

# Housing Outcomes: An Assessment of Long-Term Trends

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## I. INTRODUCTION

In the field of housing economics, there is a long tradition of evaluating housing outcomes for the entire population and various subgroups by tracking four key variables, or concepts: the physical adequacy of the occupied housing unit, the number of people living in the unit relative to the number of available rooms, the financial commitment to housing expressed as a share of the household's income, and the household's assessment of the quality of its neighborhood and of its local public services. In this paper, we examine trends in housing outcomes over the past two decades for income quintiles, controlling for the age of the household head and for tenure (renter versus owner) status.

Our data set for this analysis is the American Housing Survey (AHS), which is produced jointly by the U.S. Bureau of the Census and the U.S. Department of Housing and Urban Development. The AHS was conducted annually from 1973 to 1981 (as the Annual Housing Survey) and has been conducted in odd-numbered years since 1983. We present data from 1975 through 1997. Information is collected on individual housing units and

on selected characteristics of the residents (a small percentage of the units are unoccupied). National samples range in size from 50,000 to 80,000. From 1973 to 1983, the sample consisted of a panel of housing units selected from the 1970 decennial census, with allowances for additions to the stock of housing from new construction. A new sample was drawn from the 1980 decennial census, which has been used from 1985 to the present. However, new sample weights were introduced in 1991 based on the 1990 decennial census.<sup>1</sup>

The main conclusions drawn from our analysis are as follows. There has been significant improvement in the physical adequacy of the housing stock over the past few decades, particularly for households in the lowest income quintile. As a result, today there is very little difference across income quintiles in terms of the physical adequacy of the units occupied. A similar result holds for persons per room. Because newly constructed housing units have tended to increase in size over time while the number of persons per household has declined, persons per room has steadily declined for all income quintiles and there is now little difference across them. Assessments of neighborhood quality have also improved, although not nearly as much as the physical quality of the housing stock, and a sharp divergence of assessments of neighborhood quality remains across the income quintiles. In contrast, financial

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commitment has not improved, particularly for lower income households. The share of this group's income devoted to housing increased significantly in the late 1970s (a period of rapid inflation) and remained high in the 1980s (a period of generally high interest rates). While there has been some improvement for the population as a whole in the 1990s—likely due in part to the slowing of inflation and the associated drop in long-term interest rates—this improvement has not been experienced by households in the lowest income quintile.

## II. AN OVERVIEW OF DEMOGRAPHIC AND HOUSING CHARACTERISTICS

It is useful to begin this analysis with a broad overview of some of the key demographic and housing characteristics of the households in total and by income quintile.<sup>2</sup> Quintile 1 represents the highest income, quintile 5 the lowest. The table presents data on the age distribution (of the household head) and tenure status of all households and for the

respective quintiles for three years—1975, 1985, and 1997. In addition, for 1985 and 1997 households are divided into those receiving some form of housing subsidy and those not receiving a subsidy.<sup>3</sup>

The proportion of households that own the homes in which they reside was 67.4 percent in 1975, it declined to 65.1 percent by 1985, but then it partially recovered, to 66.1 percent, by 1997. These home ownership rates, which are based on our computations of AHS data sets, are somewhat lower than official Census Bureau published figures, but generally follow the same pattern through time. Higher income households are much more likely to be homeowners than are lower income households. Moreover, the home ownership rate for the highest income quintile rose steadily over the past two decades. In contrast, the rate for the lowest income quintile fell significantly from 1975 to 1985, and recovered only modestly by 1997. A similar but less extreme pattern exists for the middle-income quintile.

DEMOGRAPHIC AND HOUSING CHARACTERISTICS BY INCOME QUINTILE  
Percent

Quintile	Owner	Renter	Age			Unsubsidized Households	Subsidized Households
			Under Thirty-Five	Thirty-Five to Sixty-Four	Over Sixty-Five		
1975							
1	86.6	13.4	19.8	74.6	5.6	NA	NA
2	77.3	22.7	34.5	58.8	6.7	NA	NA
3	66.9	33.1	36.7	50.4	13.0	NA	NA
4	57.4	42.6	32.6	40.6	26.8	NA	NA
5	51.0	49.0	21.2	32.5	46.3	NA	NA
Total	67.4	32.6	28.9	50.9	20.2	NA	NA
1985							
1	87.5	12.5	19.2	74.1	6.7	94.4	5.6
2	75.3	24.7	31.0	59.5	9.5	92.6	7.4
3	63.1	36.9	33.0	47.7	19.2	91.5	8.5
4	54.4	45.6	31.2	38.5	30.3	89.6	10.4
5	44.0	56.0	26.1	30.4	43.5	79.7	20.3
Total	65.1	34.9	28.1	50.3	21.6	89.6	10.4
1997							
1	89.2	10.8	14.6	78.4	6.9	95.9	4.1
2	77.7	22.3	22.7	66.3	11.0	93.7	6.3
3	64.5	35.5	26.6	54.3	19.1	94.5	5.5
4	54.6	45.4	27.3	41.8	30.9	93.1	6.9
5	45.0	55.0	23.5	34.5	42.0	84.8	15.2
Total	66.1	33.9	22.9	55.0	22.1	92.4	7.6

Source: Authors' calculations, based on American Housing Survey national data sets for the respective years.

Note: A unit is defined as subsidized if: a) it is publicly owned housing; b) the federal government pays some cost for the unit; c) state or local government pays some cost for the unit; d) household income is reported each year so that rent can be set; e) a low-cost mortgage is obtained through a government program; f) the unit is rent-controlled—or any combination of the aforementioned.

In terms of age, the population as a whole grew older over the past two decades, with the share of household heads under age thirty-five falling from 28.9 percent in 1975 to 22.9 percent in 1997. Shares of households in the older age categories rose by an offsetting amount, with the largest increase in the age thirty-five to sixty-four category. The age distribution across income quintiles generally reflects the pattern of income over the life cycle, with income rising into middle age and then falling as the primary wage earner approaches and then enters retirement.

Finally, while we cannot have great confidence in the reported proportion of households receiving some form of housing subsidy, we can probably have more confidence in the change in this proportion over time. In total, the proportion of households receiving some form of subsidy fell from around 10.4 percent in 1985 to 7.6 percent in 1997, likely reflecting a combination of tightened eligibility standards, the strong economy, and the low unemployment rates of the mid-1990s. Households in the lowest income quintile are roughly four times more likely to receive a subsidy than those in the highest income quintile.

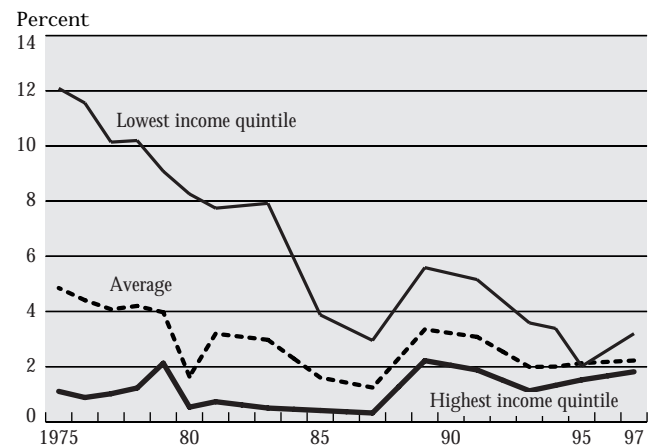
### III. PHYSICAL ADEQUACY

The physical condition of each housing unit in the sample is assessed by using both the inspection report of the individual conducting the survey—the interviewer—and the responses to questions posed to the household. Housing units are then objectively rated as adequate, moderately inadequate, or severely inadequate based on the presence of physical defects and the frequency of occurrence of breakdowns of the plumbing, heating, and electrical systems. This ranking procedure has been generally constant over time, allowing for assessments of changes in physical adequacy. (The specific criteria used to rate units according to these physical adequacy classifications appear in the appendix.) We focus on trends in the proportion of units rated severely inadequate since, in our view, only minor or temporary problems are required for a unit to be rated as moderately inadequate.

In 1975, roughly 5 percent of all housing units in the United States were rated severely inadequate; by 1997, that figure had fallen to around 2 percent (Chart 1). This

Chart 1

#### Physical Adequacy Percentage of Units Rated Severely Inadequate



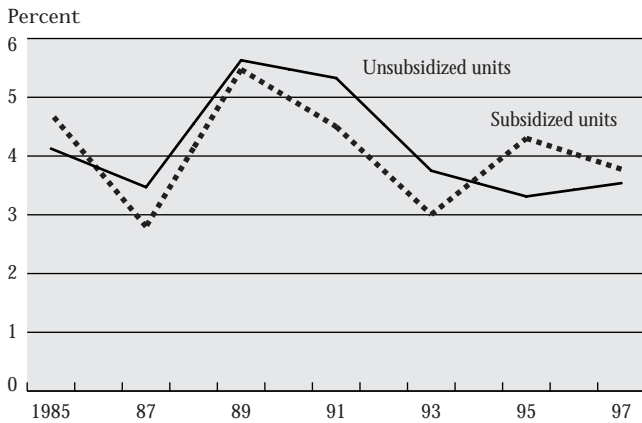
Sources: U.S. Bureau of the Census; U.S. Department of Housing and Urban Development.

improvement reflects the ongoing inflow of new units into the housing stock and the outflow of substandard units through abandonment, demolition, and rehabilitation. The improvement in the physical quality of the housing stock is seen across each of the income quintiles. By 1997, there was little difference in the share of units rated severely inadequate between the highest and lowest income households. Moreover, the most dramatic reduction in the share of severely inadequate units—from around 12 percent in 1975 to about 3 percent in 1997—occurred in the lowest income quintile. Within this quintile, housing adequacy improved for households with relatively young heads (twenty-five to thirty-four years old) as well as for those with relatively older heads (sixty-five years of age and older)—regardless of whether the household head was an owner or a renter.

Furthermore, as shown in Chart 2 (which is plotted from 1985 to 1997, while Chart 1 is plotted from 1975 to 1997), there does not appear to be a significant difference in physical adequacy between lowest quintile households receiving housing subsidies and those not receiving subsidies. Thus, the rising trend of inequality in the distribution of income over the past several decades does not seem to correspond to a relative deterioration in the physical adequacy

Chart 2

**Physical Adequacy**  
 Percentage of Units Rated Severely Inadequate  
 in the Lowest Income Quintile



Sources: U.S. Bureau of the Census; U.S. Department of Housing and Urban Development.

of the housing units occupied by low-income households. On the contrary, the physical adequacy of the housing stock has improved dramatically for the lowest income quintile and there is now little difference in physical adequacy across income groups.

**IV. PERSONS PER ROOM**

The extent to which households are living in cramped or overcrowded housing units is captured in a measure of the average number of persons per room. This outcome measure is computed for each occupied housing unit in the survey by dividing the total number of persons living in the unit by the number of rooms. Rooms are defined as whole rooms used for living purposes, such as kitchens, living rooms, dining rooms, bedrooms, finished attics and basements, permanently enclosed porches suitable for year-round use, and offices used by persons living in the unit. Not included as rooms are bathrooms, halls, foyers, vestibules, closets, alcoves, laundry and furnace rooms, storage spaces, unfinished attics and basements, and open porches.

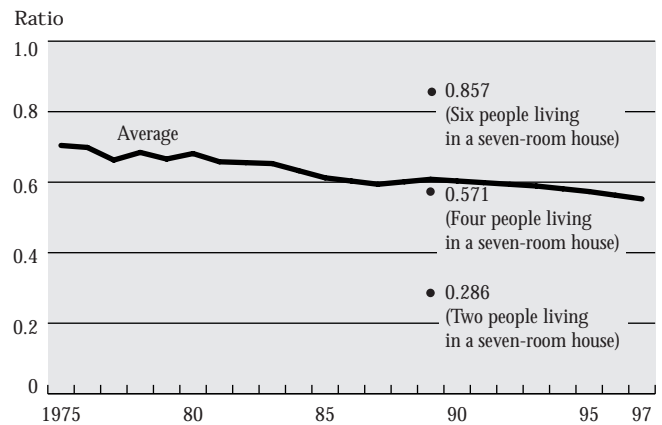
The average number of persons per room in U.S. households declined steadily between 1975 and 1997 (Chart 3). The reduction in the degree of crowding in U.S.

households reflects the fact that newly constructed housing units have tended to increase in size over time while the number of persons per household has declined. Three reference points are plotted on the chart that show the number of persons per room in a seven-room house occupied by six people (.857), four people (.571), and two people (.286). The house consists of three bedrooms, a kitchen, living room, dining room, and family room. By 1997, the average number of persons per room had declined to .55, indicating that the typical housing unit is now slightly less crowded than a seven-room house occupied by four people.

A similar reduction in the number of persons per room has occurred for both the highest and lowest income quintiles, and in 1997 there was virtually no difference between these quintiles in the average number of persons per room (Chart 4). Within the lowest income quintile, however, units with relatively younger household heads are about twice as crowded as those with older heads. Moreover, while the number of persons per room in units with both younger and older household heads has declined, the difference has persisted over the period, reflecting the continuing presence of children in the households headed by younger people.

Chart 3

**Persons per Room**  
 Number of Persons/Number of Rooms

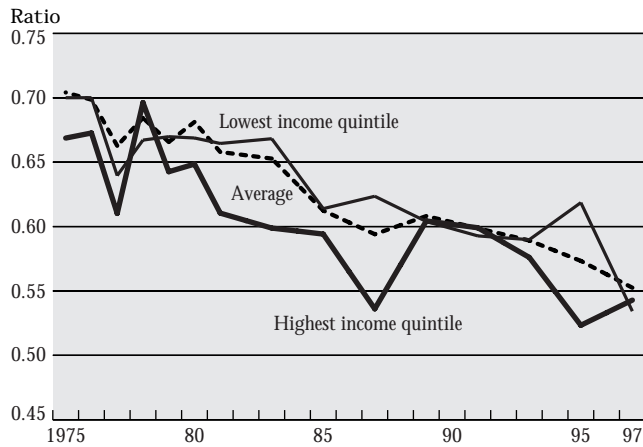


Sources: U.S. Bureau of the Census; U.S. Department of Housing and Urban Development.

Chart 4

Persons per Room: Highest and Lowest Income Quintiles

Number of Persons/Number of Rooms



Sources: U.S. Bureau of the Census; U.S. Department of Housing and Urban Development.

V. FINANCIAL COMMITMENT

A household's financial commitment to housing is expressed in terms of housing costs as a percentage of family income. The AHS uses a comprehensive definition of housing costs, which for owners includes principal and interest payments on all mortgages secured by the property; real estate taxes; utilities; property insurance; condo, co-op, and homeowner association fees (starting in 1984); and routine maintenance (starting in 1984). For renters, monthly housing costs are termed "gross rent," which includes contract rent plus charges for utilities, whether or not those utilities are included in contract rent. Note that gross rent may not be strictly comparable in all cases since contract rent may include fees for amenities such as swimming pools and tennis courts, parking, and rental of furnishings. Since 1984, renters' costs for property insurance have also been included in gross rent.

Family income is defined as the cash income of the household head or reference person and all other persons in the household related to the reference person over the twelve months before the interview date. Income is the sum of wage and salary income, net self-employment

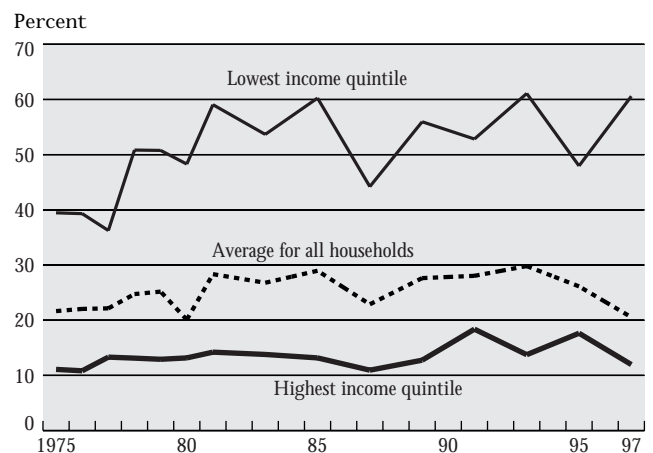
income, Social Security or railroad retirement income, private pensions, public assistance, and all other money income, gross of taxes and voluntary deductions. Note that income does not include any "in-kind" income, such as housing subsidies, food stamps, or food produced and consumed by households. Also note that the AHS definition of income does not include the imputed return on homeowners' equity, a potentially significant amount that will be addressed below.

Chart 5 presents the average housing costs as a percentage of family income for all households as well as the averages for the lowest and highest income quintiles. For all households, financial commitment averaged just above 20 percent in 1975, rose to nearly 30 percent by the early 1980s, stayed at roughly that level through the early 1990s, and returned to around 20 percent by 1997. This upside-down saucer shape roughly corresponds to the behavior of nominal mortgage interest rates. Mortgage interest rates were in the 7.5-9.0 percent range in the early-to-mid-1970s, rose to the 12.5-14.0 percent range in the early-to-mid-1980s, but then returned to the 7.5-8.5 percent range in the mid-1990s.

Chart 5

Financial Commitment: Highest and Lowest Income Quintiles

Average Housing Costs as a Percentage of Family Income



Sources: U.S. Bureau of the Census; U.S. Department of Housing and Urban Development.

For the highest income quintile, financial commitment rose relatively modestly over this time interval. In contrast, the financial commitment of households in the lowest income quintile deteriorated even more from the mid-1970s to the mid-1980s, rising from around 40 percent to around 60 percent. By 1997, it was still around 60 percent, exhibiting none of the improvement experienced by the average household. The source of the long-term rise in the financial commitment of the lowest income quintile has been the relatively slow growth in family income compared with housing costs (Chart 6). While housing costs have advanced more rapidly than income for all households, the difference in growth rates has clearly been most pronounced for the lowest income quintile.

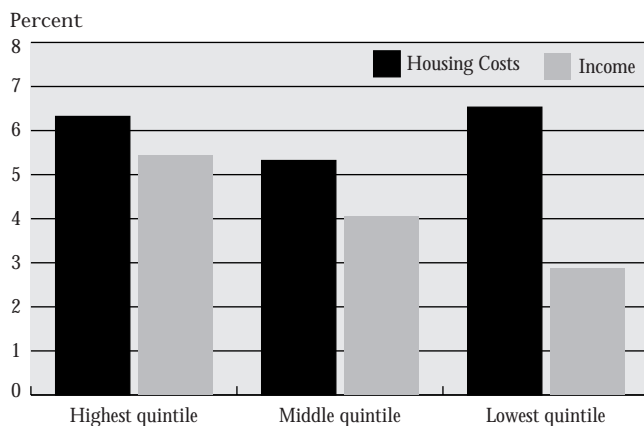
For relatively young households in the lowest income quintile, the fraction of income devoted to housing costs is even higher, averaging about 65 percent in 1997 (Chart 7). This share has remained between 50 and 65 percent for the past decade and has not differed systematically between owners and renters. Low-income households with older heads, however, devote a substantially smaller share of their income to housing than do younger households, but this share has increased roughly 15 percentage points for both groups between 1975 and 1997. Neither the younger nor the older households in the lowest income quintile,

regardless of whether they are renters or owners, have seen an improvement in their financial commitment over the 1990s. Also of note, there does not appear to be a significant distinction in the financial commitment of low-income households in subsidized versus unsubsidized units.

Ideally, the measure of income used in computing financial commitment would include the imputed return on homeowners' equity. After all, this is most households' single largest asset. For those sample records with the necessary data points—or where we could reasonably assign missing values—we estimated the return on owners' equity, included it in income, and then computed financial commitment with and without this source of income.<sup>4</sup> Chart 8 presents those results for the first, third, and fifth income quintiles, where assignment of a sample record to an income quintile is based upon the reported cash income only. Note that financial commitment is reduced by roughly 10 percentage points for the lowest income quintile, but by only about 2 percentage points for the highest income quintile. Two factors appear to explain this result. First, the lowest income quintile includes a relatively high proportion of older households, many of which are owners with relatively low loan-to-value ratios. Second, in relation to cash income, this return on equity is considerably more

Chart 6

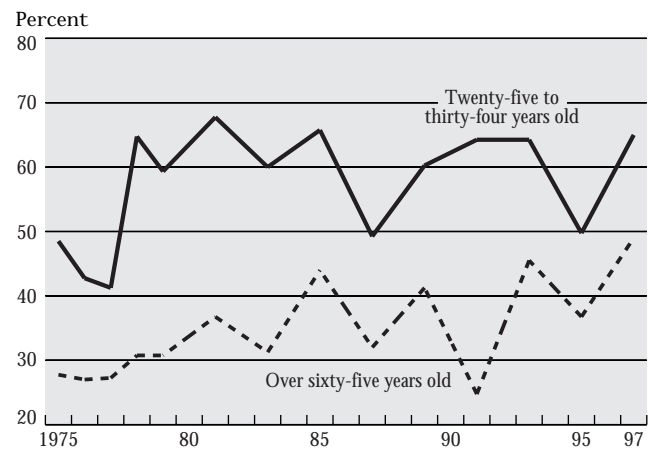
Housing Costs and Income Growth, 1975-97  
Compound Annual Rate



Source: Authors' calculations, based on American Housing Survey data.

Chart 7

Financial Commitment: Young and Old  
in the Lowest Income Quintile  
Average Housing Costs as a Percentage of Family Income

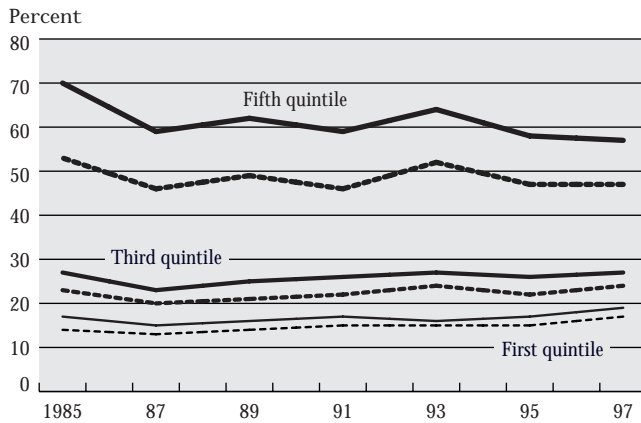


Sources: U.S. Bureau of the Census; U.S. Department of Housing and Urban Development.

Chart 8

### Financial Commitment: First, Third, and Fifth Income Quintiles

Average Housing Costs as a Percentage of Family Income



Sources: U.S. Bureau of the Census; U.S. Department of Housing and Urban Development.

Note: Solid lines represent pre-equity housing costs; dashed lines represent post-equity housing costs.

important for low-income households than for high-income households. Inclusion of return on equity does not alter the fundamental result, that lower income households pay what many regard to be an excessive share of their income for housing. However, it does alter the relative financial commitment across income quintiles.

## VI. NEIGHBORHOOD QUALITY

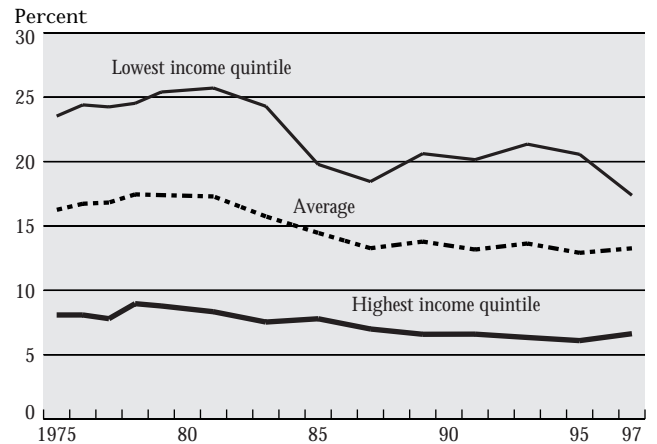
The AHS includes a self-reported assessment of the household's neighborhood as either excellent, good, fair, or poor, based on the presence, dependability, and adequacy of specific public services and the presence and extent of both resulting from detriments such as litter, crime, and pollution. We present data on the percentage of respondents rating their neighborhood as either "fair" or "poor" as our final housing outcome.

Between 1975 and 1997, assessments of neighborhood quality improved for households nationwide and in the lowest and highest income quintiles (Chart 9). As with physical adequacy, the greatest improvement has been in the lowest income quintile. Nevertheless, households in the lowest income quintile rate their neighborhood conditions substantially lower than those in the wealthiest quintile.

Chart 9

### Neighborhood Quality

Percentage of Households Responding "Fair" or "Poor"



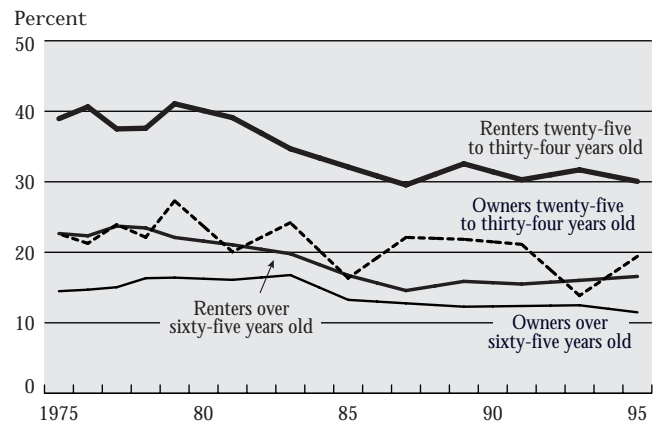
Sources: U.S. Bureau of the Census; U.S. Department of Housing and Urban Development.

Within the lowest income quintile, households with relatively young heads rate their neighborhood conditions lower than households with older heads (Chart 10). In addition, owners in the lowest income quintile rate their neighborhood conditions higher than renters do.

Chart 10

### Neighborhood Assessment: Owners and Renters in the Lowest Income Quintile

Percentage of Units Rated "Fair" or "Poor"



Sources: U.S. Bureau of the Census; U.S. Department of Housing and Urban Development.

## VII. CONCLUSION

The physical adequacy of the nation's housing stock has improved over the past few decades, particularly for households in the lowest income quintile. Today, there is very little difference across income quintiles in terms of the physical adequacy of the housing units occupied. A similar result holds for persons per room. Because newly constructed housing units have tended to increase in size over time while persons per household have diminished, persons per room have steadily declined for all income quintiles and there is now little difference across quintiles. Assessments of neighborhood quality have also improved, although not nearly as much as the physical quality of the housing stock. Furthermore, a sharp divergence of assessments of neighborhood quality remains across the income quintiles. In contrast, financial commitment has not improved, particularly for lower income households. The share of this group's income devoted to housing increased significantly in the late 1970s, a period of rapid inflation, and remained high in the 1980s, a period of generally high interest rates. While there has been some improvement for the population as a whole in the 1990s—likely due in part to the slowing of inflation and the associated decline in long-term interest rates—this improvement has not been experienced by households in the lowest income quintile.

Within the lowest income quintile, physical adequacy improved noticeably over our sample period for households with relatively young heads (twenty-five to

thirty-four years of age) and for those with older heads (sixty-five years of age and older). Very little difference was observed in the physical adequacy of the housing units occupied by these two groups in 1997. Although the persons-per-room and neighborhood-quality measures also improved for units with younger and older household heads, both measures were relatively worse for units with younger heads.

The financial commitment of households with younger heads exceeded that of households with older heads, although the gap has narrowed somewhat over the past two decades due to a modest, increasing trend in the commitment of households with older heads. Unit owners in the lowest income quintile had better housing outcomes than renters on all four measures. Notably, the financial commitment of older renters is now more than 10 percentage points higher than that of older owners. In addition, the neighborhood assessment of younger renters was much lower than that of younger owners.

Finally, the available data recognize that the ability to distinguish between households living in subsidized units and those living in unsubsidized units is limited because the information in the American Housing Survey is self-reported. Nonetheless, our analysis of the survey data indicates that there is no significant difference between these groups in terms of financial commitment and physical adequacy.



## APPENDIX: PHYSICAL ADEQUACY CRITERIA USED TO RATE HOUSING UNITS

Criterion	Severely Inadequate: Any of the Following Conditions	Moderately Inadequate: Any of the Following Conditions, but None of the Severe Conditions
Plumbing	Lacking hot, piped water or a flush toilet, or lacking both bathtub and shower, all for the exclusive use of the unit.	Having all toilets break down at once, at least three times in last three months, for at least six hours each time.
Heating	Uncomfortably cold last winter for twenty-four hours or more due to heating system breakdown, and the system broke down at least three times last winter for at least six hours each time.	Having unvented gas, oil, or kerosene heaters as the main source of heat.
Upkeep	Any five of the following six conditions: leaks from outdoors, leaks from indoors, holes in the floor, holes or open cracks in the walls or ceilings, more than a square foot of peeling paint or plaster, rats in the last ninety days.	Any three of the six conditions considered severely inadequate.
Hallways	Having all of the following four conditions in public areas: no working light fixtures, loose or missing steps, loose or missing railings, no elevator.	Any three of the four conditions considered severely inadequate.
Electric	Having no electricity, or all of the following three conditions: exposed wiring, a room with no working wall outlet, three blown fuses or tripped circuit breakers in the last ninety days.	NA
Kitchen	NA	Lacking a sink, range, or refrigerator, all for the exclusive use of the unit.

Source: U.S. Department of Housing and Urban Development (1990, p. 67).

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## ENDNOTES

*The authors thank Richard Thompkins and Rita Chu for excellent research assistance. They also thank Chris Mayer for his comments on the paper at the conference. All errors are the responsibility of the authors.*

1. See U.S. Department of Housing and Urban Development (1990) for additional details.

2. The definition of income used to sort households into income quintiles is discussed in the section on financial commitment.

3. A household is defined as receiving a housing subsidy if: a) it occupies publicly owned housing; b) the federal government pays some of the cost of the unit; c) a state or local government pays some of the cost of the unit; d) the household's income must be reported each year to determine the rent the household must pay; e) the household obtained a below-market interest rate on a mortgage through a government program; f) the housing unit is rent-controlled—or any combination of the aforementioned. In the American Housing Survey, all of the above

information is self-reported. Therefore, it is quite likely that the true number of households receiving some form of subsidy is larger than reported.

4. To estimate return on equity, an estimate of owners' equity is multiplied by some rate of return. Equity is defined as home values minus the outstanding balance on any loans secured by the home. The AHS contains a self-reported estimate of the current value of the home as well as data that enable the user to estimate outstanding loan balances: the date the loan was acquired, the original loan amount, the amortization period, and the interest rate for the first and second mortgages (with summary information on additional mortgages). Unfortunately, many records lacked some of this information—in particular, the data acquired—so outstanding loan balances could not be computed for all owner records. For those records in which equity could be estimated, the assumed rate of return on equity was the current yield on Government National Mortgage Association mortgage-backed securities, as suggested by Hendershott (1988).

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