
Replacement Demand for Housing

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Over the period from 1980 to 1993, an annual average of about 1.6 million new housing units were produced. New estimates from the Census Bureau indicate that about 300,000 units were lost per year, so that the average net growth in the number of homes was about 1.3 million. Although relatively few new homes are built as replacements for specific older homes that have been destroyed, the loss of existing units from demolition or disaster represents a significant share of overall demand for new homes. There are substantial changes in the use of structures between residential and nonresidential, single-family and multifamily, etc., but these largely cancel each other out, at least at the national level.

Annual net loss of 300,000 homes represents a very small share of the more than 110 million units in the stock. Except in cases of catastrophe, homes can be kept in service indefinitely with proper maintenance. When homes are removed, it is often to make way for other structures that are competing for use of the land underneath, rather than because the housing structure is no longer useable.

Net removals from the housing inventory can be calculated by subtracting the change in the total stock between two points in time from the number of new units built in the interim. There are often errors in estimates of the stock at the beginning or end of the period or in the construction statistics, however, and any such errors would feed into the estimate of net removals. Even if the errors are small, relative to the total stock, they would be large relative to the number of net removals. An other problem with calculating net removals as a residual is that it does

not provide any details about which units were removed or changed and the nature of the removal or change.

Occasionally, the Census Bureau prepares estimates of the Component of Inventory Change (CINCH) for the housing stock. Recently, reports were issued for the periods from April 1980 to October 1991 and from April 1980 to October 1993. Table 1 compares the latest estimates with data from some of the previous reports.¹

Demolitions

The number of units actually destroyed through intentional demolitions or disasters such as fires or hurricanes was estimated as 3.3 million, or about 245,000 per year, over the 1980 to 1993 period. Most of these were intentional demolitions, rather than units destroyed by earthquakes, hurricanes, or fires.

The other reports for periods in the 1970s and 1980s indicated similar annual average losses to demolitions and disasters, but the report that covered the 1960s indicated that demolitions alone averaged 353,000 per year, even though the total number of units in the stock was smaller. The much higher rate of demolitions in the 1960s reflected the urban renewal and road building activity at the time, as well as the high number of substandard units that were still present in 1960.

In addition to those units that were actually demolished, an estimated 786,000 units that were in the housing stock in 1980 were still standing, but were damaged or condemned as of 1993 and no longer considered as part of the housing stock. These units were generally in

very bad shape, worse than simply boarded up. They were either "exposed to the elements" due to the absence of a roof, wall, window, or door, or (less commonly) they were severely damaged by fire or there was a notice saying that they were condemned or scheduled for demolition. Combining demolition and disaster loss with units that were lost to the stock because they became damaged or condemned, the annual average loss was 303,000 over the 1980 to 1993 period.

In the earlier CINCH studies, the loss of units to the exposed/condemned category was partially offset by units reclaimed from that apparently moribund status. For example, an estimated 633,000 units from the 1973 housing stock became exposed/condemned by 1983, but 238,000 that were exposed/condemned in 1973 were restored to habitability by 1983. The latest analysis did not separately estimate units brought into the 1993 stock from structures that were classed as exposed/condemned in 1980. Instead, such units were grouped with those that had been converted from nonresidential use, and the estimated number of housing units from both sources was much smaller than the estimates in the earlier studies.

Other Additions and Losses

Housing units are gained when one unit is converted into two or more separate units. Conversely, units are lost when two or more are merged to form a single unit. As in past CINCH studies, the latest report shows that gains from conversions exceeded losses to mergers, but the net effect is small, contributing an

Table 1 Estimates of Inventory Changes

	1950 to 1959	1960 to 1970	1973 to 1980	1973 to 1981	1973 to 1983	1980 to 1991	1980 to 1993
Initial units	46,137	58,325	78,759	78,690	78,484	89,275	89,272
Final units	58,468	70,207	91,163	92,849	94,421	104,556	106,611
Total net change	12,331	11,882	12,404	14,159	15,937	15,282	17,339
Total added	16,861	18,598	18,398	20,765	22,581	23,735	26,610
New construction	15,003	17,240	12,734	14,198	16,171	18,703	21,309
Conversion	807	615	486	696	609	522	538
Moved in	NA	NA	3,787	4,087	3,754	3,910	4,083
From nonresidential (1)	NA	NA	487	935	1,088	427	530
From exposed/condemned	NA	NA	169	176	238	NA	NA
Other (2)	1,050	743	735	673	721	173	150
Total lost	4,530	6,716	5,994	6,606	6,643	8,453	9,271
Demolition, disaster (3)	1,933	3,797	1,900	2,186	2,444	2,899	3,305
Merger	815	572	471	480	547	370	438
Moved out	NA	NA	2,278	2,690	2,233	3,281	3,643
To nonresidential	NA	NA	547	534	596	729	712
To exposed/condemned	NA	NA	614	557	633	757	786
Other	1,783	2,346	184	160	189	417	387
Length of period (years)	9.75	10.75	7.00	8.00	10.00	11.50	13.50
Annual Averages							
Total net change	1,265	1,105	1,772	1,770	1,594	1,329	1,284
New construction	1,539	1,604	1,819	1,775	1,617	1,626	1,578
Net loss	274	498	47	5	23	297	294
Adjusted for moves (4)	274	498	263	180	176	352	327
Demolition + Net to exp/cond	198	353	335	321	284	318	303

Note: All data in thousands of units. (1) Additions from nonresidential for 1980-1991 and 1980-1993 includes units classified as condemned/exposed in 1980. (2) For 1950-1959 and 1960-1970, units moved in, changed from nonresidential included in other additions. (3) For 1950-1959 and 1960-1970, disaster losses and all other losses except demolition and merger are included in "other." (4) "Adjusted for moves" is net change, excluding construction, with "moved in" set equal to "moved out."

average of only 8,000 units per year over the 1980-1993 period.

Losses from the housing stock, in addition to those from demolition and disaster, exposed/condemned, and mergers, include units converted to nonresidential use and "other losses," which consist mainly of housing units converted to residential group quarters. Units "moved out" are also listed under losses, but that category consists primarily of units that are placed on another site for continued use as housing units.

Additions to the housing stock include not only new construction and conversions of single units to multiple units, but also units con-

verted from nonresidential use and other additions (primarily from group quarters). Units moved in is also part of additions, and the number shown exceeds the number of units moved out. As discussed in the sidebar, the estimates for both units moved out and units moved in are probably overstated, and the excess of moves in over moves out largely consists of mobile homes that should have been characterized as new construction.

Table 2 shows some additional detail on the changes from 1980 to 1993. The category "changes in same units" is the net effect of differences in the responses given in 1980 and

1993 for units that were present in both years and that were not merged or converted. The net changes in same units by structure type represent units that were unchanged, but reclassified. For example, this would occur if a household living in a town house reported that they were in a multifamily structure in 1980, but in the 1993 American Housing Survey the unit was characterized as a single-family home. The net changes in year built represent differences between what the occupants in 1993 said and what occupants of the same house in 1980 said. There was a tendency in 1993 for relatively new homes to be described as built later, but for older

CINCH Methodology and Anomalies

In developing estimates of the number of units lost or changed from the 1980 housing stock, the Census Bureau was able to choose a sample from the units identified in the 1980 Census and then find out if they were still part of the stock in 1993. Generally, except for new units created in structures that already included housing in 1980 and conventional construction in permit-issuing areas, the count of additional units came from a sample of about 2,000 specific land areas, where an effort was made to list all housing units and determine whether any were present in 1993 that had not been housing units in 1980.

The most dubious component of the CINCH estimates for 1980 to 1993 (as well as for earlier periods) is the numbers given for units moved in and units moved out. These are supposed to be units that were constructed prior to 1980 and transferred from one site to another during the period. The number of units moved in, 4,083,000 (including 3,885,000 mobile homes), is higher than the number moved out, 3,643,000 (including 2,812,000 mobile homes).

Not only doesn't it make sense that more units should be moved in than out, but the total number of units moved appears to be unreasonably high, with more than half of all mobile homes reported to have moved during the period, and with more than 800,000 conventional housing units moving from their sites.

Much of this estimated movement is spurious, inferred from discrepancies between the reported characteristics of units in 1980 and 1993. The 1980 data come from responses (mainly by mail) to the 1980 Census. The 1993 data were collected as part of the biennial American Housing Survey (AHS), which involved personal interviews conducted by Census Bureau staff. In both the 1980 Census and the 1993 AHS, information was obtained from households occupying the units or from neighbors or other knowledgeable sources. In the 1980 Census, some households living in units that were constructed as mobile homes reported that they were living in conventional units, especially if they had built additions to their homes. In the AHS, even if an addition has been added, those would be considered mobile homes.

If, in the 1980 Census, a household reported living in a conventional home, but the 1993 AHS recorded that a mobile home was there, it was assumed that a

conventional home was moved out and a mobile home moved in (provided that the occupant said the mobile home was constructed before 1980).

If, in the 1980 Census, a household reported living in a mobile home, and there was a mobile home at that location in 1993, but the year built reported in 1993 was not approximately the same as the year built reported in 1980, then it was assumed that one mobile home had been moved out and another moved in. As the substantial changes in the reported year built for conventional homes show, that was a heroic assumption.

This could explain why the total number of moves might be overstated and why so many conventional units were counted as having moved out, but the larger number of units moved in compared with units moved out would remain. The excess may be due largely to newly built mobile homes being counted as (pre-1980) mobile homes moved in. New construction of conventional units was estimated for CINCH largely from permits, and the number of units in 1993 attributed to new construction is close to the number of units completed during the period. For mobile homes, the number of new construction units in CINCH was based on the year built reported in the 1993 AHS. If a household reported incorrectly that their mobile home was constructed before 1980, when it in fact was produced later, it would be misclassified as moved in rather than new construction. If the Census Bureau representative was unable to get an interview, it was assumed that there was a two-thirds probability of the unit being moved in and only one-third that it was a mobile home constructed since the 1980 Census.

Over the period from April 1980 through September 1993, there were 3.18 million mobile home placements, according to the construction statistics published by another branch of the Census Bureau, but the CINCH report shows only 2.54 million mobile homes in 1993 as built in 1980 or later. The difference of roughly 600,000 is more than the excess of moves reported in the CINCH.

Some of the mobile homes that were moved out did not move to another site, but actually represented demolition or disaster loss. Some of those moved in may have come from nonresidential. Given all of the other measurement problems, however, it is difficult to estimate how often that occurred.

Table 2 1980-1993 Changes by Tenure and Structure

Changes from 1980 to 1993	Tenure				Structure Type			Year Built					
	Total	Vacant	Owner	Renter	Single-Family	Multi-Family	Mobile	1980-1993*	1970-1979	1960-1969	1950-1959	1940-1949	Before 1940
Total 1980 Units	89,272	8,369	53,003	27,900	59,288	25,078	4,906	543	22,722	17,635	15,582	9,926	22,903
Total 1993 Units	106,611	12,297	62,644	31,670	71,017	27,751	7,843	21,843	23,309	16,516	14,118	8,596	22,230
Same units (1980)	79,168	6,051	48,968	24,149	55,172	22,231	1,764	389	20,051	16,055	14,216	8,764	19,693
Same units (1993)	79,168	8,500	46,790	23,878	57,393	20,358	1,416	389	20,348	15,361	13,650	8,287	21,133
Changes in same units	0	2,449	(2,178)	(271)	2,221	(1,873)	(348)	0	297	(694)	(566)	(477)	1,440
Units involved in conversions													
Units in 1980	463	30	287	145	254	209	0	0	35	42	77	58	250
Units in 1993	1,000	157	205	638	0	1,001	0	0	76	80	152	118	575
Net gain	537	127	(82)	493	(254)	792	0	0	41	38	75	60	325
Units involved in mergers													
Units in 1980	808	82	235	492	137	670	3	0	57	74	115	113	448
Units in 1993	371	39	222	109	256	114	2	0	32	37	45	50	207
Net loss	(437)	(43)	(13)	(383)	119	(556)	(1)	0	(25)	(37)	(70)	(63)	(241)
Net from conversion/merger	100	84	(95)	110	(135)	236	(1)	0	16	1	5	(3)	84
Demolition/disaster loss	3,305	807	1,059	1,439	2,064	1,005	237	11	440	352	535	546	1,422
Lost to exposed/condemned	786	216	176	394	441	305	40	4	83	85	110	139	365
Moved out	3,643	900	2,001	742	716	115	2,812	136	1,878	862	330	163	274
Moved in	4,083	1,069	2,115	899	171	27	3,885	136	2,666	947	220	60	54
Excess moved in	440	169	114	157	(545)	(88)	1,073	0	788	85	(110)	(103)	(220)
To nonresidential	712	147	205	360	366	316	30	2	82	79	134	90	326
From nonresidential	530	127	141	262	321	209	0	0	146	54	41	72	217
Net loss to nonresidential	(182)	(20)	(64)	(98)	(45)	(107)	(30)	(2)	64	(25)	(93)	(18)	(109)
Losses to other	387	136	71	179	137	231	19	1	57	86	66	53	124
Additions from other	150	15	15	120	51	99	0	8	41	37	9	9	47
Net loss to other	(237)	(121)	(56)	(59)	(86)	(132)	(19)	7	(16)	(49)	(57)	(44)	(77)
Total net change	17,339	3,928	9,641	3,770	11,729	2,673	2,937	21,300	587	(1,119)	(1,464)	(1,330)	(673)
New construction	21,309	2,389	13,156	5,764	12,824	5,946	2,540	21,308	0	0	0	0	0
Net removals													
As reported	(3,970)	1,539	(3,515)	(1,994)	(1,095)	(3,273)	397	(8)	587	(1,119)	(1,464)	(1,330)	(673)
Adjusted for excess move in	(4,410)	1,370	(3,629)	(2,151)	(550)	(3,185)	(676)	(8)	(201)	(1,204)	(1,354)	(1,227)	(453)

Note: *1980 stock and losses of units represent part of units in 1980 census reported as built in 1979-1980, based on NAHB assumptions.

homes to become more historic, compared with the Census responses in 1980.

Older units in the 1980 stock were more likely to be demolished or become exposed/condemned by 1993 than newer units. There was little difference between the loss rates for units built in the 1970s and those built in the 1960s, with 2 percent to 3 percent demolished or exposed/condemned by 1993. But loss rates were progressively higher for units built in prior decades, with

nearly 8 percent of units built before 1940 lost during the period.

From 1980 to 1993, according to the CINCH report, the number of units in the housing stock increased by 19 percent, and the median age of those units increased from 23 years to 29 years. Since then, the stock has become even larger and older. The median age of the stock apparently reached a low point in the 1980s, and increased as the volume of both removals and new construction declined relative to the total number

of units in the stock. Both the larger size and increased age of the stock would seem to imply an increase in removals, but that doesn't appear to have occurred.

Demolitions Authorized

Even though there may have been a rise in demolitions in the past couple of years, the number demolished remains far below that of the 1960s. Table 3 shows several measures of permits issued for demolitions. Less

Table 3 Demolitions Authorized

	Permits to Demolish Private Units				Private + Public (C45)	Public Housing Units		
	Single-Family	2-4 Units	5 + Units	Total		Demol. Auth.	Dispo-sition	Total
1969					130,108			
1970					122,773			
1971					137,426			
1972					141,915			
1973					149,141			
1974					139,450			
1975					121,972			
1976					114,449			
1977					108,727			
1978					102,895			
1979	49,370	16,694	14,736	80,800	98,037			
1980	47,684	15,705	18,949	82,338	91,786	845	187	1,032
1981	43,867	16,120	12,494	72,481	86,731	917	460	1,377
1982	37,714	11,414	10,317	59,445	69,281	1,310	480	1,790
1983	38,509	11,799	14,172	64,480	74,511	733	147	880
1984	39,556	10,903	11,260	61,719	70,687	370	17	387
1985	45,161	10,531	12,439	68,131		2,604	1,086	3,690
1986	51,323	11,944	10,478	73,745		952	1,340	2,292
1987	55,189	11,429	10,749	77,367		4,845	284	5,129
1988	54,156	11,309	12,007	77,472		2,622	154	2,776
1989	55,225	10,462	8,720	74,407		2,731	170	2,901
1990	55,880	10,673	10,575	77,128		1,504	168	1,672
1991	49,061	9,349	9,294	67,704		1,252	308	1,560
1992	49,608	10,063	6,804	66,475		943	264	1,207
1993	49,025	9,402	6,267	64,694		1,333	196	1,529
1994	51,228	10,334	11,761	73,323		2,376	862	3,238
1995	51,530	11,192	12,764	75,486		17,343	1,018	18,361
1996						20,061	1,170	21,231

Note: For public housing, demolitions authorized could take two years. Disposition means sale to nonpublic housing use, usually results in demolition.
 Source: Permits to demolish private units from U.S. Bureau of the Census, Series C40; total demolitions authorized, including publicly owned structures from U.S. Bureau of the Census, Series C45; public housing demolitions and dispositions for fiscal years from U.S. Department of Housing and Urban Development.

regulatory, and political constraints on public housing demolitions are being relaxed, and this has already been reflected in the number of units approved for demolition or disposition, which rose to over 21,000 in fiscal year 1996. Demolition of public housing units could potentially be even greater in the years ahead, and it is unlikely that many of those units will be replaced by new public housing.

Conclusions and Outlook

The estimates for some components of change for the 1980-1993 period appear to differ from earlier periods, but the differences are probably due more to measurement problems than to fundamental changes in the housing market. Overall, the effects of changes between residential and nonresidential use, conversions and mergers, use of living quarters as housing units or as group quarters, and other changes in the use of structures largely cancel each other out. The annual number of units lost to demolitions or disasters, or that become exposed/condemned and move toward demolition, has apparently remained near 300,000 since the 1970s. In the years ahead, annual net removals could rise beyond 300,000, but the numbers are not likely to be sharply higher.

than a third of demolitions appear to be covered by these permits. The number of localities included in the permit survey increased in stages over the past 30 years, so the downward trend is actually greater than these data indicate.

A significant share of demolitions involve housing units that are publicly owned prior to demolition. There are three major groups of publicly owned units demolished. One

group consists of units purchased by government agencies under the power of eminent domain, in order to make way for construction of roads or other public facilities. A second group consists of units that are tax-delinquent or abandoned by private owners. The third category is public housing.

Until recently, very few of the roughly 1.3 million public housing units were demolished. The legal,

¹The 1980-1993 data are in U.S. Bureau of the Census, *American Housing Survey: Components of Inventory Change: 1980-1993* (Current Housing Reports H151/93-2). The data for the 1973-1980, 1973-1981, 1973-1983, and 1980-1991 periods were all revised after printed volumes were released, and the revised data used here were provided in unpublished form. The data for the 1960 to 1970 period are from *Census of Housing: 1970, Components of Inventory Change* (HC(4)-1, issued June 1973) and the data for 1950 to 1959 are from *Census of Housing: 1960, Components of Inventory Change* (HC(4) part 1A-1).