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Is Housing Unaffordable? Why Isn't It More Affordable?

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Public concern over the affordability of housing arises from two factors. First, housing is the single largest expenditure item in the budgets of most families and individuals. The average household devotes roughly one-quarter of income to housing expenditures, while poor and near-poor households commonly devote half of their incomes to housing. These high proportions suggest that small percentage changes in housing prices and rents will have large impacts on nonhousing consumption and household well-being.

Second, many large U.S. metropolitan areas have experienced recent and well-publicized increases in housing prices and rents. For example, between 1995 and 2002, the median home price increased by 65 percent (in nominal terms) in the San Francisco Bay Area, 62 percent in Boston, 54 percent in San Diego and 49 percent in Denver. The comparable changes in rents for a standard two-bedroom apartment are 76 percent for San Francisco, 61 percent for Boston, 49 percent for San Diego and 62 percent for Denver. While these metropolitan areas represent the extremes, median home prices and rents increased considerably in nearly all of the largest metropolitan areas.

Housing affordability is regularly raised as a major policy concern, most recently by the bipartisan Millennial Housing Commission (2002). But economists are wary, even uncomfortable, with the rhetoric of "affordability," which jumbles together in a single term a number of disparate issues: the distribution of housing prices, the distribution of housing quality, the distribution of income, the ability of households to borrow, public policies affecting housing markets, conditions affecting the supply of new or refurbished housing, and the choices that people make

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about how much housing to consume relative to other goods. This mixture of issues raises difficulties in interpreting even basic facts about housing affordability. For example, the rapid rise in the price of homes clearly made homeownership more difficult for many renters, but it also greatly reduced the financial costs of homeownership to a much larger group of existing homeowners by providing substantial capital gains. Among renters, the large share of income devoted to housing surely reflects voluntary consumption choices for many households and the consumption of a publicly determined minimum quality and quantity of housing for others. To the extent that the latter group of households would choose a lower quality of housing, given their opportunities, one might conclude that the incomes of the poorest households are insufficient to afford the socially imposed minimum standard.

This paper sorts out these issues. We show that for the two-thirds of U.S. households who own homes, there is little evidence that housing has become less affordable in recent years. For the one-third of U.S. households who are renters, the proportion of income that the median renter devotes to housing has increased only modestly. However, we find pronounced increases in the typical rental burdens for poor and near-poor households. Thus, we examine the low-income rental market in greater detail, evaluating the contribution of changes in the income distribution, increases in rental quality, land-use regulation, growth controls and zoning to the observed changes in rent burdens among low-income households. We end by sketching some policies that might improve the affordability of housing for homeowners and for renters.

Trends in the Rental and Owner-Occupied Housing Markets: The Past 40 Years

The majority of U.S. households are homeowners, and homeownership rates in recent decades have trended upward for virtually all demographic groups. By 2000, two out of every three U.S. households owned their dwellings. Table 1 presents homeownership rates for the period 1960 to 2000 for all households, for quintiles defined by household income and for poor households. Over the past four decades, aggregate homeownership rates increased by five percentage points. Even among households in the bottom quintile, homeownership is quite common. In 2000, 45 percent of bottom-quintile households were homeowners, as were 37 percent of households with incomes below the poverty line.

However, income can be a misleading measure of housing affordability; for example, many retirees have low annual incomes, yet own their homes. Thus, Table 2 presents more detailed tabulations of homeownership rates for the year 2000—for households stratified by income, age of the household head and race/ethnicity. These tabulations reveal several clear patterns. First, the high aggregate homeownership rates for poor and near-poor households evident in Table 1 reflect the conditions of older households with low incomes. For many of these households, current low incomes are likely reflective of retirement rather than material poverty. For the nonelderly poor and near poor, homeownership rates are very low. More-

Table 1
Homeownership Rates by Income Quintile and Poverty Status, 1960 to 2000

	1960	*1970*	*1980*	*1990*	*2000*
All households	61%	62%	65%	64%	66%
Income quintile					
First	49	48	45	43	45
Second	49	50	52	54	57
Third	60	61	63	63	66
Fourth	70	71	77	75	77
Fifth	76	80	87	86	87
Poor households	48	46	39	36	37

Source: For 1960 to 1990, the figures are tabulated from the Integrated Public Use Microdata Files. For 2000, the figures are tabulated from the American Community Survey Public Use Microdata Files.

Table 2
Homeownership Rates by Age, Income Quintile, Poverty, Race and Ethnicity, 2000

	Age of Head of Household					
	All	*Under 25*	*25 to 34*	*35 to 44*	*45 to 64*	*65 and over*
All households	66%	18%	45%	66%	77%	79%
Income quintile						
First	45	9	20	32	50	66
Second	57	18	32	49	66	82
Third	66	25	46	64	76	89
Fourth	77	30	60	77	86	91
Fifth	87	38	68	87	92	93
Poor households	37	9	21	34	49	60
Race/ethnicity						
White	71	20	50	71	81	81
Black	45	8	26	43	58	65
Asian	53	16	33	59	69	60
Hispanic	45	15	31	49	59	64

Source: Figures are tabulated from the 2000 American Community Survey Public Use Microdata Files.

over, there are pronounced racial and ethnic differences in homeownership rates (for example, the white-black difference in homeownership rates is 26 percentage points).

Tables 1 and 2 indicate that for the majority of American households—including more than two-thirds of those in the top three income quintiles—housing "affordability" refers to the terms on which dwellings can be purchased and loans to purchase these assets can be amortized. In contrast, for households of lower incomes, for the poor, for minority households and for many young households, "affordability" refers to the terms for rental contracts and the relationship between these rents and their low incomes. Hence, we proceed by analyzing separately trends in these two segments of the housing market.

Before proceeding, however, we must stress the limitation of affordability measures based on annual income. Housing choices for both owners and renters involve very substantial transactions costs. Moreover, housing choice anchors many other consumption activities, including schools, neighborhoods and other publicly provided and natural amenities. Thus, housing choices are likely to be made based on self-assessments of permanent income rather than current annual income. Measured annual income may be a noisy signal of the longer-run economic circumstances that govern choice, and households are unlikely to adjust housing consumption in response to short-run fluctuations in economic conditions. This distinction is recognized in the professional economics literature on housing markets familiar to specialists, where considerable attention is paid to distinguishing between the higher long-run income elasticity of demand and the lower short-run elasticity. (This distinction dates back to the influential work of Margaret Reid, 1962.)

When housing affordability is measured by rent-income ratios based on annual income, affordability must be correlated with income. Moreover, housing will appear to be less affordable for the very young and very old; it will appear to be more affordable to households at the peak of their lifetime income profiles. In some part, these reflect definitional issues as well as behavioral consequences.

Trends in the Costs of Owner-Occupied Housing

The affordability of homeownership is monitored by a variety of organizations. For example, the National Association of Realtors (NAR) and the U.S. Department of Housing and Urban Development (HUD) regularly compute the monthly payments required to amortize a standard fixed-rate mortgage on the average house sold as a function of current house prices and interest rates. The HUD index of housing affordability, shown in Figure 1, is the ratio of median family income to the income required to qualify for a conventional mortgage on the median valued house sold. In the early 1970s, the median household earned 50 percent more than that required to purchase the average house. The period of high interest rates in the late 1970s is clearly reflected in the index. Since the early 1980s, the affordability of owner-occupied housing increased by this measure. Owner-occupied housing is as affordable now, on average, as in the early 1970s.[1]

According to the HUD affordability index, as incomes increase, affordability increases. As inflation increases, nominal interest rates and house prices increase, which more than counterbalances any increases in nominal wages, so that inflation makes housing less affordable.

[1] Several other measures of affordability are worth a brief mention. The NAR's "Housing Affordability Index" is defined as the ratio of 25 percent of median monthly income to the payment described above; a value of 100 indicates that, by devoting 25 percent of income to housing, a household of median income has exactly enough income to afford the median priced house sold. The National Association of Home Builders (NAHB) computes the fraction of dwellings sold that could be purchased by the median household with 28 percent of household income. The values of these indices are widely reported in the business press. Until 1995, the U.S. Census estimated the fraction of households whose current incomes would qualify them to purchase the median priced home in their region.

Figure 1
Housing Affordability Index, 1970–2001

Source: U.S. Department of Housing and Urban Development

To an economist, however, the affordability of owner-occupied housing is a bit more complicated—by taxes, by depreciation and by capital gains. Absent taxes and depreciation, the annual user cost of a unit of housing capital is the real interest rate, i. The value of the periodic flow of housing services, R, is related to the value of the home, V, by

$$R = iV.$$

To an economist, housing "rent," R, is the opportunity cost of using housing capital for one period, iV; alternatively, the capitalized value of rent, R/i, equals the value of the property, V.

Adding depreciation and maintenance expenditures at the annual rate d, property taxes at rate t and capital gains at real rate g gives a new rent equation:

$$R^* = (i + t + d - g)V.$$

Property taxes and depreciation increase the user cost of housing while capital gains reduce costs. Note that the appreciation of housing prices has an ambiguous effect on affordability. For those who don't own homes, high prices make affordability more difficult. For incumbent owners, appreciation in the price of homes decreases the cost of owner-occupied housing. In fact, in many regional housing markets throughout the United States, the rates of home price increase have been large enough to reduce the true annual costs of homeownership to zero, at least for some periods.

Federal taxes further complicate the costs and affordability of owner-occupied housing. Since property taxes and interest payments on home mortgages are tax

deductible while capital gains on owner-occupied housing are (essentially) untaxed, federal tax policy reduces the user cost of capital. Moreover, the fact that general price inflation influences nominal interest rates as well as nominal housing price appreciation, coupled with the deductibility of nominal interest payments, means that inflation reduces the after-tax user cost of capital. To see this, add the inflation rate a to the prior equation for the value of the periodic flow of housing services and then multiply the interest and property tax component by one minus the marginal tax rate, T. This yields an expression:

$$R^{**} = ([i + a][1 - T] + t[1 - T] + d - [g + a])V,$$

which incorporates the deductibility of nominal interest payments and property taxes. Rearranging the terms in this expression yields

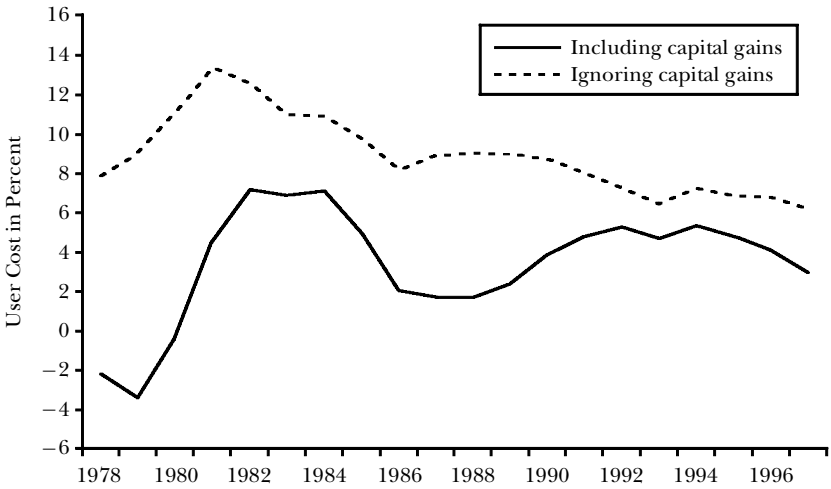
$$R^{**} = R^{*} - (i + a + t)TV,$$

where the new rental equation is equal to rents in the absence of the favorable tax treatment (R^{*}) less an offset associated with the interest and property tax deduction. The offset provided by deductibility reduces the sensitivity of user costs to interest rates and property taxes. Taxes also mean that user costs are lower at higher marginal tax rates, and they are also lower in an inflationary environment (Quigley, 1998, provides a more extensive discussion).

More generally, this perspective indicates that the costs of homeownership can be quite sensitive to macroeconomic stabilization policies and to the structure of income tax rates. For example, at plausible values of the variables in the previous equation—say, $i = g = 3$ percent, $t = d = 2$ percent, $T = 30$ percent—a decrease in inflation from 6 percent to 1 percent doubles the after-tax user cost of residential capital. Similarly, holding inflation constant at recent levels—for example, $a = 3$ percent and, as before, $I = g = 3$ percent, $t = d = 2$ percent—a decrease in the marginal income tax rate from 40 to 20 percent increases the user cost of capital by one-third. Thus, tax and monetary policies can cause substantial changes in the costs of owner-occupied housing that are unrelated to the price of houses, per se.

Figure 2 presents rough estimates of the user cost of residential capital during the period 1978–1997. These estimates are derived from the time series on interest rates for newly issued fixed rate mortgages (from Freddie Mac) and the temporal variation in marginal tax rates (on an income of $40,000 exercising the NBER model, TAXSIM, for each year). The calculations also assume $d = 4$ percent and $t = 2$ percent, and they make no other allowances for risk premia or other costs. The figure presents two estimates: one ignoring capital gains, and one including capital gains, estimated as a three-year trailing average of national house price changes. Ignoring capital gains, these estimates show a rapid increase in user costs of the late 1970s with a continuous decline since about 1982. When capital gains in housing are included (albeit roughly), the user cost estimates are lower, and they are somewhat more volatile. (Note that during the earliest period, 1978–1980, user costs were actually negative, at least when anticipated capital gains

Figure 2
User Cost of Housing Capital, 1978–1997



Source: See text for definitions and assumptions

are reckoned.) There is, however, no evidence that user costs have increased appreciably, even when capital gains are ignored. Of course, interest rates in the early 2000s have been lower than in the period covered in Figure 2, further reducing user costs.

Trends in the Costs of Rental Housing

The median renter saw a substantial increase in the share of income spent on housing in the 1970s, but little change since then. However, for those at lower income levels, rent has been taking a larger share of income.

Table 3 presents alternative measures of the affordability of rental housing for the period 1960 to 2000: median rent-to-income ratios[2] and the proportion of households who spend more than 30 percent of income on rent. We choose the 30 percent benchmark since most government housing assistance programs subsidize housing costs so that the housing expenditures of recipients do not exceed 30 percent of household income.[3] We present figures for all renter households, for renter households stratified by quintiles of the household income distribution and for poor households. In 1960 and 1970, the median renter devoted 20 percent of income to rent. By 1980, this figure increased to 25 percent, and it subsequently rose slightly. Similar patterns are observed for the proportion of renter households

[2] Other studies have calculated rent-to-income ratios using alternative data sources and sample specifications: See Burt (1992), Jencks (1994) and Orr and Peach (1999).

[3] Prior to 1982, these subsidies were fixed so that subsidized households spent 25 percent of their incomes on shelter. Other programs set different norms. For example, the Federal Housing Administration (FHA) mortgage program for homeowners currently sets a house-payment-to-income standard of 28 percent.

Table 3
Rent Burdens of Renter Households by Income Quintile and Year

	1960	*1970*	*1980*	*1990*	*2000*
A. Rent as a percentage of household income					
All renters	19%	20%	25%	26%	26%
Income quintile					
First	47	51	53	53	55
Second	23	23	24	28	29
Third	17	16	20	21	20
Fourth	14	13	15	16	15
Fifth	10	10	11	12	11
Poor renters	44	57	63	63	64
B. Percentage of renters devoting more than 30 percent of income in rent					
All renters	23%	26%	34%	37%	40%
Income quintile					
First	62	67	69	72	79
Second	21	23	37	42	44
Third	4	4	9	14	12
Fourth	1	1	2	5	3
Fifth	0	0	0	0	2
Poor renters	55	64	68	71	77

Source: For 1960 to 1990, the figures are tabulated from the Integrated Public Use Microdata Files. For 2000, the figures are tabulated from the American Community Survey Public Use Microdata Files.
Note: Quintiles are defined using the household income distribution for all households (renters and homeowners combined).

spending greater than 30 percent of incomes on housing costs, although for this measure, the post-1980 increases are pronounced.

The increases in the median rent-to-income ratio, coupled with the increase in the proportion of renter households in the upper tail of the rent-to-income distribution, suggests that inequality in rent burdens has increased over the past four decades. Standard measures of inequality confirm this intuition. For example, comparisons of the rent-to-income ratios at the 90^{th} and 10^{th} percentiles of the distribution indicate an increase in dispersion. For 1960, the 90/10 ratio was 5.91. This increased to 6.76 in 1980 and to 7.06 in 2000.

Beyond these aggregate trends, the tabulations by household income quintile reveal two distinct regularities. First, in all years, the proportion of income devoted to housing costs is far larger among low-income renters than among high-income renters. The most extreme rent burdens are observed for poor households (roughly the bottom 12 percent of households). In 2000, the median poor renter household devoted 64 percent of income to rent. (As measured by the U.S. Census, "income" includes all cash transfers, such as welfare payments, but it excludes in-kind benefits, such as subsidized medical insurance.) Among poor households, 77 percent devoted more than 30 percent of their incomes to housing costs, while 57 percent spent over half their incomes for housing.

Table 4

Percentage of Rental Stock Affordable to Households with the Median Renter's Household Income, the Median Renter's Income Within Quintiles[a] and the Median Renter's Income for Poor Renters

(percentage of renter households in each category is shown in parentheses)

	1960	*1970*	*1980*	*1990*	*2000*
Percentage of units renting for less than 30 percent of the median renter's income					
All renters	83% (100%)	84% (100%)	70% (100%)	63% (100%)	62% (100%)
By quintile					
First	13 (27)	13 (28)	15 (33)	12 (33)	7 (32)
Second	65 (26)	69 (26)	59 (27)	53 (25)	50 (26)
Third	92 (20)	95 (21)	92 (20)	87 (20)	88 (20)
Fourth	99 (16)	99 (15)	99 (13)	97 (14)	98 (14)
Fifth	100 (11)	100 (11)	100 (7)	100 (8)	100 (8)
Poor renters	13 (27)	12 (22)	12 (22)	9 (22)	4 (23)

Source: For 1960 to 1990, the figures are tabulated from the Integrated Public Use Microdata Files. For 2000, the figures are tabulated from the American Community Survey Public Use Microdata Files.

[a] Quintiles are defined using the household income distribution for all households (renters and homeowners combined).

Second, households in the lower quintiles of the income distribution experienced much greater increases in rental costs relative to income when compared with relatively wealthier renter households. From 1960 to 2000, the rent-to-income ratio for the median renter in the bottom quintile increased from 0.47 to 0.55, while the proportion spending more than 30 percent of income on rent increased from 0.62 to 0.79. Increases in these proportions were considerably more moderate for renter households in the middle quintile and negligible for households in the top quintile.

An alternative metric often employed in descriptive analyses of housing affordability—for example, in the Department of Housing and Urban Development's (2000) "Worst Case Housing Needs" report—is the proportion of the rental stock that is "affordable" to renters within a given income class, relative to the size of the relevant population of renters. For the period 1960 to 2000, Table 4 reports the proportion of housing units with rents that are less than 30 percent of the income of the median renter. These tabulations are provided for all renters, for renters by income quintiles and for poor renters. The proportion of renter households that fall into each category is included in parentheses.

The proportion of the rental housing stock that is affordable, in this sense, to the median renter has declined markedly. Between 1960 and 2000, the proportion of dwellings renting for 30 percent or less of renter median income declined from 0.83 to 0.62. Again, this erosion is concentrated in the bottom of the income distribution, although the decline in affordability is also evident for renters in the middle quintile. Over this time period, the percentage of renters concentrated in the bottom quintile increased from 29 to 34 percent. These patterns suggest a

substantial undersupply of rental dwellings available for low-income households, even those willing to devote a large fraction of income to rent.

Explaining Trends in Low-Income Housing Markets

Since affordability measures depend on both housing costs and incomes, trends in the distribution of income are potentially important in explaining the increase in housing costs and rent burdens experienced by poor and near-poor households. For example, there is now a large literature documenting increases in earnings inequality around a stagnant mean during the 1980s (Levy and Murnane, 1992; Reed, Glenn-Haber and Mammeesh, 1996; Freeman and Katz, 1994). If low-income households permanently lost ground during this period in terms of real income, changes in the income distribution would have increased the rent burdens for this segment of the income distribution.[4]

Concurrently, increases in rents can be caused by an increase in the quality and/or quantity of housing consumed or by increases in the price of a quality-adjusted unit of housing. Factors that may influence the quantity or quality of housing consumed by the poor are changes in income, tastes and government regulations that mandate minimum quality housing standards. Factors that may influence quality-adjusted price may include land-use regulations that decrease the supply of low-income housing or demographic factors, such as the aging of the baby boomers or immigration, that alter demand.

Is Rental Housing Less Affordable Because Incomes Have Changed Over Time?

In Table 5, we decompose the decade-by-decade affordability changes (from Table 4) into two components—the change in affordability due to changes in rents, holding incomes constant, and the change in affordability due to changes in income, holding the distribution of rents constant. Estimates are provided for all renters, for renters in the bottom two quintiles of the household income distribution and for poor renters.

For all renters, the proportion of units affordable at 30 percent of income was stable during the 1960s, declined during the 1970s (by 14 percentage points), declined further during the 1980s (by 7 percentage points) and was stable during the 1990s. Increases in rents accounted for 8 of the 14 percentage point reduction during the 1970s, while the remaining 6 percentage points is attributable to a decline in the real median incomes of renters. During this decade, real incomes increased for all households (renters and owners combined) in all quintiles, while homeownership rates increased considerably for the top four income quintiles (as

[4] Increases in income inequality per se may also increase the price of low-income housing. O'Flaherty (1995) models the impact of increased inequality on the housing price-quality profile. An increase in income inequality reduces the demand for middle-quality housing and increases the demand for low-quality housing, as households experiencing declines in real income reduce their demand for housing.

Table 5

Decomposition of Decade-by-Decade Changes in the Percentage of Rental Units Affordable to the Median Renter, to All Renters, to Renters in the Bottom Quintiles and to Poor Renters

(in percentage points)

Change 1960 to 1970	*Overall change*	*Due to rents*	*Due to income*
All renters	1	−8	9
Quintile 1	0	0	0
Quintile 2	4	−14	18
Poor renters	−1	−1	0
Change 1970 to 1980	*Overall change*	*Due to rents*	*Due to income*
All renters	−14	−8	−6
Quintile 1	2	−1	3
Quintile 2	−10	−10	0
Poor renters	0	−1	1
Change 1980 to 1990	*Overall change*	*Due to rents*	*Due to income*
All renters	−7	−9	2
Quintile 1	−3	−2	−1
Quintile 2	−6	−9	3
Poor renters	−3	−3	0
Change 1990 to 2000	*Overall change*	*Due to rents*	*Due to income*
All renters	−1	−4	3
Quintile 1	−5	−5	0
Quintile 2	−3	−5	2
Poor renters	−5	−6	1

Notes: The decompositions are calculated as follows. Let $F^{2000}(\cdot)$ be the 2000 rental cumulative density function (cdf), $F^{1990}(\cdot)$ be the 1990 rental cdf, affordable^{2000} be equal to 30 percent of the income of the median renter in 2000, affordable^{1990} be equal to 30 percent of the income of the median renter in 1990, P^{2000} be the proportion of rental units renting for less than affordable^{2000}, and P^{1990} be the proportion of rental units renting for less than affordable^{1990}. Both affordable^{2000} and affordable^{1990} are measures in 1990 dollars. The change in the proportion affordable between 1990 and 2000 is given by the equation, $\text{Change} = P^{2000} - P^{1990} = F^{2000}(\text{affordable}^{2000}) - F^{1990}(\text{affordable}^{1990})$. Add and subtract the 1990 rental cdf evaluated at the 2000 affordable rent threshold to get, $\text{Change} = F^{2000}(\text{affordable}^{2000}) - F^{1990}(\text{affordable}^{2000}) + F^{1990}(\text{affordable}^{2000}) - F^{1990}(\text{affordable}^{1990}) = [F^{2000}(\text{affordable}^{2000}) - F^{1990}(\text{affordable}^{2000})] - [F^{1990}(\text{affordable}^{1990}) - F^{1990}(\text{affordable}^{2000})]$. The first term is the change in the proportion affordable arising from the change in the rental cdf around the 2000 affordability threshold. The second term is the change in the proportion affordable holding the rental distribution constant in 1990 and allowing the affordability threshold to change.

shown earlier in Table 1). These facts suggest that nearly half of the decline in the affordability of rental dwellings during the 1970s is attributable to a decline in the median income of renter households, which in turn was caused by a selective shift of better-off households into homeownership. During the 1980s and 1990s, however, all of the declines in affordability arose from shifts in the rental distributions

toward higher priced dwellings, with increases in median income providing a modest offset to these rent increases.

For poor and bottom-quintile households, the largest declines in the proportion of housing affordable to the median renter occurred during the 1980s and 1990s. During the 1980s, real income declines contributed modestly to the decreases in affordability. During the 1990s, nearly all of the declines in the affordability are attributable to increases in rents. Note, in nearly all cases, rent distributions have shifted to the right. With the exception of the large change in median income of renters during the 1970s (a change that is more of an artifact of better-off renters becoming homeowners rather than a real decline in purchasing power), most decreases in affordability are attributable to higher rents, not lower incomes.

Do Quality Improvements Explain the Rent Increases of the Past Four Decades?

By most measures, improvements in the quality of rental housing in America have been quite substantial. Forty years ago, for example, one-fifth of the rental units in the United States lacked complete plumbing facilities like hot water, sinks and flush toilets. In 2000, only one rental unit out of 200 did not have complete plumbing facilities. Among the rental dwellings occupied by the poorest quintile of U.S. households, dwellings without plumbing facilities declined from 40 percent of the stock four decades ago to nearly zero percent. Similarly, nearly all rental units currently have complete kitchen facilities. Moreover, the sizes of rental units have also increased considerably since 1960. The proportion of one-room rentals declined from 5.8 percent to 3.9 percent for all rentals and from 11.5 percent to 5.9 percent for those occupied by bottom-quintile renters. In addition, the proportion of low-quality rentals with four or more rooms increased by 10.2 percentage points. The percentage of rentals with three or more bedrooms increased by 2.7 percentage points, while for the lowest income quintile, the percentage increased by 5.8 percentage points.[5]

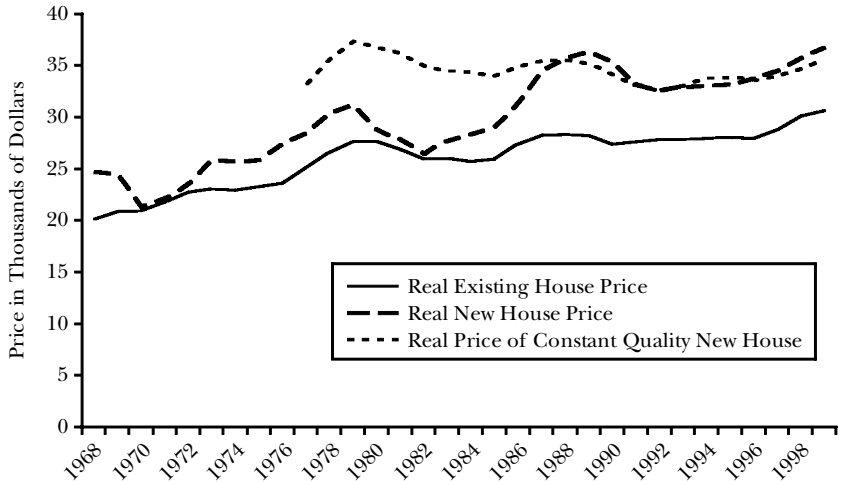
Other aspects of quality have improved as well. Orr and Peach (1999) document that between 1975 and 1997, the proportion of rental units they classified as "inadequate"—defined as units with physical defects or faulty plumbing, electricity or heating—decreased considerably, as did the proportion classified as "overcrowded." Moreover, the improvements in dwellings occupied by poorer renter households were larger than the improvements in other dwellings. The one measure of housing quality where substantial differences remain across income quintiles is the self-assessment by residents of the quality of their neighborhoods.

For owner-occupied dwellings, the trends in quality are parallel. Plumbing and kitchen facilities, size, as well as measures of structural adequacy all improved considerably over the past four decades.

Figure 3 presents evidence on the course of owner-occupied housing prices and the importance of quality changes during the past quarter-century. The solid

[5] See Quigley and Raphael at ⟨http://urbanpolicy.berkeley.edu⟩ for details and documentation of these quality changes.

Figure 3
Real Price of New, Existing and New Constant-Quality Houses (in 1968 dollars)



Source: U.S. Department of Housing and Urban Development, U.S. Census Bureau

line shows the median price of existing housing, while the line with heavier long dashes shows median selling price of new housing. Both are normalized by the consumer price index for other goods (that is, the CPI-U minus its shelter component) and indexed to 1968 prices. The real prices of existing housing increased by about 1.3 percent per year during the period, while new home prices increased by about the same amount (but with more variation). The figure also presents a line of short dashes showing estimates of the real price of a new constant-quality house of 1992 characteristics during the period 1977–1999, which is produced using hedonic methods by the U.S. Census Bureau. As is clear, much of the increase in real prices has arisen from quality change. For example, a new dwelling with 1992 features, but purchased in 1980, would have cost almost 15 percent more, in real terms, than the median new dwelling sold in 1980. During the period 1977–1999, the real price of a constant quality home increased about 0.3 percent per year while the median sales price of a new house increased by about 1.1 percent per year.

The evidence on characteristics of rental and owner-occupied housing suggests that quality increases are an important factor in explaining higher prices of housing stock.

Does the Increased Quality of Rental Housing Stem from Demand or Government Rules?

Does the improvement in the quality of housing for low-income renters result from increases in demand for housing amenities among low-income households, or from supply-side restrictions that impose minimum habitation standards on new and existing units, or both? It is not hard to imagine that households in the lower

tail of the income distribution are willing to pay handsomely for basic amenities like indoor plumbing or hot water as their incomes rise. However, the rise in rent burdens suggests that either the income elasticity of demand for housing among the poor is exceptionally high or that other forces are at work. Estimates of housing demand by renters yield income elasticities less than one, indicating housing consumption should grow at a slower rate than income.[6]

It seems plausible that much of the increase in quality of rental units has been abetted by government restrictions. Habitation standards generally preclude building new dwellings without basic amenities such as private kitchens, complete plumbing and multiple exits. Standards typically do not permit shared facilities (and as we note below, this form of construction would not be profitable anyway). Increased habitation standards affect the quality and quantity distribution of the rental stock through other avenues, as well. For example, these standards may be enforced through local zoning ordinances that reduce density, impose minimum dwelling and lot size requirements, or impose other restrictions that increase the minimum quality of new units (Fischel, 1985).

The Urban Renewal Program, beginning in 1949, and its successors up to the early 1970s are widely perceived to have increased the minimum quality of housing and reduced the stock of housing in many urban areas. These programs provided subsidies to local governments to acquire and demolish occupied property (mostly older housing units and small businesses) under the power of eminent domain to create new housing and public facilities. In his textbook summary of urban renewal, O'Sullivan (1996) notes that the redevelopment programs removed 600,000 low-income dwellings from the housing stock and added 250,000 new dwellings, mostly targeted toward middle- and upper-income households. The program affected a relatively small fraction of the stock of rental units, less than 5 percent, but almost all of the units targeted for demolition were in the bottom of the quality distribution.

Quality enhancements caused by public interventions such as zoning ordinances or urban renewal are likely to raise the level of housing consumption of low-income households above the levels they would otherwise choose. The way in which quality enhancements can make those with low incomes worse off is perhaps most vivid when minimum standards price the poorest households out of the market and increase the number of households that are homeless or at risk of

[6] Using the CPI deflator for all urban consumers, between 1960 and 2000, real median household income for renters in the bottom quintile of the household income distribution increased by 38 percent. Concurrently, real rents increased by 50 percent. If all rent increases above the overall inflation rate reflected increases in housing quality, and if all increases in quality of housing consumed reflected the voluntary choices of renter households, then the income elasticity of demand for housing by renters in the bottom quintile can be calculated by simple arithmetic. But this calculation suggests an income of elasticity of demand for housing of 1.3 among bottom quintile renter households. This computation lies well above the range of scientific estimates. In an early review, Mayo (1981) summarized prior research, reporting a maximum of 0.70 for renters and 0.87 for owners. From an explicitly dynamic model, Hanushek and Quigley (1982) estimated elasticities for renters of 0.6. In a later review, Malpezzi and Mayo (1987) concluded that credible estimates of the income elasticity of housing demand lie between 0.5 and 1.

becoming homeless.[7] But even for poor households whose circumstances are less desperate, increases in housing quality caused by regulation may still reduce overall economic welfare—at least, as long as the preferences and paternalism of the nonpoor with regard to the quality of housing occupied by others are not given too much weight.

How Government Building Restrictions Increase Housing Prices

Increases in housing rents do reflect increases in quality, but they also reflect higher prices even after adjusting for quality. Holding quality constant, the price of a given rental unit depends on factors influencing the overall supply of rental housing as well as demographic and economic determinants of market demand. This section will focus on the supply side of the housing market, in which the most important determinants of the quantity of rental housing are construction quality, vintage and depreciation. The next section will focus on factors influencing the demand for low-income rental housing, including income, preferences and changing demographic conditions.

Economists studying housing refer to a process of "filtering," by which housing units move through a quality hierarchy, either through depreciation in excess of maintenance outlays or investments to upgrade dwellings. The total supply of rentals is jointly determined by new construction at all quality levels, the rates at which units filter through the quality hierarchy, and the rate at which units are removed from the rental stock via abandonment and conversion to other uses. Sweeney (1974) and O'Flaherty (1995) offer powerful models of this process. The process of filtering is especially important for low-income rental housing, because new construction at higher quality levels tends to be more profitable than new construction of low-quality housing, for reasons linked to depreciation and durability (O'Flaherty, 1995, 1996). Through the process of filtering, the supply of bottom-quality housing is dependent on new housing construction at all levels, not just newly built "affordable housing." Malpezzi and Green (1996) demonstrate that metropolitan area growth in the quantity of low-quality housing units is quite sensitive to the quantity of new, higher-quality housing supplied. In their words, this pattern indicates that "to the extent that a city makes it easy for *any* [emphasis added] type of housing to be built, it will also enhance the available stock of low-cost housing."

The converse is also true: to the extent that cities make it difficult to build new housing, *any type of new housing*, the availability of low-cost housing will be reduced and the affordability of *all* housing will decline. Indeed, many cities complicate and add costs to the process of building new housing. Perhaps the most extreme barriers to new housing come in the form of explicit growth controls. Municipal

[7] Many have argued that the removal of low-quality rentals (for example, single-room occupancy dwellings) via urban redevelopment as well as minimum quality standards imposed through local housing ordinances are directly responsible for the rise in homelessness in the United States during the 1980s (Burt, 1992; Rossi, 1989). For more recent evidence on the link between housing costs and homelessness, see Quigley, Raphael and Smolensky (2001).

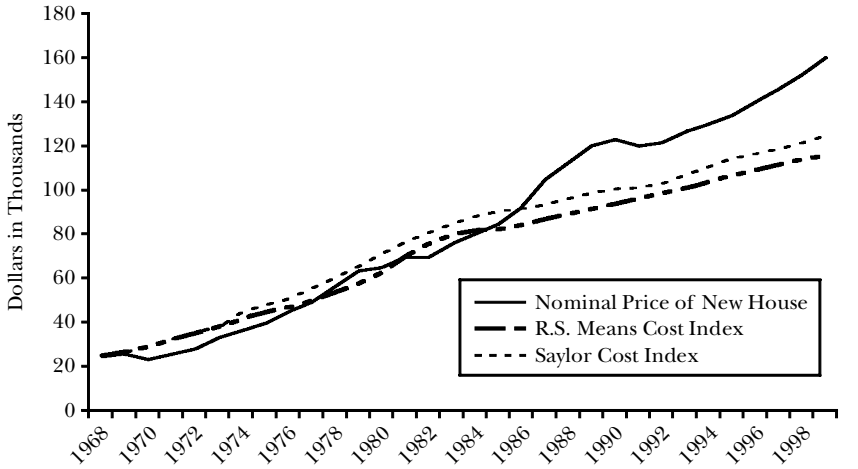
growth control measures may take the form of moratoria on new developments, urban growth boundaries beyond which development is severely curtailed, or open space requirements intended to preserve undeveloped land (Schill, 2001). An early review of the empirical research on growth controls concluded that these measures increase housing prices in the municipalities that impose restrictions, have spillover effects on housing prices in neighboring municipalities without such restrictions and reduce the value of undeveloped land that has become subject to restrictive regulation (Fischel, 1990). More recent research based on large surveys of California municipalities finds similar results (Levine, 1999).

Land-use regulations that reduce housing supply and increase housing prices include a wide variety of local ordinances. In the previous section, we noted that zoning ordinances are responsible, in part, for increasing the minimum quality of the existing rental stock. However, many zoning ordinances also reduce the supply of housing by artificially increasing land requirements and by allocating land away from residential uses. For example, municipalities often set minimum lot sizes for new single-family homes with the aim of reducing density and controlling the demand for public services. In addition, many municipalities have community "master plans" that reserve large portions of undeveloped land for commercial uses that generate local tax revenue, yet require little spending on public services such as education. These examples of "fiscal zoning"—zoning designed to minimize the fiscal impact of land uses—reduce the quantity of land available for housing, restrict the housing supply and, thus, increase housing prices in the regulated municipalities as well as in neighboring towns. Not surprisingly, empirical research on the economic impacts of zoning ordinances indicates that these rules tend to increase housing prices and reduce new housing construction (Thorson, 1996, 1997).[8]

Several studies have estimated the impact of the overall municipal regulatory environment on housing supply and prices. Using aggregate data for U.S. metropolitan areas, Mayer and Somerville (2000) found that heavily regulated areas have considerably lower levels of new housing construction and that housing supply elasticities are considerably lower in more heavily regulated metropolitan areas. Green, Malpezzi and Mayo (1999) found a similar relationship between supply elasticities and the degree of land-use regulation across U.S. metropolitan areas, while an international comparison of housing supply elasticity estimates (Mayo and Sheppard, 1996) reported larger elasticities in less heavily regulated national housing markets. A number of studies have found strong relationships between the overall degree of land-use regulation and housing prices (for example, Green, 1999; Malpezzi, 1996; Pollakowski and Wachter, 1990).

[8] Theoretically, zoning may increase housing prices by both reducing the supply of housing as well as increasing the demand for housing in the zoned community. The original motivation behind zoning ordinances was to prohibit the co-location of incompatible uses of land, largely to separate and isolate activities that generate negative externalities for residents (Fischel 1985). Hence, a zoned community is likely to be desirable to many, a fact that should be reflected in housing values. However, the fact that land-use regulations in one municipality create spillover effects on housing prices in neighboring municipalities suggests that these regulations reduce the supply of housing.

Figure 4
Nominal House Prices and Construction Costs



Source: U.S. Department of Housing and Urban Development, R.S. Means Building Construction Costs, Saylor Publications Residential Construction Costs.

One rough way to estimate the extent to which urban land use and zoning regulations have inflated housing prices is to consider the relationship between housing prices and the nonland components of input costs. Time series data on the nominal costs of labor and materials for a house whose quality is specified by engineering criteria can be pieced together from two commercial sources: R. S. Means and Saylor, Inc.[9] Figure 4 presents these two input cost series, benchmarked to 1968, together with the price of new houses. From 1968 up to about 1985, nominal new house prices increased roughly in proportion to the hard nonland costs of construction. But starting in the mid-1980s, new house prices increased by more than either of these price indices, so that by 1999, new house prices had risen to about 25 percent above the level of the underling input prices. As we have noted, part of this divergence certainly reflects quality improvements. (The data underlying Figure 3 suggest that a little over half is due to quality improvement.) Part surely reflects urbanization and increased competition for land. But a large part probably represents increased land costs arising from regulatory restrictions on new construction. The impact may be especially large for the low-quality housing market. Malpezzi and Green (1996) quantified the impact of metropolitan-wide measures of regulatory restrictiveness on rents for the bottom, middle and third quartiles of metropolitan rental markets. Their regression results indicate that moving from a relatively unregulated to a highly regulated metropolitan area increases bottom-quartile rents by more than a fifth and bottom-quartile house values by more than

[9] See Glaeser and Gyourko (2002) for a discussion of the R. S. Means data and for a cross-sectional analysis by region.

three-fifths. The largest price effects of such regulations occur in the market for low-quality housing.

There are no studies that assess the contribution of land-use regulation *per se* to the increases in rent burdens experienced by low-income households. Nonetheless, a substantial body of empirical literature consistently finds large effects of land-use regulation and restrictions on housing prices and rents. A precise and explicit evaluation of the contribution of land-use regulation in explaining the increased rent burdens of the poor would be a fruitful area for future research.

Demographic Trends and Rental Markets

On the demand side of the rental market, several long-term demographic trends are likely to influence quality-adjusted rents. On the one hand, the native-born population continues to age. As is evident from the profile of age and housing status reported in Table 2, an aging population should help relieve demand-side pressure in the market for low-quality rentals.

At the same time, international immigration to the United States has contributed greatly to the growth of the nation's population over the past two decades and has altered the internal age distribution. Moreover, the household income distribution for the immigrant population is disproportionately concentrated at low income levels relative to the distribution for the native-born. Both factors suggest that recent immigration trends may put upward pressure on rents for low-quality rental units (especially in metropolitan areas with large immigrant populations).

Two recent studies document the effect of large-scale immigration on housing costs in the short run. Susin (2001) and Saiz (2003) independently exploited a natural experiment, first studied in the context of labor markets by Card (1990), to estimate the impact of immigration on housing costs. Both authors assessed whether housing prices and rents increased in Miami after the large increase in the Miami immigrant population resulting from the "Mariel boatlift"—when Cuba allowed 125,000 refugees to leave for Miami over a period of five months in 1980. Susin and Saiz found sizable short-term impacts of the population increase on housing prices. Again, the effect of immigration on housing costs in the United States is a question deserving further research.

Concluding Thoughts: What Can Be Done?

What can be done to make housing more affordable? For the owner-occupied sector, lack of affordability is a problem for younger households. Here, modest changes in institutional arrangements could greatly affect the affordability of homeownership, especially for young households whose incomes will increase over the life cycle. For low-income renters, more aggressive policy is needed.

Policies to Facilitate Homeownership

As noted above, levels of homeownership are high, and they have been drifting upward continuously during the past four decades. These outcomes are widely applauded by those who see a link between federal tax expenditures on

homeownership and fulfillment of the "American dream." These trends in homeownership are also applauded by those who see positive social externalities arising from owner occupancy. In fact, however, there is only a small effect of tax expenditures on homeownership. There is, perhaps, a bit more to the neo-Marxist notion that homeownership increases political participation (DiPasquale and Glaeser, 1999) and other desirable social outcomes (Haurin, Parcel and Haurin, 2002). But the evidence of externalities from homeownership is not overwhelming.

Federal tax expenditures on homeownership like the deductability of mortgage interest payments and local property taxes and the special treatment of capital gains from housing are large—estimates for 1999 range from $56.2 to $72.0 billion (Voith, 1999). Ironically, the deductions have only a small effect on homeownership because the elasticity of homeownership with respect to price is quite small. (Rosen, Rosen and Holtz-Eakin, 1984, present the canonical empirical analysis.) A more productive—and far less expensive—focus on homeownership would be on expansion of mortgage instruments.

Most mortgage underwriting criteria consider only current income. Most young households have income levels that are relatively low compared to their long-run prospects. The effects of these institutional constraints are even more pronounced in inflationary environments. For example, during the 1975–1985 period, high interest rates precluded home purchase by many younger households at exactly the time when the true user costs of housing were low or even negative. But this insight also suggests possibilities for rethinking mortgages in ways that would encourage homeownership among the young.

Improvements in underwriting techniques, achieved by reliance upon broader measures of borrower creditworthiness, can increase the opportunities for homeownership among households with lower annual incomes (Gates, Perry and Zorn, 2002), as better credit risks can be identified. Limited programs involving credit counseling and risk-based pricing have expanded ownership opportunities for those with lower current incomes without eroding the profitability of lending (Hirad and Zorn, 2002).

With a fixed-rate mortgage, payments are fixed in nominal terms over time. With an adjustable-rate mortgage, the payments will rise or fall over time according to movements in interest rates. But the more natural pattern for mortgage amortization is in "graduated payments," in which the contracted monthly payments increase over time, as do the expected incomes of younger households over the life cycle. With adjustable interest rates, these mortgages do raise a possibility of "negative amortization," where in the first few years the amount that it would take to pay off the mortgage in full might increase. But quite modest increases in nominal house prices in the first few years make negative equity quite rare.

Longer amortization periods would reduce monthly payments and allow households of lower current incomes to qualify for loans. In states with high housing prices, like California, 35 and 40 year mortgages are becoming common; in European countries, even longer terms are common. See Maclennan, Muellbrauer and Stephens (1998) for a survey of mortgage institutions in EU countries.

More ambitious institutional rearrangements have been proposed. For

example, partnerships have been proposed in which an outside investor or syndicate puts up some fraction of the purchase price of a house and the homeowner amortizes only the residual fraction, perhaps over a 30-year term; Caplin, Chan, Freeman and Tracy (1997) discuss one concrete example. The passive investor would then share in capital appreciation at the time of sale or transfer according to some schedule reflecting the investments of the two parties. Poorer households would benefit from lower payments in exchange for reduced capital appreciation. Even richer households, who could more easily amortize the full purchase price, could benefit from the increased diversification provided by the contractual relationship. The shared appreciation mortgage programs offered by a number of firms and universities to their employees are other examples of this relationship.

Making Rentals More Affordable

Rental housing can be made affordable to low-income households through policies that increase housing supply or those that augment the purchasing power of poor households.

The case for a supply-side response, removing barriers to construction of housing for high-income as well as low-income families, is clear. As discussed earlier, local land use regulations drive up rents and force poorer households to spend large fractions of their incomes on shelter. However, the political dynamics of reform are very difficult. Homeowners dominate most governments outside of central cities. It is in the self-interest of these homeowners to oppose the development of higher density housing in their jurisdictions, much less to encourage production of new dwellings of lower quality termed "affordable housing." The fiscal reasons for this opposition were termed the "Homevoter Hypothesis" by Fischel (2001). Consumers of small quantities of housing pay little in local taxes; they may consume larger quantities of locally financed public services. Homevoters also fear that being surrounded by lower-priced housing may bring down their own property values. Moreover, there is a fear that higher-density dwellings for lower-income residents are more likely to include those of differing race, ethnicity and language. Finally, there are increasingly respectable reasons for cloaking this self-interest in the common ecological good. The rhetoric of "smart growth" is espoused by ecologists and advocates to impede suburban development, and the concept has widespread support among professional planners. Open space, greenbelt and urban growth boundary regulations are but a few of the names used to describe building and density restrictions that reduce housing opportunities.

It is unreasonable to expect that the capacities of local governments to impede residential development will be curtailed by *local* homevoters. This would require action by a higher regional authority or by state government. Most states have shown little interest in pursuing reforms of this kind.

California may be the clearest example of the window-dressing approach to this issue. By law, each California jurisdiction must produce a "housing element," which requires zoning enough land for higher density construction to meet a state-provided forecast of demand by income segment. There are no penalties for failing to produce a housing element in compliance with state guidelines; in fact,

Table 6
Summary of Renter Households and Housing Market Needs
(thousands)

Fiscal year	*Number of renter households*	*Number of households in severely inadequate housing*	*Number of households paying 30–50% income*	*Number of households paying >50% income*	*Number of households in poverty*	*Total subsidized renters*
1973	24,425			na	4,828	1,356
1974	24,943			na	4,922	1,551
1975	25,462	2,832	4,099	na	5,450	1,717
1976	25,897	2,886	4,359	na	5,311	2,067
1977	26,324	2,840	4,655	na	5,311	2,092
1978	26,810	1,677	4,765	3,661	5,280	2,400
1979	27,174	2,621	4,790	4,620	5,461	2,654
1980	27,415	2,589	4,961	4,935	6,217	2,895
1981	28,709	2,882	5,399	5,455	6,851	3,012
1983	29,894	1,617	5,661	5,481	7,647	3,443
1985	31,736	1,108	6,739	6,128	7,223	3,887
1987	33,320	859	7,675	6,991	7,005	4,175
1989	33,734	1,587	6,983	5,187	6,784	4,402
1991	34,242	1,347	6,938	5,426	7,712	4,613
1993	35,184	910	7,163	5,948	8,393	4,851
1995	35,246	849	7,385	6,187	7,532	5,087
1997	35,059	1,072	7,264	7,359	7,324	5,120
1999	34,831	1,184	7,476	6,710	6,676	5,101
2001	34,417	1,178	7,411	7,092	6,813	5,061[a]

Sources: U.S. Department of Housing and Urban Development Office of Budget, Annotated Tables for the 1998 Budget Process; Congressional Budget Office Tabulations based on Congressional Justifications for the Department of Housing and Urban Development; U.S. Department of Housing and Urban Development, Office of Policy Development and Research Tabulations of American Housing Surveys; American Housing Survey, Series H-150, various years; Housing Vacancy Survey, Series H-111, various years; March Current Population Survey, various years; The Green Book, various years; U.S. General Accounting Office, Changes in Rent Burdens And Housing Conditions Of Lower Income Households. Washington, D.C.: U.S. GPO (1985); Quigley (2000).

Notes: Prior to 1978, the AHS did not report rent-to-income ratios beyond the 35 percent + category. Data on rent burdens and inadequate housing units prior to 1981 are taken from GAO (1985) and represent only households with less than 80 percent of median area incomes. AHS survey design and definitions of severe and moderate problems changed in 1985 so caution should be used in interpreting trends. Subsidized households include those in Public Housing, Section 8, Section 236 and Rent Supplement programs. Number of subsidized households after FY 1980 reflects subtraction of units receiving more than one subsidy (i.e., Section 236 projects that also receive either Rent Supplement or Section 8 subsidies).

[a] Estimate.

there are no penalties for failing to produce a housing element at all. After producing a plan and zoning some land for higher densities, there is nothing to compel California jurisdictions to grant permission to build on the land so zoned.

With limited ability to increase supply, policies to augment demand can be less effective. Only a fraction of households deserving of assistance on income grounds receive housing assistance, and in tight markets, many program participants find it difficult to locate and acquire acceptable units on the private market.

Table 6 presents data that we think is at the center of popular concern. It

documents the number of renter households in severely inadequate housing and the number paying more than 30 percent of income on rent for each year during the past quarter-century. The table also presents the number of households in poverty and the number of renters subsidized by federal housing programs. As the table indicates, the incidence of severely inadequate housing has been reduced by almost two-thirds during this period, and the incidence of poverty among rental households has declined. But the number of renter households paying 30 to 50 percent of income on rent has increased by 3 million, and the number of rental households paying more than 50 percent of income on rent has increased by another 3.6 million. In contrast, the total number of renter households receiving housing subsidies from the federal government has increased much more modestly. Since 1978, the number of households paying more than 30 percent of income on rent increased by 6.4 million. The number of federally subsidized households increased by 2.7 million—about two-fifths of the increase in households with severe rent burdens. Currently, there are 7.3 million renters in poverty. All federal rental programs provide subsidies to 5.1 million households.

During the 1970s and 1980s, the United States conducted the largest social science experiment in history, the Experimental Housing Assistance Program (EHAP). These housing allowance programs provided cash assistance to families for housing, with the amount determined by the gap between some share of the family's income and the cost of standard housing in that area. A range of experiments were carried out in a number of cities; some focused on the effect of the allowances on housing consumption and household behavior, some focused on the effects of allowances on the supply of housing to low-income households and some focused on different administrative arrangements. The results of the experiment demonstrated rather conclusively that if phased in carefully, universal shelter allowance programs need not drive up rents (for example, see the papers in Bradbury and Downs, 1982; Friedman and Weinberg, 1983). Nothing was done to implement the program at the time, and the concept of a universal housing allowance program seems even less politically feasible today.

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