source: Data provided by the US Department of Housing and Urban Development from the Public and Indian Housing Information Center and the Tenant Rental Assistance Certification System.

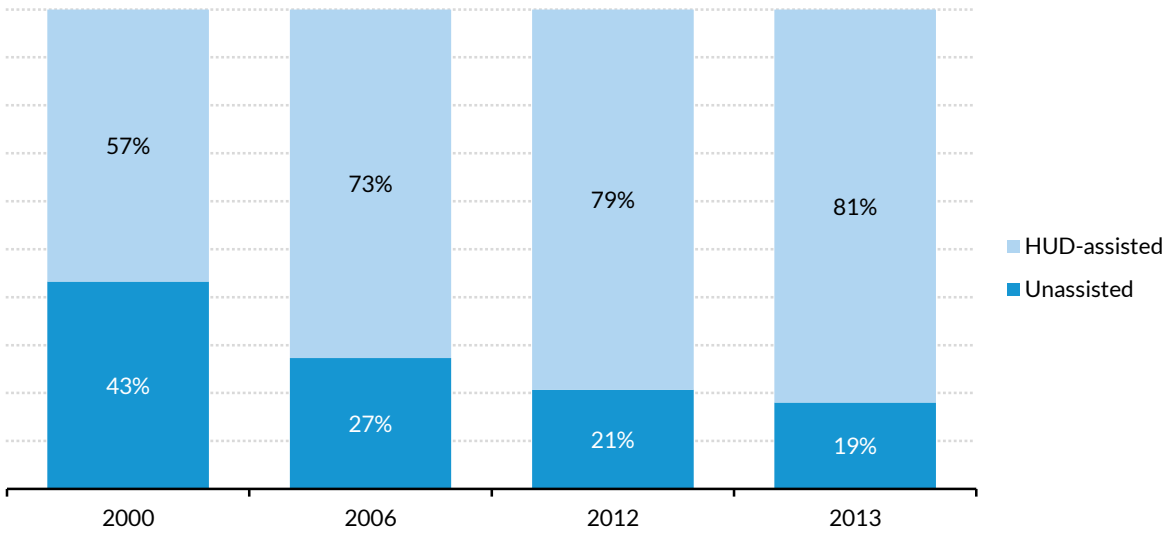
All PHAs set a payment standard, by bedroom size, that dictates the maximum rent they will subsidize for families in the HCV program. If households choose to rent over this limit—to rent a unit in a neighborhood with better schools, for example—they must pay the difference between the market rent and the payment standard. In their first year in the program, households cannot have their rent burden exceed 40 percent. The cap does not apply after the first year. Previous analysis has shown that households renting over the payment standard are the single biggest cause of rent burden, which explains why rent-burden rates are so much higher in the HCV program than in other HUD programs (McClure 2005).

Excluding rent-burdened households, HUD rental assistance programs keep housing affordable for nearly 2.6 million ELI renters. This is roughly four times the number of non-HUD-assisted ELI renters in adequate and affordable housing (610,000). From 2000 to 2013, the number of ELI renter households with adequate and affordable housing through HUD programs has increased from 1.7 million to 2.6 million. By contrast, the number of ELI renters with adequate and affordable housing absent HUD assistance has fallen from 1.3 million to 610,000. In 2000, 57 percent of ELI renters with adequate and affordable housing received HUD assistance; by 2013 that share had risen to 81 percent, reflecting the loss of market-rate affordable housing (figure 4).

FIGURE 4

HUD Assistance Plays a Critical Role in Enabling ELI Renters to Obtain Adequate and Affordable Housing

Share of ELI renters in adequate and affordable housing with and without HUD assistance



Source: ACS and HUD data, 2000–13.

Availability of Adequate and Affordable Rental Housing by County

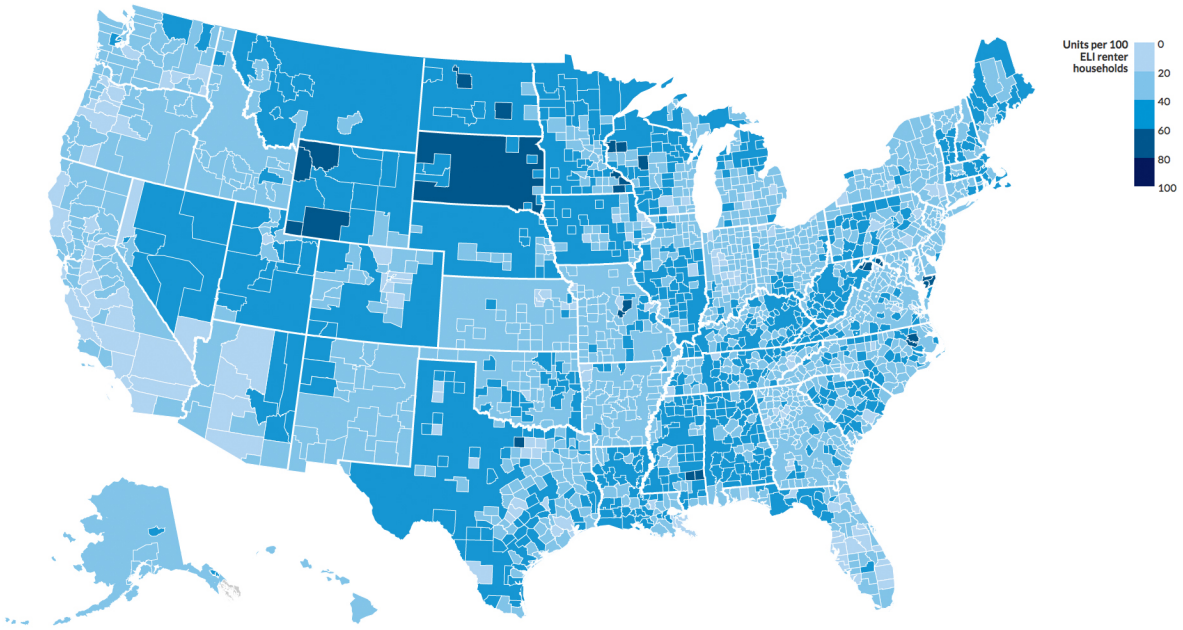
Our interactive map shows the number of adequate, affordable, and available housing units for ELI renters in each county in the United States. For this brief, we focus on the 100 counties with the highest populations as of 2013.[3]

The Northeast Has a Greater Supply of Affordable Housing for Extremely Low-Income Renters than the South or the West

Figure 5 shows the gap between the number of ELI renter households and the number of affordable and adequate rental units available to them in each county nationwide. The lightest areas have the least available and affordable housing for ELI renters and the darkest areas have the most. The affordability gap is lowest in the Northeast, Appalachia, the Midwest, and the Great Plains and is highest in the South and the West. Our related feature article describes how different state and local housing policies can contribute to higher and lower gaps.

FIGURE 5

Number of Adequate, Affordable, and Available Housing Units for Extremely Low-Income Renters by County, 2013



Sources: 2011, 2012, and 2013 ACS 1-year sample data from the Integrated Public Use Microdata Series merged with data from HUD on income limits and households receiving rental assistance.

Table 2 shows which of the 100 largest US counties have the greatest share of adequate, affordable, and available rental units for ELI renters. Suffolk County, which includes Boston, is ranked highest; even Suffolk, however, has only enough adequate, affordable, and available rental units for about half of its ELI renter households. Five of the 10 counties with the smallest affordability gap are in Massachusetts; only one—San Francisco—is outside the Northeast. Counterintuitively, some counties with the most expensive housing markets—including Boston, San Francisco, and Washington, DC—have the smallest gap in units affordable to ELI renters. For the most part, these results reflect a higher proportion of rental units targeted to ELI renters, not fewer ELI renters. The higher share of affordable units may reflect a local, state, or federal decision to focus on ELI households.

TABLE 2

Large Counties with the Smallest Gap in Affordable Units for ELI Renters, 2013

County	Population	ELI renter households	Adequate, affordable, and available units	Units per 100 renters	Rank
Suffolk, MA	745,716	74,262	37,703	51	1
Norfolk, MA	682,501	23,018	10,222	44	2
Essex, MA	756,508	40,208	17,733	44	3
District of Columbia	633,167	52,633	22,300	42	4
Worcester, MA	805,989	37,265	15,612	42	5
Middlesex, MA	1,537,150	60,809	25,376	42	6
Fairfield, CT	933,794	38,710	14,511	37	7
San Francisco, CA	826,626	64,697	23,112	36	8
Hartford, CT	897,426	43,454	15,442	35	9
Allegheny, PA	1,229,582	51,549	18,260	35	10

Source: Three-year averages from the 2011, 2012, and 2013 ACS 1-year sample data from the Integrated Public Use Microdata Series merged with data from HUD on income limits and households receiving rental assistance.

Denton County, Texas, part of the Dallas-Ft. Worth metropolitan area, has roughly 8 adequate, affordable, and available units for every 100 ELI renters, the greatest gap of any large county (table 3). Eight of the 10 counties with the biggest gap in affordability for ELI renters are in Georgia, Florida, or Texas; Clark County, Nevada, which includes Las Vegas, and San Joaquin, California, which includes Fresno, are the two exceptions.

The counties with the largest affordability gap typically have both fewer ELI renters and far fewer affordable rentals than the counties with the smallest gap. For example, Suffolk County has a similar total population as Denton County (745,716 vs. 707,550), and nearly five times as many ELI renters (74,262 vs. 14,924). But Suffolk has more than 30 times more affordable units for ELI renters than Denton (37,703 vs. 1,207). Clark County, Nevada, which includes Las Vegas, has a population of more than 2 million but one-third of the affordable units of Washington, DC, which has a population of less than 650,000. This disparity is partly the result of federal rental assistance not keeping pace with population growth in the South and Southwest. For example, Suffolk County has over 32,000 federally assisted units, and Denton has roughly 1,000, and partly a result of differences in state and local investments in affordable housing development and preservation. For example, Massachusetts has a number of state-run programs to supplement federal rental assistance.[4]

TABLE 3

Large Counties with the Biggest Gap in Affordable Units for ELI Renters, 2013

County	Population	ELI renter households	Adequate, affordable, and available units	Units per 100 renters	Rank[a]
Denton, TX	707,550	14,924	1,207	8	97
Gwinnett, GA	841,658	17,155	1,494,	9	96
Cobb, GA	707,248	19,510	1,767	9	95
Orange, FL	1,198,989	37,165	3,730	10	94
Clark, NV	1,997,371	66,336	7,998	12	93
Lee, FL	645,681	13,059	1,696	13	92
DeKalb, GA	706,093	30,682	4,325	14	91
San Joaquin, CA	700,220	22,831	3,306	14	90
Travis, TX	1,093,138	48,056	6,979	15	89
Collin, TX	834,110	13,433	1,959	15	88

Source: Three-year averages from the 2011, 2012, and 2013 ACS 1-year sample data from the Integrated Public Use Microdata Series merged with data from HUD on income limits and households receiving rental assistance.

[a] Four of the 100 largest counties in the United States are in New York City. Because the five New York City counties are combined in this analysis, the lowest ranking number is 97.

Boston, Los Angeles, and Miami Made the Most Progress in Closing the Affordability Gap from 2000 to 2013; Detroit Fell the Furthest Behind

Only 9 of the 100 largest counties increased the number of affordable units available per 100 ELI renters from 2000 to 2013 (table 4). Each county with a positive trend closed the gap by increasing the number of units affordable to ELI renters rather than decreasing the number of ELI renter households. Suffolk County led the way, increasing the number of units available for every 100 ELI renters from 48 to 51. Unfortunately, while these counties saw improvements in the proportion of rentals affordable to ELI renters, none were able to add enough units to match the increase in ELI renters. For example, Los Angeles added roughly 38,200 units affordable to ELI renters between 2000 and 2013, but it had an increase of 137,000 ELI renter households.

Wayne County, Michigan, which includes Detroit, and Will County, Illinois, provide contrasting examples of how counties can lose ground in this area. In Wayne County, the negative trend is the result of a precipitous drop in the supply of affordable housing for ELI renters, from about 48,000 units to about 24,500. By comparison, in Will County the number of units affordable to ELI renters stayed more or less the same, but the number of ELI renter households nearly doubled, from 5,900 to 11,100. Many counties that have lost the most affordable housing per 100 ELI renters are large Midwestern counties, such as Wayne County, Cook County (Chicago), and Milwaukee County (Milwaukee).

TABLE 4

Counties with the Most Positive Affordability Trends for ELI Renters, 2000–13

County	ELI Renter Households		Adequate, Affordable, and Available Units		Units per 100 Renters		Difference	Rank
	2000	2013	2000	2013	2000	2013		
Suffolk, MA	57,132	74,262	27,281	37,703	47.8	50.8	3.1	1
Los Angeles, CA	383,332	535,214	58,780	94,672	15.3	17.7	2.4	2
Kern, CA	17,459	26,549	2,377	4,239	13.6	16.0	2.4	3
Bergen, NJ	19,474	28,429	4,905	7,775	25.2	27.3	2.2	4
New York, NY	589,726	643,243	192,995	220,121	32.7	34.2	1.5	5
San Francisco, CA	48,847	64,698	16,882	23,112	34.6	35.7	1.2	6
Orange, CA	71,254	106,204	11,532	18,108	16.2	17.1	0.9	7
Miami-Dade, FL	87,982	115,281	22,203	29,789	25.2	25.8	0.6	8
Fresno, CA	25,350	38,484	4,549	6,987	17.9	18.2	0.2	9
San Diego, CA	77,359	120,135	13,566	20,376	17.5	17.0	-0.5	10

Source: 2000 Decennial Census and three-year averages from the 2011, 2012, and 2013 ACS 1-year sample data from the Integrated Public Use Microdata Series merged with data from HUD on income limits and households receiving rental assistance.

TABLE 5

Counties with the Worst Affordability Trends for ELI Renters, 2000–13

County	ELI Renter Households		Adequate, Affordable, and Available Units		Units per 100 Renters		Difference	Rank[a]
	2000	2013	2000	2013	2000	2013		
Wayne, MI	88,945	99,699	48,069	24,458	54.0	25.5	-28.5	97
Shelby, TN	33,966	40,861	13,575	6,866	40.0	16.8	-23.2	96
Will, IL	5,921	10,080	2,988	2,758	50.5	27.4	-23.1	95
Lee, FL	7,568	13,059	2,494	1,696	33.0	13.0	-20.0	94
Milwaukee, WI	47,944	66,421	19,159	13,641	40.0	20.5	-19.5	93
Fulton, GA	43,626	49,586	21,057	14,345	48.3	28.9	-19.3	92
Macomb, MI	13,249	22,435	5,461	4,987	41.2	22.2	-19.0	91
Jefferson, AL	25,237	29,591	13,177	10,138	52.2	34.3	-18.1	90
Duval, FL	23,391	33,141	10,648	9,266	45.5	28.0	-17.5	89
Cook, IL	249,920	255,759	103,324	62,840	41.3	24.6	-16.8	88

Source: Three-year averages from the 2011, 2012, and 2013 ACS 1-year sample data from the Integrated Public Use Microdata Series merged with data from HUD on income limits and households receiving rental assistance.

[a] Four of the 100 largest counties in the United States are in New York City. Because the five New York City counties are combined in this analysis, the lowest ranking number is 97.

Conclusion

Housing affordability is an ongoing challenge for households throughout the United States, but it creates the greatest stress for the poorest households. Since 2000 the number of extremely low-income renters has increased substantially while the stock of adequate, affordable, and available rental units for these households has continued to erode. This erosion is driven by both the continued loss of affordable market-rate housing and the budget cuts to HUD rental assistance programs. As this brief demonstrates, without vital federal rental assistance, the magnitude of this problem would be much greater. Simply put, virtually no affordable housing units would be available to ELI households absent the continued investment in federally assisted rental housing.

The provision of adequate affordable housing for ELI households requires more than federal funding. It requires a functioning local housing market and ecosystem that draws on resources from and leverages coordination between federal, state, and local actors. The approach cities and counties take to solving the affordability crisis for ELI households is a function of several things, some within the control of a local jurisdiction and some not.

Local resource commitment: In the current constrained budget climate, cities are able to devote fewer resources to housing for ELI households. Yet some cities have created local revenue sources, either one time or ongoing, that can be used to build and maintain affordable housing. Some of these strategies include using general obligation bonds, local housing trust funds, or property tax set-asides to finance the construction of affordable rental housing and/or cover operating costs.

Resource targeting: Federal rental assistance can serve households earning up to 80 percent of area median income. In reality, it mostly serves households earning at or below 30 percent of AMI. However, rent levels that are affordable to ELI households often involve the creative layering of federal, state, and local resources (such as tax credits and housing subsidies), or they require deep, ongoing subsidies for property operations. Local communities can target this array of resources to serve extremely low-income households through local preservation strategies and other forms of rental assistance. To makes these approaches systemic versus episodic requires coordinated action and investment by local actors from the nonprofit, philanthropic, public, and for-profit sectors and a clear understanding of the target population and specific affordability challenges.

State support: The state-level fiscal, regulatory, and programmatic environment can either help or hinder local action. Some states have adopted policies that outlaw local zoning practices that generate more affordable housing, such as inclusionary zoning. Other states have created housing assistance programs or tax credit programs that supplement local action.

Legacy of federal investments: How and where federal housing resources are allocated is a function of history and past decisionmaking. These allocations were partly a function of city size and need at the time. Older large cities such New York, Los Angeles, Baltimore, Boston, and Chicago benefited early from federal housing investments. More recent large cities such Dallas, Houston, Phoenix, and San Jose do not have the same distribution of federally assisted housing, largely because their accelerated

growth happened after the major allocations of federal rental assistance. In addition to demonstrating a large need, Northeast cities in particular had strong local political will, which helped them benefit from early federal investment in affordable rental housing. For the most part, these cities have been good stewards of these early investments and have sought to stem the loss of affordable rental housing and even add to the stock. Some cities have more tools to work with than others, but cities and even states cannot do it alone. As the need grows in cities and counties, these local governments are unlikely to keep pace without additional federal investment in rental assistance for ELI households.

Appendix. Where Our Numbers Come From

The primary data source for this analysis is household-level records from the 2000 Census and 3-year averages of the one-year American Community Survey (ACS) for 2005, 2006, and 2007, and for 2011, 2012, and 2013. Household-level records from this dataset were downloaded from the University of Minnesota's Integrated Public Use Microdata Series. This dataset provides information on households' income, demographics, housing units, and housing-related expenses. We applied HUD data on income limits to identify renters with extremely low incomes.[5]

To determine renters' housing costs, we used the RENT variable from the ACS, which asks "What is the monthly rent for this house, apartment, or mobile home?" We applied HUD's annual income limits to calculate affordability: if the reported monthly rent and utilities from ACS were less than or equal to 30 percent of the income limit for ELI households in that area, the unit was considered affordable.[6] We then added vacant units affordable to ELI renters. Finally, we subtracted both vacant and occupied substandard units, defined as those with incomplete plumbing or missing kitchen or cooking facilities. This provided the total number of adequate, affordable, and available units.

Units adequate, affordable, and available to ELI renter households = Affordable occupied units + affordable vacant units – units occupied by higher-income renters – substandard occupied units – substandard vacant units

We divided the number of adequate, affordable, and available units by the number of ELI renter households, then multiplied by 100. The result was the number of units per 100 ELI renter households, both nationwide and by county.

Adequate, affordable, and available units per 100 ELI renters = [(Total ELI renters – units affordable to ELI renters)/ Total ELI renters]*100

To examine the role of HUD's rental assistance programs, we used a dataset provided by HUD. The dataset provided information by county on the number of assisted households, their income levels, and rent burdens for each of HUD's rental assistance programs from 2000 to 2013.[7] We took the total number of units adequate, affordable, and available to ELI renters and subtracted units in which ELI households were receiving HUD rental assistance to estimate how many rental units would be affordable to ELI renters without HUD rental assistance programs.

Affordable units without HUD assistance = Total affordable units – (HUD-assisted, affordable, and adequate units)

Our methodology differs from our 2014 analysis of the affordability gap for ELI renter households in two key areas. First, to increase our sample size and thus the reliability of local estimates, we used 3-year averages rather than relying on the 1-year ACS estimates. Second, in last year's report, we assumed that all ELI renters receiving HUD assistance were in affordable housing. Thus, the number of affordable units for ELI renters was calculated by subtracting all ELI renter households receiving HUD assistance from the total number of affordable units. This year we received data from HUD on the rent burden of ELI renters receiving HUD rental assistance. Using these new data, we removed the units of

HUD-assisted renters who were rent-burdened or in inadequate housing before calculating the impact of HUD programs on the affordability gap.

Our methodology has several important limitations, which we will work to address in future iterations of our analysis. The first limitation is small sample sizes for county-level estimates. The ACS typically samples roughly 1 percent of the total population (Census Bureau 2013). This process yields a large sample for national analysis, but the sample size for any particular county is much smaller; the sample for a particular subset within that county, such as extremely low-income renters, is smaller still. As a result, for smaller counties—those with fewer than 20,000 residents—we are unable to reliably provide a county estimate and instead rely on statewide averages.

The second limitation is that the Census Bureau no longer includes a question about households' receipt of government housing assistance in either the ACS or the decennial census. This creates challenges when using ACS data to measure housing affordability. Housing Choice Voucher recipients should report the full rent amount (including what the voucher covers) to the ACS, but many report their own monthly payments instead. An internal Census Bureau analysis of subsidized renters in California estimated that 40 percent of these households reported their own rent contribution to the ACS, 32 percent reported the total monthly rent, and the other 28 percent reported an amount that did not match either their rent contribution or the full monthly rent. Conversely, some households receiving tenant-based rental assistance report the value of their voucher as part of their income to the Census Bureau—overstating the impact of rental assistance on households' rent burden.

For our analysis, we assume that subsidized renters report their monthly rent payments to the ACS rather than the full rent. However, based on the Census Bureau's analysis, this may be true for less than half of assisted households. As a result, we may underestimate the availability of affordable housing by failing to capture the value of the rent subsidy for households that report the full market rent of their unit to the ACS. For future reports, we will explore whether we can adjust our methodology to reflect the uncertainty of how subsidized renters report their housing expenses to the ACS.

Also for future reports, we hope to incorporate data from other federal rental assistance programs, such as the US Department of Agriculture's Multi-Family Housing Rental Assistance program and other HUD rental assistance programs, such as for Native Americans. Adding data from these programs will provide a more complete picture of rental assistance, particularly outside metropolitan areas.

Another limitation is that our data do not include homeless individuals, which constituted over 610,000 people at 2013's point-in-time count (Henry, Cortes, and Morris 2013).

APPENDIX TABLE A.1

Availability of Adequate and Affordable Rental Housing for Extremely Low-Income (ELI) Renters in the 100 Largest US Counties, 2013

From most to least affordable

County	State	Total population	ELI renter households	Adequate, affordable, and available rentals	Affordable units per 100 ELI renter households	Rank
Suffolk	MA	745,716	74,262	37,703	50.8	1
Norfolk	MA	682,501	23,018	10,223	44.4	2
Essex	MA	756,508	40,208	17,734	44.1	3
District of Columbia	DC	633,167	52,634	22,300	42.4	4
Worcester	MA	805,989	37,266	15,612	41.9	5
Middlesex	MA	1,537,150	60,810	25,376	41.7	6
Fairfield	CT	933,794	38,710	14,511	37.5	7
San Francisco	CA	826,626	64,698	23,112	35.7	8
Hartford	CT	897,426	43,454	15,442	35.5	9
Allegheny	PA	1,229,582	51,549	18,260	35.4	10
Philadelphia	PA	1,546,770	117,816	41,499	35.2	11
Jefferson	AL	658,601	29,591	10,138	34.3	12
New York	NY	8,341,122	643,243	220,121	34.2	13
Essex	NJ	787,615	57,340	19,595	34.2	14
Hamilton	OH	802,659	52,749	17,972	34.1	15
Jackson	MO	677,502	37,535	12,507	33.3	16
Hennepin	MN	1,184,060	55,135	18,189	33.0	17
Westchester	NY	962,233	38,017	12,354	32.5	18
Jefferson	KY	751,312	36,957	11,756	31.8	19
El Paso	TX	824,916	23,573	7,423	31.5	20
Cuyahoga	OH	1,266,434	75,049	23,361	31.1	21
New Haven	CT	863,217	43,438	13,331	30.7	22
Lake	IL	701,763	16,486	5,029	30.5	23
Davidson	TN	647,670	30,858	9,362	30.3	24
Nassau	NY	1,348,563	26,769	7,911	29.6	25
Hidalgo	TX	805,497	24,008	6,991	29.1	26
Bexar	TX	1,785,855	59,316	17,228	29.0	27
Fulton	GA	970,400	49,586	14,345	28.9	28
Monmouth	NJ	629,754	16,599	4,801	28.9	29
Denver	CO	634,685	41,764	12,074	28.9	30
Montgomery	MD	1,004,242	22,183	6,409	28.9	31
King	WA	2,007,779	83,687	23,621	28.2	32
Duval	FL	879,131	33,141	9,266	28.0	33
Snohomish	WA	733,797	24,172	6,660	27.6	34
Honolulu	HI	974,683	34,437	9,465	27.5	35
Will	IL	681,537	10,080	2,758	27.4	36
Bergen	NJ	919,049	28,429	7,775	27.3	37
Hudson	NJ	652,921	39,544	10,757	27.2	38
Erie	NY	919,332	41,314	11,159	27.0	39
Alameda	CA	1,554,725	74,913	19,711	26.3	40

County	State	Total population	ELI renter households	Adequate, affordable, and available rentals	Affordable units per 100 ELI renter households	Rank
Fairfax	VA	1,117,918	22,323	5,843	26.2	41
Suffolk	NY	1,499,091	31,588	8,264	26.2	42
Miami-Dade	FL	2,592,201	115,281	29,789	25.8	43
Ventura	CA	834,880	23,113	5,971	25.8	44
Wayne	MI	1,789,819	99,699	25,458	25.5	45
Prince George's	MD	881,876	29,694	7,416	25.0	46
Cook	IL	5,227,094	255,759	62,840	24.6	47
Franklin	OH	1,195,915	59,062	14,389	24.4	48
Santa Clara	CA	1,836,454	65,983	15,940	24.2	49
Contra Costa	CA	1,079,460	36,578	8,750	23.9	50
Oakland	MI	1,221,103	30,690	7,265	23.7	51
Middlesex	NJ	822,933	29,979	7,090	23.6	52
Macomb	MI	848,455	22,435	4,987	22.2	53
Montgomery	PA	808,846	18,697	4,149	22.2	54
Baltimore	MD	817,791	25,404	5,571	21.9	55
Monroe	NY	748,221	35,118	7,630	21.7	56
Bernalillo	NM	672,027	29,411	6,388	21.7	57
Oklahoma	OK	742,641	30,468	6,496	21.3	58
St. Louis	MO	1,000,363	29,835	6,200	20.8	59
Milwaukee	WI	953,901	66,421	13,641	20.5	60
DuPage	IL	927,775	16,001	3,235	20.2	61
Wake	NC	951,834	28,487	5,750	20.2	62
Hillsborough	FL	1,280,536	41,766	8,307	19.9	63
Marion	IN	919,356	51,544	10,085	19.6	64
Multnomah	OR	757,738	40,498	7,872	19.4	65
San Mateo	CA	738,114	22,430	4,241	18.9	66
Pima	AZ	992,286	40,447	7,560	18.7	67
Pinellas	FL	922,744	26,608	4,957	18.6	68
Riverside	CA	2,264,491	56,844	10,509	18.5	69
Fresno	CA	947,942	38,484	6,987	18.2	70
Palm Beach	FL	1,354,932	40,267	7,309	18.2	71
Salt Lake	UT	1,063,941	27,523	4,929	17.9	72
Pierce	WA	811,730	25,763	4,588	17.8	73
El Paso	CO	645,787	18,978	3,359	17.7	74
Los Angeles	CA	9,951,320	535,214	94,672	17.7	75
Sacramento	CA	1,448,487	66,416	11,554	17.4	76
Orange	CA	3,084,550	106,204	18,108	17.1	77
San Diego	CA	3,175,313	120,135	20,376	17.0	78
Dallas	TX	2,447,575	101,007	17,106	16.9	79
Shelby	TN	937,748	40,861	6,866	16.8	80
Broward	FL	1,812,793	57,465	9,392	16.3	81
Kern	CA	856,363	26,549	4,239	16.0	82
Harris	TX	4,255,830	152,692	23,462	15.4	83
Tarrant	TX	1,880,361	61,493	9,318	15.2	84
Mecklenburg	NC	967,906	35,788	5,421	15.1	85

County	State	Total population	ELI renter households	Adequate, affordable, and available rentals	Affordable units per 100 ELI renter households	Rank
San Bernardino	CA	2,076,322	59,923	8,857	14.8	86
Maricopa	AZ	3,939,668	124,368	18,346	14.8	87
Collin	TX	834,110	13,434	1,959	14.6	88
Travis	TX	1,093,138	48,057	6,980	14.5	89
San Joaquin	CA	700,220	22,831	3307	14.5	90
DeKalb	GA	706,093	30,682	4,325	14.1	91
Lee	FL	645,681	13,059	1,696	13.0	92
Clark	NV	1,997,371	66,336	7,998	12.1	93
Orange	FL	1,198,989	37,166	3,731	10.0	94
Cobb	GA	707,248	19,510	1,768	9.1	95
Gwinnett	GA	841,658	17,156	1,494	8.7	96
Denton	TX	707,550	14,924	1,207	8.1	97

Sources: 2000 Decennial Census, and three-year averages from the 2005,2006, and 2007 and 2011, 2012, and 2013 ACS 1-year sample data from the Integrated Public Use Microdata Series merged with data from HUD on income limits and households receiving rental assistance.

Note: Four of the 100 largest counties in the United States are in New York City. Because the five New York City counties are combined in this analysis, the lowest ranking number is 97.

APPENDIX TABLE A.2

Trends in Affordability for Extremely Low-Income (ELI) Renters in the 100 Largest US Counties, 2000–13

By most to least positive

County	State	ELI Renter Households		Adequate, Affordable, and Available Units		Affordable Units per 100 ELI Renter Households		Difference, 2000–13	Rank
		2000	2013	2000	2013	2000	2013		
Suffolk	MA	57,132	74,262	27,281	37,703	47.8	50.8	3.0	1
Los Angeles	CA	383,332	535,214	58,780	94,672	15.3	17.7	2.4	2
Kern	CA	17,459	26,549	2,377	4,239	13.6	16.0	2.4	3
Bergen	NJ	19,474	28,429	4,905	7,775	25.2	27.3	2.2	4
New York	NY	589,726	643,243	192,995	220,121	32.7	34.2	1.5	5
San Francisco	CA	48,847	64,698	16,882	23,112	34.6	35.7	1.2	6
Orange	CA	71,254	106,204	11,532	18,108	16.2	17.1	0.9	7
Miami-Dade	FL	87,982	115,281	22,203	29,789	25.2	25.8	0.6	8
Fresno	CA	25,350	38,484	4,549	6,987	17.9	18.2	0.2	9
San Diego	CA	77,359	120,135	13,566	20,376	17.5	17.0	-0.6	10
Sacramento	CA	40,354	66,416	7,272	11,554	18.0	17.4	-0.6	11
Pierce	WA	17,212	25,763	3,181	4,588	18.5	17.8	-0.7	12
Hennepin	MN	35,793	55,135	12,161	18,189	34.0	33.0	-1.0	13
Alameda	CA	54,253	74,913	14,822	19,711	27.3	26.3	-1.0	14
Monroe	NY	26,270	35,118	6,004	7,630	22.9	21.7	-1.1	15
Riverside	CA	31,695	56,844	6,248	10,509	19.7	18.5	-1.2	16
Montgomery	MD	18,104	22,183	5,498	6,409	30.4	28.9	-1.5	17
El Paso	TX	16,929	23,573	5,607	7,423	33.1	31.5	-1.6	18
Ventura	CA	15,984	23,113	4,394	5,971	27.5	25.8	-1.7	19
Prince George's	MD	22,879	29,694	6,095	7,416	26.6	25.0	-1.7	20
Suffolk	NY	23,300	31,588	6,504	8,264	27.9	26.2	-1.8	21
San Mateo	CA	13,898	22,430	2,880	4,241	20.7	18.9	-1.8	22
El Paso	CO	9,876	18,978	1,953	3,359	19.8	17.7	-2.1	23
San Joaquin	CA	15,032	22,831	2,519	3,307	16.8	14.5	-2.3	24
Worcester	MA	25,148	37,266	11,200	15,612	44.5	41.9	-2.6	25
King	WA	57,032	83,687	17,737	23,621	31.1	28.2	-2.9	26
Travis	TX	31,237	48,057	5,474	6,980	17.5	14.5	-3.0	27
Essex	MA	30,254	40,208	14,292	17,734	47.2	44.1	-3.1	28
San Bernardino	CA	41,253	59,923	7,426	8,857	18.0	14.8	-3.2	29
Hudson	NJ	34,344	39,544	10,491	10,757	30.5	27.2	-3.3	30
Broward	FL	42,510	57,465	8,502	9,392	20.0	16.3	-3.7	31
Baltimore	MD	16,236	25,404	4,207	5,571	25.9	21.9	-4.0	32
Fairfax	VA	14,104	22,323	4,253	5,843	30.2	26.2	-4.0	33
Middlesex	MA	42,927	60,810	19,625	25,376	45.7	41.7	-4.0	34
Philadelphia	PA	89,798	117,816	35,264	41,499	39.3	35.2	-4.0	35
DuPage	IL	10,603	16,001	2,577	3,235	24.3	20.2	-4.1	36
Bernalillo	NM	17,002	29,411	4,388	6,388	25.8	21.7	-4.1	37
Norfolk	MA	14,382	23,018	6,979	10,223	48.5	44.4	-4.1	38
Nassau	NY	20,527	26,769	6,982	7,911	34.0	29.6	-4.5	39
Salt Lake	UT	16,215	27,523	3,664	4,929	22.6	17.9	-4.7	40

County	State	ELI Renter Households		Adequate, Affordable, and Available Units		Affordable Units per 100 ELI Renter Households		Difference, 2000–13	Rank
		2000	2013	2000	2013	2000	2013		
Santa Clara	CA	43,116	65,983	12,489	15,940	29.0	24.2	-4.8	41
Pima	AZ	25,419	40,447	6,043	7,560	23.8	18.7	-5.1	42
Bexar	TX	36,710	59,316	12,674	17,228	34.5	29.0	-5.5	43
Snohomish	WA	13,008	24,172	4,303	6,660	33.1	27.6	-5.5	44
Westchester	NY	38,451	38,017	14,747	12,354	38.4	32.5	-5.9	45
Clark	NV	35,284	66,336	6,587	7,998	18.7	12.1	-6.6	46
Hillsborough	FL	26,607	41,766	7,081	8,307	26.6	19.9	-6.7	47
St. Louis	MO	16,638	29,835	4,607	6,200	27.7	20.8	-6.9	48
Contra Costa	CA	21,642	36,578	6,681	8,750	30.9	23.9	-6.9	49
Maricopa	AZ	69,925	124,368	15,236	18,346	21.8	14.8	-7.0	50
Montgomery	PA	11,340	18,697	3,316	4,149	29.2	22.2	-7.0	51
Monmouth	NJ	12,910	16,599	4,728	4,801	36.6	28.9	-7.7	52
Denton	TX	10,341	14,924	1,667	1,207	16.1	8.1	-8.0	53
Erie	NY	35,378	41,314	12,414	11,159	35.1	27.0	-8.1	54
Multnomah	OR	25,553	40,498	7,112	7,872	27.8	19.4	-8.4	55
Hartford	CT	30,870	43,454	13,566	15,442	43.9	35.5	-8.4	56
Middlesex	NJ	19,015	29,979	6,126	7,090	32.2	23.6	-8.6	57
Allegheny	PA	39,794	51,549	17,520	18,260	44.0	35.4	-8.6	58
Essex	NJ	53,310	57,340	22,806	19,595	42.8	34.2	-8.6	59
Dallas	TX	78,282	101,007	20,070	17,106	25.6	16.9	-8.7	60
Pinellas	FL	21,268	26,608	5,817	4,957	27.4	18.6	-8.7	61
Honolulu	HI	29,315	34,437	10,639	9,465	36.3	27.5	-8.8	62
Gwinnett	GA	6,684	17,156	1,189	1,494	17.8	8.7	-9.1	63
Orange	FL	21,150	37,166	4,061	3,731	19.2	10.0	-9.2	64
Harris	TX	119,594	152,692	29,672	23,462	24.8	15.4	-9.4	65
Palm Beach	FL	24,940	40,267	6,950	7,309	27.9	18.2	-9.7	66
Oklahoma	OK	21,613	30,468	6,726	6,496	31.1	21.3	-9.8	67
Denver	CO	29,865	41,764	11,582	12,074	38.8	28.9	-9.9	68
New Haven	CT	32,360	43,438	13,157	13,331	40.7	30.7	-10.0	69
DeKalb	GA	19,051	30,682	4,747	4,325	24.9	14.1	-10.8	70
Jefferson	KY	24,944	36,957	10,642	11,756	42.7	31.8	-10.9	71
Jackson	MO	24,501	37,535	10,824	12,507	44.2	33.3	-10.9	72
Lake	IL	9,759	16,486	4,042	5,029	41.4	30.5	-10.9	73
Franklin	OH	43,838	59,062	15,513	14,389	35.4	24.4	-11.0	74
Wake	NC	15,633	28,487	4,908	5,750	31.4	20.2	-11.2	75
Oakland	MI	20,764	30,690	7,275	7,265	35.0	23.7	-11.4	76
Collin	TX	5,347	13,434	1,390	1,959	26.0	14.6	-11.4	77
Hidalgo	TX	13,559	24,008	5,514	6,991	40.7	29.1	-11.5	78
Cobb	GA	10,728	19,510	2,211	1,768	20.6	9.1	-11.5	79
Tarrant	TX	38,937	61,493	10,650	9,318	27.4	15.2	-12.2	80
Hamilton	OH	35,445	52,749	16,699	17,972	47.1	34.1	-13.0	81
Marion	IN	29,319	51,544	9,644	10,085	32.9	19.6	-13.3	82
Cuyahoga	OH	61,369	75,049	27,296	23,361	44.5	31.1	-13.4	83
Fairfield	CT	30,154	38,710	15,412	14,511	51.1	37.5	-13.6	84
Davidson	TN	26,492	30,858	11,908	9,362	44.9	30.3	-14.6	85

County	State	ELI Renter Households		Adequate, Affordable, and Available Units		Affordable Units per 100 ELI Renter Households		Difference, 2000–13	Rank
		2000	2013	2000	2013	2000	2013		
District of Columbia	DC	52,474	52,634	30,365	22,300	57.9	42.4	-15.5	86
Mecklenburg	NC	17,733	35,788	5,580	5,421	31.5	15.1	-16.3	87
Cook	IL	249,920	255,759	103,324	62,840	41.3	24.6	-16.8	88
Duval	FL	23,391	33,141	10,648	9,266	45.5	28.0	-17.6	89
Jefferson	AL	25,237	29,591	13,177	10,138	52.2	34.3	-18.0	90
Macomb	MI	13,249	22,435	5,461	4,987	41.2	22.2	-19.0	91
Fulton	GA	43,626	49,586	21,057	14,345	48.3	28.9	-19.3	92
Milwaukee	WI	47,944	66,421	19,159	13,641	40.0	20.5	-19.4	93
Lee	FL	7,568	13,059	2,494	1695.67	33.0	13.0	-20.0	94
Will	IL	5,921	10,080	2,988	2,758	50.5	27.4	-23.1	95
Shelby	TN	33,966	40,861	13,575	6,866	40.0	16.8	-23.2	96
Wayne	MI	88,945	99,699	48,069	25,458	54.0	25.5	-28.5	97

Sources: 2000 Decennial Census, and three-year averages from the 2005,2006, and 2007 and 2011, 2012, and 2013 ACS 1-year sample data from the Integrated Public Use Microdata Series merged with data from HUD on income limits and households receiving rental assistance.

Note: Four of the 100 largest counties in the United States are in New York City. Because the five New York City counties are combined in this analysis, the lowest ranking number is 97.

Notes

1. Three other counties also had 75 adequate, affordable, and available units for every 100 ELI renters: Allegan County, Michigan, Lincoln County, Missouri, and Jefferson County, West Virginia. This analysis excludes counties with fewer than 10 ELI renters surveyed as part of the 2013 American Community Survey.
2. See the appendix for a detailed description of how we constructed county-level estimates from the Integrated Public Use Microdata Series dataset.
3. New York City is technically five separate counties, but for this analysis they are grouped as one.
4. Matthew Johnson, "Stepping Up: How Cities Are Working to Keep America's Poorest Families Housed," http://www.urban.org/features/stepping-how-cities-are-working-keep-americas-poorest-families-housed.
5. HUD income limits are available at http://www.huduser.org/portal/datasets/il.html.
6. Because the ACS does not include a variable that indicates whether utility costs are included in the rent, we calculate the difference in gross rent and contract rent for each renter-occupied household, as explained in the appendix.
7. The HUD data were broken out into the following program categories: HCV program, public housing, moderate rehabilitation program, multifamily Section 8 contracts, and other multifamily programs.

References

Arnold, Althea, Sheila Crowley, Elina Bravve, Sarah Brundage, and Christine Biddlecombe. 2014. *Out of Reach 2014*. Washington, DC: National Low Income Housing Coalition. http://nlihc.org/sites/default/files/oor/2014OOR.pdf.

CBPP (Center on Budget and Policy Priorities). 2013. "Section 8 Project-Based Rental Assistance." Washington, DC: CBPP. http://www.cbpp.org/sites/default/files/atoms/files/PolicyBasics-housing-1-25-13PBRA.pdf.

Cunningham, Mary, Joshua Leopold, and Pamela Lee. 2014. "A Proposed Demonstration of a Flat Rental Subsidy for Very Low Income Households." Washington, DC: Urban Institute. http://www.urban.org/research/publication/proposed-demonstration-flat-rental-subsidy-very-low-income-households.

Henry, Meghan, Alvaro Cortes, and Sean Morris. 2013. *The 2013 Annual Homeless Assessment Report (AHAR) to Congress. Part 1: Point-in-Time Estimates of Homelessness*. Washington, DC: US Department of Housing and Urban Development, Office of Community Planning and Development.

HUD (US Department of Housing and Urban Development). 2013. "Picture of Subsidized Households." Washington, DC: HUD.

JCHS (Joint Center for Housing Studies). 2013. "America's Rental Housing." Cambridge, MA: JCHS. http://www.jchs.harvard.edu/americas-rental-housing.

———. 2014. "State of the Nation's Housing." Cambridge, MA: JCHS. http://www.jchs.harvard.edu/research/state_nations_housing.

McClure, Kirk. 2005. "Rent Burden in the Housing Choice Voucher Program." *Cityscape: A Journal of Policy Development and Research* 8 (2): 5–20.

Rice, Douglas. 2014. "Sequestration's Rising Toll: 100,000 Fewer Low-Income Families Have Housing Vouchers." Washington, DC: CBPP. http://www.cbpp.org/research/housing/sequestrations-rising-toll-100000-fewer-low-income-families-have-housing-vouchers

Steffen, Barry L., George R. Carter, Marge Martin, Danilo Pelletiere, David A. Vandenbroucke, and Yun-Gann David Yao. 2015. *Worst Case Housing Needs: 2015 Report to Congress*. Washington, DC: HUD.

Treskon, Mark, and Mary Cunningham. Forthcoming. "Moving to Work." Washington, DC: Urban Institute.

US Census Bureau. 2013. "An Overview of the American Community Survey." Washington, DC: US Census Bureau.

Acknowledgments

This brief was funded by Housing Authority Insurance, Inc. (HAI, Inc.), to provide fact-based analysis about public and assisted housing. We are grateful to them and to all our funders, who make it possible for Urban to advance its mission. Funders do not, however, determine our research findings or the insights and recommendations of our experts. The views expressed are those of the authors and should not be attributed to the Urban Institute, its trustees, or its funders.

The authors thank Rob Santos, Tim Triplett, and Doug Wissoker for their advice on data analysis. They also thank Erika Poethig reviewing earlier drafts of this brief.

About the Authors

Josh Leopold is a research associate in the Metropolitan Housing and Communities Policy Center at the Urban Institute, where his work focuses on homelessness and affordable housing policy.

Before joining Urban, Leopold was a management and program analyst at the US Interagency Council on Homelessness (USICH). At USICH, he helped implement the Obama administration's plan for ending chronic homelessness and homelessness among veterans by 2015; he also helped develop a national research agenda related to homelessness. From 2006 to 2011, he worked as an analyst for Abt Associates, where he was involved in numerous studies, including the Annual Homeless Assessment Report; the Costs of Homelessness study; the Study of Rents and Rent Flexibility in Subsidized Housing; and an evaluation of the AmeriCorps program.

Leopold has a bachelor's degree from Grinnell College, Iowa, and a master's degree in information science from the University of Michigan.

Liza Getsinger is the policy and research program manager of Urban Institute's Policy Advisory Group. In this capacity she coordinates across Urban's policy centers to deepen engagement on cross-cutting topics—in particular cities and places. Her expertise blends research, policy, and practice with a focus on developing actionable, evidence-based solutions to inform policymakers, practitioners, and philanthropic investments.

Before joining Urban, Getsinger worked at the National Housing Conference, where she helped craft policy, legislative, and programmatic initiatives on budget and tax issues, HUD's regulatory and programmatic functioning, and neighborhood restoration. In Austin, Texas, she held several positions focused on youth services and affordable housing. Getsinger started her career as a researcher in Urban's Metropolitan Housing and Communities Policy Center.

A graduate of DePaul University, Getsinger holds a master's in public affairs with a concentration in social and economic policy from the Lyndon B. Johnson School of Public Affairs at the University of Texas at Austin, where she was an endowed fellowship recipient.

Pamela Blumenthal is a senior research associate with the Policy Advisory Group and the Metropolitan Housing and Communities Policy Center at the Urban Institute. Her expertise is in affordable housing, land-use regulation, and economic resilience, with an emphasis on qualitative research. She also works with other researchers to translate their work into actionable policy for urban policy makers.

Blumenthal spent over a decade as a regulatory lawyer working on consumer financial protection issues, both in the private sector and at the Division of Consumer and Community Affairs at the Federal Reserve Board. She blended her legal expertise and research skills as a member of the Consumer Financial Protection Bureau implementation team, leading work on development of new mortgage lending application disclosures. She joined Urban Institute from the Office of Policy Development and Research at the US Department of Housing and Urban Development.

Blumenthal has a BA in English from Cornell University, a JD from University of Michigan School of Law, and a PhD in public policy and public administration from the George Washington University.

Katya Abazajian is a research assistant in the Metropolitan Housing and Communities Policy Center at the Urban Institute. She works in multiple subject areas including consumer financial protection, neighborhood development, and the preservation of affordable housing in Washington, DC. Since starting at Urban, Abazajian has been involved with the National Neighborhood Indicators Partnership, the NeighborhoodInfo DC program, Promise Neighborhoods, and the DC Affordable Housing Preservation Network.

Abazajian graduated from Claremont McKenna College in 2014 with a BA in both economics and math. At Claremont McKenna, she was an undergraduate research assistant at the Rose Institute of State and Local Government and the managing editor of the campus newspaper. Her undergraduate research focused on municipal tax systems, regional economic forecasting, and local politics.

Reed Jordan is a research associate II in the Metropolitan Housing and Communities Policy Center at the Urban Institute. Since joining Urban in 2012, he has been involved in various national. He is currently providing technical assistance to grantees of the US Department of Education's Promise Neighborhoods program and evaluating the early implementation of the US Department of Housing and Urban Development's Choice

Neighborhoods initiative. His other interests include performance management, low-income housing, and education policy.

Jordan graduated magna cum laude from Carleton College in Northfield, Minnesota, with honors in political science and departmental distinction on his senior thesis. While at Carleton, he was awarded a two-year grant from the Howard Hughes Medical Institute to perform environmental chemistry research at Carleton and signal analysis research at Texas A&M University. He was also awarded a fellowship to fund a community development and public health internship in Urubamba, Peru.

2100 M Street NW
Washington, DC 20037

www.urban.org

ABOUT THE URBAN INSTITUTE

The nonprofit Urban Institute is dedicated to elevating the debate on social and economic policy. For nearly five decades, Urban scholars have conducted research and offered evidence-based solutions that improve lives and strengthen communities across a rapidly urbanizing world. Their objective research helps expand opportunities for all, reduce hardship among the most vulnerable, and strengthen the effectiveness of the public sector.

Copyright © June 2015. Urban Institute. Permission is granted for reproduction of this file, with attribution to the Urban Institute.