

Appendix C.

Historical Changes

The American Housing Survey was first conducted in 1973. Between 1973 and 1981 it was conducted every year and was called the Annual Housing Survey. The last even-numbered year for the national survey was 1980. Since 1981, the survey has been conducted every other year. In 1984, the name was changed to the American Housing Survey. Other historical changes in the survey are listed below by subject area. The year refers to the year the change was made. In some cases, multiple years are mentioned together. In these cases, either corrections were made to the data in more than 1 year or there are specific years for which data are not comparable.

Only changes are noted in this appendix. For example, “Book titles” has no entries for 1975 through 1977, since the same titles were published for those years as in 1974.

Age of other residential buildings within 300 feet.

1987. See the discussion in this appendix under the topic “Buildings and neighborhood.”

Bars on windows of buildings.

1987. See the discussion in this appendix under the topic “Buildings and neighborhood.”

Book titles.

1973. Annual Housing Survey: 1973

Part A. General Housing Characteristics (compared central city, suburban, and nonmetropolitan areas)

Part B. Indicators of Housing and Neighborhood

Part C. Financial Characteristics of the Housing Inventory

Part D. Housing Characteristics of Recent Movers

Supplement report number 1. Financial Characteristics by Indicators of Housing and Neighborhood Quality

1974. Parts A, B, C, and D stayed the same.

A new *Part E, Urban and Rural Housing Characteristics* was added.

Supplement report number 1 was changed to *Part F, Financial Characteristics by Indicators of Housing and Neighborhood Quality*.

1978. Parts A, C, D, and E stayed the same.

Parts B and F from earlier years were combined into a new *Part B, Indicators of Housing and Neighborhood Quality by Financial Characteristics*. A new *Part F, Energy-Related Housing Characteristics* was added.

1985. Parts A, B, C, D, E, and F were combined in one report, *American Housing Survey for the United States*.

A new report was added, *Supplement to the American Housing Survey for the United States* with data on family types, neighborhood quality, commuting, and ownership of additional residential units.

Buildings and neighborhood.

1987. As a result of the use of both decentralized telephone interviewing and Computer Assisted Telephone Interviewing (CATI) in the 1987 AHS-National sample and later, data for several observation items (where the interviewer rather than the respondent supplied the data) are not comparable to that reported in the 1985 AHS-National sample. Data for the observation items for units assigned to telephone interviewing were collected only if the sample unit was located in a multiunit structure. Data for the following items in 1987 and later national surveys are restricted to units in multiunit structure: “Stories in structure”; “External building conditions”; “Description of area within 300 feet”; “Age of other residential buildings within 300 feet”; “Other buildings vandalized or with interior exposed”; “Bars on windows of buildings”; “Condition of streets”; and “Trash, litter, or junk on streets or any properties.” Data for these items were shown for all units in the 1985 national survey, including single-family homes.

1997. These items ceased being collected by interviewer observation; they were reworded as questions for the respondents. The intent of interviewer observations had been to provide a source of data on housing conditions, independent of the respondents, since these items could be directly observed by the interviewers. While neither respondents nor interviewers are trained building inspectors, and they reported data on different subjects, the data at least gave independent points of view by two people for each housing unit. Furthermore the observations were collected even at units where interviews could not be obtained, so they could be used in research on the representativeness of AHS noninterview adjustments (which are explained in Appendix B).

As noted above, observations became impossible for many single-unit structures in 1987. Starting in 1997 staff no longer visit many multiunit buildings either, so the observation items have been changed to questions. The survey could continue to collect observations when visits are done for some other purpose, but the results would be

too biased to be useful (high turnover units, subdivided units, and units where the respondent requests a personal interview).

Codebooks. Documentation of codes on data files has been published in various volumes. The most comprehensive is *Codebook for the American Housing Survey*, Volume 1, 466 pages plus 1 errata page. It documents surveys from 1973-93, showing which items are available in each survey, and when or if codes changed. It was published without a volume number, but is currently referred to as Volume 1 to distinguish it from two later volumes.

For surveys from 1994-96, codes remain the same as in 1993 (shown in Volume 1, as mentioned above), except a few new and changed variables which are shown in Volume 2, 90 pages. This Volume 2 also shows final record layouts for 1984-96.

Volume 3, 250 pages, shows variables and codes used in 1997 (and later) along with actual question wording.

Some of the older surveys have additional documentation. Besides a *Questionnaire Compendium* (900 pages) with 1973-81 questionnaires (see the topic "Questionnaires"), there is also a *Questionnaire Directory* (300 pages) with unweighted frequency distributions of each variable in 1974-85, and an index to 1974-85 questionnaires (but no copies of the questionnaires). Each file from 1973-83 had a *Technical Documentation* volume, which duplicates the *Codebook*, Volume 1 mentioned above, but is less accurate. When errors are found, they are corrected in *Codebook*, Volume 1 but not in *Technical Documentation*.

Computer assisted interviewing.

1987-91. Large-scale experiments in computer assisted telephone interviewing (CATI) were conducted as part of the 1987-91 AHS-National sample. (CATI has not been used in metropolitan surveys, though some of those interviews were completed on paper by telephone from interviewer's homes.) Preliminary analysis of the CATI experiments indicated that CATI has a significant effect on the data. The experiments revealed that data for characteristics of owner-occupied housing, urban housing, and housing with moderate physical problems exhibited high numbers of significant differences between CATI and non-CATI estimates. The moderate physical problems subgroup had the highest incidence of significant differences. The analysis also showed significant differences for total occupied, suburban housing units, and moved in past year.

CATI estimates were generally lower than non-CATI for units with water leakage, monthly housing costs as percent of current income, other heating fuel, and owners with a mortgage. However, CATI produced higher estimates for utilities paid separately, income and shared ownership. Other characteristics which showed significant differences between CATI and non-CATI estimates include routine maintenance costs and heating equipment.

Little is known at this time about whether CATI or non-CATI produces better data. It is felt, however, the estimates of change in AHS-National sample between 1985 and later years will be biased for many characteristics as a result of the introduction of CATI. Also see the discussion in this appendix under the topics "Buildings and neighborhood" and "Telephone interviewing."

1995. CATI was conducted for returning households whenever possible to the extent that CATI staff was able to handle the workload.

1997. The paper questionnaire was eliminated. All interviews were conducted by computer assisted personal interviewing using laptop computers. The survey questions, including the skip instructions (that is, telling the interviewer which questions to ask next), were programmed into the laptop. The field representatives either called by telephone or made a personal visit to the respondent to conduct the interview. The interview questions were displayed on the computer screen one at a time. The skip instructions were programmed into the laptop, thus eliminating the possibility that the field representative would not follow the correct path and ask inappropriate questions. An example of this would be to ask monthly rent at an owner-occupied unit.

Caution is recommended when comparing prior years' data with 1997 because of this change to a laptop computer environment. The change to a laptop environment could give different responses for a number of reasons. The laptop incorporated a wide range of improvements that had been identified during 2 years of research and testing. Skip patterns involved complex branching and calculations that would not have been appropriate with a paper questionnaire, but with an automated instrument became simple for the respondent and field representative. It was almost impossible for field representatives to skip appropriate questions. Online editing features reduced errors at the point of data collection. Feedback of telescoping (the reporting of events in the current data collection time period that were and should have been reported during an earlier time period) reduced the number of incorrect answers. These changes should improve the quality of the data. The results of the 1997 survey were not analyzed in time for the release of this appendix. There are plans to do so in the future.

For copies of the old paper questionnaire and the new questions used in the laptop computer in 1997, see the topic "Questionnaire."

Condition of streets.

1987. See the discussion in this appendix under the topic "Buildings and neighborhood."

Current interest rate.

1990 and 1993. In the 1993 national and 1990 metropolitan surveys, a programming error was discovered and corrected involving the computation of the median for the

item “Current interest rate.” Caution should be used when making comparisons with earlier surveys. The medians presented in the earlier reports are calculated incorrectly. However, the data distributions are correct and can be used to compute corrected medians.

Description of area within 300 feet.

1987. See the discussion in this appendix under the topic “Buildings and neighborhood.”

Education.

1995. The question was revised to give less detail for people with less than a high school education, and more detail for people with college degrees and advanced vocational training, in order to be consistent with the census and other surveys.

External building conditions.

1987. See the discussion in this appendix under the topic “Buildings and neighborhood.”

Head of household/householder.

1980. Beginning in 1980, the concept head of household was dropped and replaced by householder. The head of household was the person regarded as the head by the respondent. However, if a married woman living with her husband was reported as the head, her husband was considered the head. The householder is the first household member listed by the respondent who is 18 years old or over and is an owner or renter of the sample unit.

Heating equipment.

1989. The heating equipment questions were revised to improve the reporting of electric heat pumps as a heating source. Previously, the questionnaire item dealing with the type of heating equipment underreported electric heat pumps. The respondents often answered yes to the first option of “a central warm-air furnace with air vents or ducts to the individual rooms” and did not proceed to the option of “electric heat pump.” The questionnaire item was revised to determine if the central air system is actually a heat pump or another type of warm-air furnace.

Housing costs and value.

1984. Value, mortgage data, and taxes are shown for all owners; rent for all renters; and utilities for all of both groups. From 1973 through 1983, these items were shown only for “specified” owners and renters. For comparability, Table 19 in each chapter of the books published since 1984 still shows data separately for “specified” owners and renters. “Specified” homes exclude 1-unit buildings on 10 or more acres, and owners in buildings with 2 or more units or with a business or medical office on the property.

Also, the terminology changed. The new term “Monthly housing costs” includes the old terms “Selected monthly housing cost” for owners, “Gross rent” for renters, and “Contract rent” for vacant-for-rent units.

1989. The monthly housing costs questionnaire items for subsidized renters were revised to improve the reporting of actual rental costs. In 1987, the questionnaire reflected the total amount reportedly paid for monthly rental costs. These amounts may have included the partially subsidized amount provided by the public housing authority, the federal government, or state and local governments. Beginning in 1989, a probe was added for subsidized households to determine what they actually paid. The new procedures in 1989 produce lower and more accurate estimates.

Also see the discussion in this appendix under the topics, “Income” and “Utilities.”

1995. Mortgage payments were estimated when the respondent did not know the amount. They are estimated by amortizing each mortgage at level payments over its full term. If amount borrowed is unknown, it is imputed first from the value of the house. If interest rate or term were unknown, they were imputed from owners who got their mortgages in the same year. This change eliminates a large source of missing data. While not perfect, it gives a much more complete picture of housing costs than in previous years.

1997. A “Separate category,” depending on income of the occupants, was added for vacant-for-rent units. In these units the rent charged will depend on the income of the occupants, such as in public housing or some military housing. In 1995 and earlier, the category, less than \$100, includes an estimated 166,000 housing units where the rent depended on income of the occupants. They have a code 1 in the microdata. These units were incorrectly published as “less than \$100” from 1985-96.

Housing unit definition.

1984. One major and one minor difference appears in the housing unit definition. The major difference is that beginning in 1984 the AHS includes vacant mobile homes as housing units. Vacant mobile homes added an additional 698,000 seasonal and 642,000 year-round vacant units to the 1985 national housing inventory. The 1973 through 1983 AHS excluded these units from weighted counts, though they are included in the microdata with zero weight.

A minor difference in the definition is the 1973 through 1983 requirement that a housing unit must have either direct access from the outside or through a common hallway, or complete kitchen facilities for the exclusive use of the occupants. In 1984, the complete kitchen facilities alternative was dropped with direct access required of all units.

Another issue is in the definition of group quarters. In the 1973 through 1983 AHS, a household containing 5 or more people unrelated to the householder was considered to be group quarters. In 1984, the cutoff was changed to 9 or more people unrelated to the householder.

Income.

1984. See the discussion in this appendix under the topic “Poverty.”

1989. Two new items replaced similar items that were published in 1984-88. They are “Monthly housing costs as percent of current income” and “Ratio of value to current income.” For income, these new items use “Current income.” In 1984-88, the items “Monthly housing costs as percent of income” and “Value-income ratio” used the “Income of families and primary individuals in the last 12 months.” See Appendix A for a complete definition of “Current income,” “Monthly housing costs as percent of current income,” and “Ratio of value to current income.” Caution is recommended when comparing prior years’ data with 1989 because of the differences in the definitions.

For comparative purposes, Table E shows monthly housing costs as a percent of both income in the last 12 months and current income. For total households and owner households, the medians are the same for both types of income; for renter households, the medians are 29 and 27 percent, respectively.

Table C in the introduction of the book *American Housing Survey for the United States in 1989*, series H150/89, shows the individual categories for monthly housing costs as a percent of income in the last 12 months. Table 2-13 of the same report shows the individual categories for “percent of current income.” For most households, current income is the same as income in the last 12 months. That is the situation for 83 percent of total households, 86 percent of the owners, and 78 percent of renters.

Table E. Monthly Housing Costs as a Percent of Income

Characteristic	Median (percent)		
	Total	Owner	Renter
Monthly housing costs as percent of income using—			
Income in the last 12 months:			
1987	22	18	29
1989	21	18	29
Current income:			
1989	21	18	27

1993. Questions on income sources were revised in an effort to improve income reporting. The 1991 question reported interest or dividend income of \$400 or more. It

was divided into two questions in 1993, on any interest, and any dividends from stocks, regardless of amount. Therefore both new questions cover even small amounts.

Wage and salary income was underreported for some people and households in 1993. The error occurred during the processing of the data collected by computer assisted telephone interviewing. When the respondent doesn’t know or refuses to report wage and salary income, income is normally allocated during the processing. In 1993, this income was not allocated but was incorrectly processed as “zero” (no) income. This error did not occur in 1991 and earlier years and was corrected in 1995. Although the income data for 1993 are incorrect, analysis of median household income for 1991, 1993, and 1995 indicates that the overall impact of this error on 1993 data is minor, though it significantly increases the apparent number of households with zero income.

Caution should be used when making income comparisons before and after the 1993 survey.

Income sources.

1993. See the discussion in this appendix under the topic “Income.”

Kitchen.

1984. Short questions are asked about each aspect of a complete kitchen (questions 27, 36a, 38a, 38b2). Previously only one long question was asked. The new approach finds more homes missing some part of the kitchen than the old longer question did.

In vacant units, the definition was changed. Previously, if the respondent said the kitchen was incomplete, but the future tenant would be expected to complete it (for example, bring a refrigerator), as is the practice in some areas, such a kitchen was counted as complete. Starting in 1984, it is counted as incomplete. Both approaches have problems, but the newer approach was chosen as preferable.

Between 1983 (old question and instruction) and 1985 national (new questions and instruction), the estimate of occupied units with incomplete kitchens changed 59 percent from 827,000 to 1,316,000. The estimate of vacant units with incomplete kitchens changed 274 percent from 665,000 to 2,490,000. Much of this change is assumed to be a result of the changes in the questions.

1984 to present. Starting in 1984, an oven was required for a housing unit to have “complete kitchen facilities” in the printed books. In the books from the 1987 through 1993, “the complete kitchen facilities” definition in Appendix A is incorrect. The definition does not require an oven even though the data in the tables do require an oven. All data from 1984 through the present in the books for “complete kitchen facilities” are comparable. The definition of “complete kitchen facilities” in the microdata files does not require a unit to have an oven.

Location of previous unit.

1995. Data were suppressed, since it was not possible to code the metropolitan area of previous units on a basis consistent with current units. The 1993 data were not suppressed, but it is unclear whether they were correctly coded. The AHS residence is coded by its 1983 metropolitan area (see Metropolitan Areas). This may not be its current area (because definitions change, not because house lots move). The previous residence is no longer coded with comparable 1983 boundaries, because of updated geographic coding systems. For example, Jefferson county, WV, was nonmetropolitan in 1983 and is metropolitan in 1993. A move next door would count as a move between metropolitan and nonmetropolitan areas. Eventually comparable codes will be re-established.

Lodgers.

1984. A new series of questions (item 112) concerned household members 14 or older, who are not related to the householder. The respondent was asked if any of these nonrelatives paid a regular fixed rent as a lodger, and, if so, what their dollar cost was and whether it included food. The questions were intended to measure the cost of such housing for the lodgers. In this as well as earlier and later years, any lodgers' rent received by the householder should be reported as rental income, but it is not certain whether householders do so.

1993. Because of concern about ambiguity of the questions for housemates who share rent and utilities, and a desire to measure their housing costs, the questions were changed to remove the word "lodger" and ask about any cost sharing. The respondent could answer with average dollars per month or a percent share for each such cost-sharing nonrelative. Again inclusion of food was asked, and a new question was asked on whether the nonrelative was an employee of the household. True cost-sharing would not be counted as the householder's income, and the householder's housing cost only would be the remaining share not covered by any nonrelatives' shares.

The category labelled lodgers in the 1993 books is incorrect, since the term was not used in the questionnaire that year.

1995-96. In the 1995 national and 1996 metropolitan surveys, the screening for the questions about lodgers was changed to omit co-owners, co-renters, and their children. Any other unrelated household members 14 or older were asked the 1984 questions.

1997. Both nonrelatives and relatives age 21 and over who were not (co-)owners or (co-)renters and who were not spouses of (co-)owners or (co-)renters were asked the cost questions. The same questions were asked as in 1984 with the addition of whether the person was an employee of the household, or contributed to costs (asking separately about contributions for utilities, mortgage/rent, groceries, and other).

Losses.

1975 and 1976. The figures for housing units lost from the housing stock between 1973 and 1975 or 1976, published in the 1975 and 1976 national books, are incorrect. These figures were corrected in 1977 and published in *General Housing Characteristics for the United States and Regions: 1977*, series H150/77.

Married-couple families.

1985 and 1987. It was discovered that the published 1985 and 1987 national estimates of married-couple families with no nonrelatives were overestimates as a result of an error in processing. The 1985 overestimate was approximately 340,000, while the 1987 overestimate was 407,800. The overestimated married-couple families with no nonrelatives should have been tabulated under two-or-more-person households as either other male or other female householders. This error was corrected in 1989. Table F provides corrected figures for 1987.

Table F. **Estimate of Married-Couple Families With No Nonrelatives and Other Two-or-More-Person Households: 1987**

Characteristic	Estimate
Married-couple families, no nonrelatives	50,084,000
Other two-or-more-person households	18,853,000
Male householder	6,421,000
Female householder	12,432,000

Metropolitan areas and central cities.

1984. Books and microdata started using 1983 boundaries. This change increased the number of metropolitan units, especially suburbs, and decreased the number of nonmetropolitan units. These boundaries were established in 1983, after the 1980 census, based on population and commuting patterns measured in the 1980 census. Therefore, the 1984 AHS metropolitan boundaries are not comparable to those in the 1980 census publications.

National microdata started showing central city and suburban status in all cases. Also, cases in more areas have the identifying code for their area shown, because of less strict confidentiality constraints than in the past (areas of 100,000 population may be identified; the previous rule was 250,000).

Metropolitan microdata always identify the total area surveyed, but not necessarily the newer central cities, to protect confidentiality. When an area of less than 100,000 people was added to an AHS-Metropolitan survey, sample cases were added there, and extra sample cases also were added (salted) in part of the old area, so one would not know which cases were in the small added area.

From 1973-83 all books and microdata had consistently used 1971 boundaries of metropolitan areas and cities. These were called Standard Metropolitan Statistical Areas. The criteria were published by the U.S. Bureau of Budget

in *Standard Metropolitan Statistical Areas, 1959*. The boundaries were published in the U.S. Bureau of Budget in *Standard Metropolitan Statistical Areas, 1967* (which also reprinted the criteria), and some boundaries were revised in the U.S. Bureau of the Budget's *Second Amendment*, February 23, 1971. These same boundaries were used in publications from the 1970 census.

Note that major revisions in official SMSA boundaries (but not AHS boundaries) happened in 1973, using results of the 1970 census, minor revisions happened during the 1970s, and more major revisions happened in 1983. Therefore, the AHS revision in 1984 reflected the cumulative result of 12 years of changes in official definitions.

1995. Starting in 1995, most metropolitan surveys use new samples and new boundaries, which for the first time may differ from standard boundaries published by the Office of Management and Budget. A list of exactly which counties (towns in New England) are covered in each metropolitan survey each year is under development and will be posted on Internet and printed here in the metropolitan books.

Mobile homes.

1984. Mobile homes with attached permanent rooms began to be counted as mobile homes, while previously they were counted as single family units. See discussions under the topic "Housing unit definition."

1985. See discussion in this appendix under the topic "Weighting."

Monthly housing costs.

1984, 1989. See the discussion in this appendix under the topic "Housing costs and value."

Name change.

1984. The AHS changed its name from the Annual Housing Survey to the American Housing Survey. See the introduction of this appendix.

Neighborhood.

1987. See the topic "Buildings and neighborhoods."

New construction.

1976, 1977, and 1978. The figures for 1973 to 1976 new construction, 1973 to 1977 new construction, and 1973 to 1978 new construction published in the 1976, 1977, and 1978 national books are incorrect. These figures were corrected in 1979 and published in *General Housing Characteristics for the United States and Regions: 1979*, series H150/79.

1984. The characteristics of new construction units are based on units constructed during the last 4 years in the 1984 AHS and later. Prior to 1984, characteristics of new

construction were based on units built since the last survey year. In the national survey, this was a 1-year period except for the 1983 survey, which covered a 2-year period. In the metropolitan survey, this varied from being a 3- to 4-year period.

Other buildings vandalized or with interior exposed

1987. See the discussion in this appendix under the topic "Buildings and neighborhood."

Other housing costs per month.

1995. A processing error was discovered and corrected involving the category "homeowner association fee paid" in the item "Other housing costs per month." The "homeowner association fee paid" data in the 1993 and earlier were incorrect and should not be used. The 1995 data are correct.

Persons other than spouse or children.

1993. See discussions under the topic "Lodgers."

Plumbing facilities. Caution should be used when making comparisons among any of the surveys after 1983.

1984. Changes in the questionnaire resulted in serious deficiencies in plumbing data. In 1983 and earlier, respondents were asked a question on complete plumbing facilities that specified to the respondent the components necessary for complete plumbing (that is, hot and cold piped water, a flush toilet, and a bathtub or shower). The question further ensured that these facilities were only for the use of the occupants of the unit in which they were located (exclusive use). In those units with complete plumbing, an additional question was asked as to how many bathrooms there were.

Starting in 1984, respondents were first asked how many full bathrooms they have. If they answered one or more, questions on plumbing facilities were not asked; the unit was assumed to have complete plumbing facilities for exclusive use. Although the 1984 through 1987 definition of a bathroom requires hot and cold piped water, a sink, a flush toilet, and a bathtub or shower, this definition was not read to the respondent. Also, nothing in the question required the bathroom to be only for the use of the occupants of the sample unit (exclusive use). We believe that the 1984 through 1987 AHS counted a significant number of units as having complete plumbing for exclusive use because respondents for these units reported having a bathroom when, in fact, either the bathroom did not contain all plumbing facilities or the facilities were shared by people living in another unit. Based on previous years' AHS data, we believe the "completeness" was more of a problem than "exclusive use."

The table on plumbing facilities was suppressed in books starting in 1985 (though data were still included in severe physical problems, see below). 1984 data were published, but are incorrect.

1989. Beginning in 1989 national (1990 metropolitan surveys), the questionnaire items on bathrooms and plumbing were modified to provide more accurate estimates. Respondents were asked, "How many full bathrooms with a sink, with hot and cold piped water, a flush toilet, and a bathtub or shower does this house/apartment have?" Also, an additional question was asked, "Are the bathrooms for this household's use only?" If the respondent reported no bathrooms, detailed questions on each required plumbing facility were asked separately.

In 1989, there were 3,139,000 year-round housing units in the United States lacking complete plumbing facilities for exclusive use. Prior to 1985, there was a downward trend of units lacking complete plumbing facilities, with 1983 showing 2,233,000 such units. There has not necessarily been an increase in units lacking plumbing between 1983 and 1989. The 1989-91 figures may be too high, as noted in the discussion of changes in 1993, below.

Units lacking complete plumbing facilities are included in the count of units with severe physical problems. The number of units with severe physical problems may have been underestimated in both national and metropolitan surveys in 1984 through and 1990. It also appears the units with moderate problems may have been overestimated.

There was an unrealistic increase in units with severe problems in the United States between 1985 and 1989

because of redesigning the plumbing facilities question, and then an unrealistic drop in 1993. Occupied housing units with severe problems went from 1,559,000 in 1985 to 3,161,000 in 1989 and 1,901,000 in 1993. There was a simultaneous decrease in moderate problems, from 5,814,000 in 1985 to 4,442,000 in 1989, which may be unrealistic, but no corresponding increase in 1993. Figures are shown in Table G. This increase also affected medians as Table H shows.

1993. In 1993, questionnaire item 29c on bathrooms for exclusive use was modified to provide more accurate estimates. The wording of the "answer options" to this question was changed to specify whether or not there was exclusive use of the facilities. This change appears to have caused a one third drop in plumbing problems, compared to 1991, and a similar drop in severe physical problems. Although the decrease between 1991 and 1993 seems unrealistic, we feel that the change in the 1993 questionnaire resulted in a better estimate.

1997. The definition of a complete bathroom was removed again from the original question (as in 1985-87), though the definition was still available in a help screen. Later in the questionnaire, for homes with only one bathroom, AHS asked specifically if it had hot and cold water, toilet, and tub or shower.

Table G. Measures of Plumbing and Other Problems

Year	Year-round units with plumbing problems	Occupied units with selected physical problems			
		Severe problems		Moderate problems	Total with severe or moderate problems
		Plumbing ¹	Total		
1973	3,573,000	2,471,000			
1974	3,036,000	2,281,000			
1975	2,706,000	2,076,000			
1976	2,661,000	1,944,000			
1977	2,542,000	1,805,000			Not published
1978	2,503,000	1,791,000			
1979	2,353,000	1,715,000			
1980	2,359,000	1,753,000			
1981	2,375,000	1,760,000			
1983	2,233,000	1,621,000			
1985	–	660,000	1,559,000	5,814,000	7,373,000
1987	–	574,000	1,224,000	5,184,000	6,408,000
1989	3,139,000	2,529,000	3,161,000	4,442,000	7,603,000
1991	2,849,000	2,278,000	2,874,000	4,531,000	7,405,000
1993	1,814,000	1,379,000	1,901,000	4,225,000	6,126,000
1995	1,993,000	1,459,000	2,022,000	4,348,000	6,370,000

– Means not applicable.

¹Lacks any of the following, inside the structure, for exclusive use of occupants of this housing unit: hot piped water, cold piped water, flush toilet, bathtub (shower is an acceptable alternative).

Table H. Types of Units With Severe Physical Problems

Median	1985	1989
Year structure built	1938	1955
Rooms	4.0	4.8
Square footage	948	1,389

For households with more than one toilet, the 1997 questionnaire mistakenly asked about times when *the* toilet was unusable, instead of times when *all* toilets were unusable. The 1997 breakdown data and counts of moderate physical problems may therefore include many units where another toilet was indeed usable.

Poverty.

1984. The AHS provides housing characteristics for households with income below the poverty level. The AHS poverty data are not comparable to poverty data published from the Current Population Survey (CPS). Table I presents the differences.

Compared with the CPS, the AHS drop in poverty between 1985 and 1987 seems too large. The 1987 to 1989 AHS increase in poverty may be, in part, a compensation for the unrealistic 1985 to 1987 drop.

In general, AHS estimates of poverty are higher than the CPS estimates. Research indicates that the AHS slightly underreports income when compared with the CPS, thus overreporting poverty. Furthermore, the problems seem to be concentrated among elderly households. A detailed discussion of AHS poverty data is presented in the U.S. Census Bureau memoranda for the record, "AHS Poverty Data,

Table I. Households in Poverty in AHS and CPS: 1985, 1987, and 1989

Year	AHS	CPS
1985	13,266,000	11,996,000
1987	11,969,000	11,807,000
1989	12,403,000	11,369,000
1985-87 change	-1,297,000	-189,000
1987-89 change	434,000	-438,000

1985 to 1989" and "Comparison of the 1989 AHS and CPS Income Reporting." Copies can be obtained by writing to the Housing and Household Economic Statistics Division, U.S. Census Bureau, Washington, DC, 20233. See also Appendix D, which discusses AHS and CPS income reliability and gives additional citations to published sources.

Analysts are reminded that poverty data are published in the AHS not as an official count of households in poverty, but to show the housing characteristics of low-income households.

Public elementary school.

1997. Satisfaction with the public elementary school was no longer asked at all households with children under 17. It was only asked if the household had a 0- to 13-year-old. This change was caused by a desire to focus on households with children up to age 13, who would be most knowledgeable about elementary schools. A mistake prevented covering all such households.

Questionnaire

1985. A new questionnaire was introduced in the 1985 AHS-National sample. Most of the changes on the questionnaire were made to improve the quality of the data. As a result of these changes, however, several items in the 1985 AHS-National sample and later are not comparable to similar data for 1973 through 1983. A list of these items follows. A discussion of each item can be found under the topic of the same name.

Items changed on 1985 questionnaire:

- Units in structure
- Rooms in unit
- Plumbing facilities
- Kitchen
- Recent movers

A number of new items were introduced in the 1985 AHS-National sample including lot size, square footage, units with severe or moderate problems, elderly householder, heating degree days, and detailed information on mortgages, etc. For detailed definitions of these and other items, please see Appendix A.

1995. A number of new items were introduced in the 1995 questionnaire to improve the quality of the data. A list of these items follows.

New items in the 1995 questionnaire:

- Rooms used for business
- Homes currently for sale or rent
- Safety of primary source of water
- Source of drinking water
- Rent paid by lodgers
- Home equity loan

1997. Computer assisted personal interviewing was introduced in the 1997 AHS using laptop computers, see the discussion in this appendix under the topic "Computer assisted interviewing."

For copies of questions used in the laptop computers call HUD User at 800-245-2691 or the American Housing Survey Branch, HHES, U.S. Census Bureau at 301-457-3235.

The questionnaires have been published for reference as shown in the Table J.

Table J. Reprints and Indexes of Questionnaires

Year	Printed books	Codebook					Questionnaire Compendium		Questionnaire Directory
		Volume 1	Volume 2		Volume 3		Reprints	Index	Index
		Reprints	Reprints	Index	Reprints	Index			
1973	Occ, Vac	-	-	-	-	-	Card, Occ, Vac	*	*
1974-81	Occ, Vac	-	-	-	-	-	Card, Occ, Vac	*	*
1983	Occ, Vac,	-	-	-	-	-	-	-	*
1984	Card, Occ, Vac	-	-	*	-	-	-	-	*
1985 National .	Card, Occ, Vac	Card, Occ, Vac	-	*	-	-	-	-	-
1985 Metro . . .	Card, Occ, Vac	-	-	*	-	-	-	-	-
1986-92	Card, Occ, Vac	-	-	*	-	-	-	-	-
1993-94	Card, Occ, SU	-	-	*	-	-	-	-	-
1995 National .	Card, Occ, SV	-	Card, Occ, SV	*	-	-	-	-	-
1995 Metro . . .	Card, Occ, SV	-	-	*	-	-	-	-	-
1996	Card, Occ, SV	-	-	*	-	-	-	-	-
1997	-	-	-	-	Card, Occ, Vac	*	-	-	-
Notes	-	-	-	-	-	-	900 pages HUD USER #2270 ntis#pb8 2175845	-	300 pages HUD USER #5599

- Means not applicable. * An alphabetical index to the questions is provided.

Abbreviations:

Card: Control Card with introductory questions and household members

Occ: Questions for occupied units

Vac: Questions for vacant units, noninterviews, and URE (temporary home, people have usual residence elsewhere)

SU: A few special questions for URE are printed, only questions that differ from occupied units

SV: A few special questions for Vacant and URE are printed, only questions that differ from occupied units

Downloadable/machine-readable questions are only available for 1997. Many of the other books listed above are downloadable, but those downloadable versions exclude the questionnaires (except for the 1997 questionnaire in *Codebook*, volume 3).

Race.

1995. Beginning in 1995, two new categories were added to this item: “American Indian, Eskimo, and Aleut” and “Asian and Pacific Islanders.”

Recent movers.

1984. In the 1984 AHS and later, some of the data for recent movers are based on the householder’s characteristics and some are based on characteristics of the AHS respondent who may or may not be the householder. Before 1984, all recent-mover data were based on the householder’s characteristics.

Rooms in unit.

1984. The number of year-round units with one or two rooms dropped from 4,056,000 in 1983 to 2,486,000 in 1985. As a result, the median number of rooms per unit increased from 5.1 to 5.3. This does not necessarily indicate an increase in the average size of housing units. In the 1983 AHS, respondents answered a single question

asking for a total count of rooms in the unit. The potential to miss specific rooms is high in a question of this type. In the 1984 and later surveys, respondents were asked for a count of each specific type of room. The answers to these questions are then added together in the tabulations to provide a total count of rooms. Far fewer rooms are missed in this series of questions which has apparently in lower counts of one- and two-room units. It is also possible, however, that a few rooms may be double counted. For example, a living room also may have been counted as a family room for a count of two rooms when only one room actually exists.

1997. Unfinished rooms are excluded from the published total number of rooms, but the count of unfinished rooms is available separately in the microdata. Respondents are asked for number of rooms not only by type of room, but also by floor. Research had shown this approach was helpful for large homes, but it may have caused confusion and double counting in small homes.

1999. The question returns to the 1985 approach, but with unfinished rooms separate and with some differences

in wording about business space. The definition of bedroom changes. The old definition counted just rooms used mostly for sleeping. The new definition counts rooms that are meant to be bedrooms even though they may not be used as bedrooms currently.

Sample.

1985. A new sample was chosen for the national survey from the 1980 census. It has been interviewed ever since. The previous sample, selected from the 1970 census, was used from 1973 to 1983. To the degree that the coverage of housing units is different between the 1970 and the 1980 censuses, comparisons of the results of the 1973 through 1983 surveys with the results of the 1985 and later surveys may be affected.

1987. Houston had a new sample based on the 1980 census, because AHS sampling techniques had not been able to keep up with its rapid growth. Its previous sample was based on the 1970 census.

1995. A new sample was chosen for the metropolitan surveys from the 1990 census, except in six areas which were covered as part of the 1995 national survey, and therefore have samples based on the 1980 census. The previous metropolitan samples, based on the 1970 census, were used from 1974 to 1994.

All samples are updated continuously to cover new construction. See also Weighting in the appendix, and the discussion of sample design in Appendix B.

Sample size.

1995. The item “sample size” was added to Table 2-1 of published books. The sample size shown in the book is the unweighted count of the actual sample cases. See Appendix B for a more detailed explanation on sample design.

Severe and moderate problems. Caution should be used when making comparisons among any of the surveys after 1983.

1985, 1987, and 1989. The data concerning units with severe and moderate problems in 1989 and later are not entirely comparable with similar data published in 1987 and 1985. See the discussion in this appendix under the topic “Plumbing facilities.”

Source of water.

1995. The title of this item changed to “Primary source of water,” and the usage restriction “for cooking and drinking” was deleted from the question.

Stories in structure.

1987. See the discussion in this appendix under the topic “Buildings and Neighborhood.”

Telephone interviewing.

1981. Beginning in 1981, decentralized telephone interviewing was conducted in the national survey for a sample of units that were in sample during the previous enumeration. As a result of analysis conducted in both 1981 and 1983, it was concluded that data collected, using the decentralized telephone interviewing procedures, were not sufficiently different from data collected by regular personal interviews to preclude basing published data on both telephone and personal interview data. Also see the discussion in this appendix under the topics “Buildings and neighborhood” and “Computer assisted interviewing.”

Time sharing.

1993. A programming error was discovered and corrected for the item “Time sharing.” In the 1991 national survey, the wrong universe was used. As a result, the published 1991 estimates of time-shared units were underestimated. Caution should be used when making comparisons with the 1991 AHS survey and the 1993 and later surveys.

Trash, litter, or junk on streets or any property

1987. See the discussion in this appendix under the topic “Buildings and neighborhood.”

Units in structure.

1984. In 1973 through 1983, data on units in structure were based on the respondent’s answer to one question, “How many living quarters, both occupied and vacant, are there in this house (building)?” In 1984 and later, data on units in structure are based on the respondent’s answers to a series of questions. The method of collecting data on units in structure was revised in 1984 as previous AHS experience has shown the concept to be difficult for respondents. Respondents particularly had difficulty distinguishing between single-family attached and units in multiunit structures. Table K shows the change in the year-round inventory by units in structure between the 1983 and 1985 AHS using the published data.

Table K. **Change in the Year-Round Housing Inventory by Units in Structure: 1983-85**

Units in structure	1983	1985	1983-85 change
Single-family detached	57,029,000	58,773,000	1,744,000
Single-family attached	4,453,000	4,451,000	-2,000
2 or more units in structure	26,193,000	28,128,000	1,935,000

It is estimated that the 1983 AHS-National sample overestimated single-family detached by 125,000 and single-family attached by 696,000 units. The 1983 AHS-National sample underestimated units in multiunit structures by approximately 898,000. Table L provides more reasonable

(revised) levels of 1983 to 1985 growth by adding (1983 overestimates) and subtracting (1983 underestimates) to the 1983-85 change shown in Table K.

Table L. Revised Change in the Year-Round Housing Inventory by Units in Structure: 1983-85

Units in structure	1983-85 change	Add 1983 over-estimate	Subtract 1983 under-estimate	1983-85 revised change
Single-family detached	1,744,000	125,000	–	1,869,000
Single-family attached	–2,000	696,000	–	694,000
2 or more units in structure	1,935,000	–	898,000	1,037,000

Urban, rural, and population.

1984. From 1973-83 books and data files consistently use 1970 populations and 1971 boundaries to define urban and rural areas. Starting in 1985, national books and data files use 1980 populations and 1981 boundaries. 1990 and 1991 data are never used for this topic. (This topic only applies to national surveys, not metropolitan surveys.)

Utilities.

1989. Two procedures were introduced that attempt to correct the overreporting of electricity and gas costs in the AHS. In the *first procedure*, respondents were asked the amount of the electricity and/or gas bill for the previous months of January, April, August, and December. These months were the best predictors of annual costs. If the respondent provided data for at least 3 of the 4 months (1 month for recent movers), the results were used to provide an annual estimate of costs. This estimate was then divided by 12 to provide average monthly costs.

The *backup procedure* was applied to the remaining units. If the respondents did not know the amount of their electricity and/or gas bill for at least 3 of the 4 months, we used their estimate of average monthly costs. A factor was then applied that, in effect, lowered these costs to make the total cost from all households consistent with electricity and gas costs reported in the Residential Energy Consumption Survey sponsored by the United States Department of Energy.

Before 1989, respondents only were asked to provide an estimate of average monthly costs. Research done using the 1987 AHS has shown that this approach produces 15 to 20 percent overestimates of electricity and gas costs. The new procedures in 1989 and later produce lower and more accurate estimates. On average, more than one-third of the respondents provided answers for at least 3 of the 4 months.

1993. The procedures introduced in 1989 were improved and expanded from two to three procedures. All respondents were asked if they had records available showing

their costs for electricity (or gas) separate from other utilities. If they responded “yes,” they were asked the amount of their electricity (or gas) bill for the most recent months of January, April, August, and December. On average, more than one-third of the respondents provided answers for at least 1 of the 4 months.

If the respondent provided data for only 1 month, the *first procedure* was used. The data for the month were adjusted using regression formulas to estimate yearly costs which were then divided by 12. These formulas were modeled after the results of the Residential Energy Consumption Survey (RECS) sponsored by the United States Department of Energy. These formulas took into account the following characteristics of the unit: electric home heating, natural gas home heating, electric water heating, natural gas water heating, year built, type of unit, number of rooms, number of bathrooms, number of appliances, and number of household members.

The *second procedure* was applied if the respondent provided data for 2, 3, or 4 months. As with the first procedure, the monthly data were adjusted using regression formulas, modeled after the results of RECS, to estimate yearly costs which were then divided by 12. Because more than 1 month’s worth of real costs were available, it was not necessary to take into account detail characteristics of the unit as was done in the first procedure.

If the respondent answered “no” that he or she did not have separate records for the electricity (or gas), the same *backup procedure* was used as described for 1989.

Vacant units.

1984. See discussions under the topics “Housing unit definition” and “Weighting.”

Value.

1984. See the discussion in this appendix under the topic “Housing costs and value.”

Weighting. The process of weighting the data to represent the country as accurately as possible is described in Appendix B. The last steps in weighting involve ratios to make AHS data match other sources. The sources of these control totals have changed over time, as shown in Table M.

1979-83. The 1980-based national estimates are about 2 percent larger than the 1970-based estimates. This 2 percent effect was equally distributed among all types of units. Therefore, percentages and medians should be comparable throughout 1973-83.

1985. The 1980 census count of occupied units in the United States was adjusted for undercount and projected to 1985 using the 1980 to 1985 Current Population Survey’s (CPS) rate of change. The 1985 AHS-National sample was then ratio-estimated to this number. The procedure

Table M. Sources of Control Totals for AHS

Survey	Census used as basis	Method of updating
NATIONAL SURVEYS		
1973-80	1970	Current Population Survey
1981-83	1980	Current Population Survey
1985-89	1980	Current Population Survey, 1980 under count, mobile home placements
1991 and later .	1990	Formula, see Appendix B
METROPOLITAN SURVEYS		
1974-75	1970	Utility companies' data
1976-78	No controls (except that the 1977 Pittsburgh survey used the 1974-75 method)	
1979-80	1970-80	Interpolation
1981-83	1980	Building + demolition permits or no controls, depending on local judgment
1984-88 California	State of California, Department of Finance	
1984-88 Outside California	1980	Total population by county, and change in household size by state (described in <i>Proceedings of the Bureau of the Census Second Annual Research Conference, 1986, pages 83-110</i>)
1989	1980-90	Interpolation between 1985 estimate (methodology on previous line) and 1990 census
1990	1980-90	Extrapolation
1991 and later .	1990	U.S. Census Bureau data on construction, mobile home placement, vacant units, lost units

used in 1985 resulted in 200,000 additional occupied units that would not have been estimated if the 1983 procedures had been employed in 1985.

Also, all vacant units were adjusted for undercount for the first time. This resulted in the addition of 400,000 vacant units (98,000 seasonal units and 302,000 year-round vacant units) to the housing inventory.

Beginning with 1985, national estimates of mobile homes with a model year of 1980 or later were ratio-estimated into independent counts of mobile home placements from the Survey of Mobile Home Placements. The 1983 and earlier years counts of mobile homes may be deficient leading to unrealistically high estimates of change between 1985 and earlier years. For example, occupied mobile homes grew from 3,999,000 in 1983 to 4,754,000 in 1985, an increase of 755,000. This level of growth seems excessive as data from the Survey of Mobile Home Placements shows approximately 570,000 new mobile homes placed for residential use during the same time period.

1991. The 1990-based national weighting produces, on average, numbers that are about 2.5 percent lower than 1980-based weighting. This effect is not equally distributed among all types of units. Table N shows the effects of the weighting change by region for the year 1991.

Table N. 1991 AHS: Decrease in Estimates From 1980-Based Weighting to 1990-Based Weighting, as Percent of 1980-Based

Type of unit	United States	North-east	Mid-west	South	West
Total housing unit ...	2.5	3.6	2.7	2.0	1.8
Occupied	2.4	3.5	2.7	2.0	1.7
Built 1980 or later	0.1	0.0	0.1	0.1	0.1
Built before 1980	2.9	3.9	3.1	2.6	2.2
Vacant	2.9	4.6	2.8	2.4	2.4

Table O presents counts of occupied homes using 1990-based weighting. This weighting is consistent with the weighting used to produce the 1991 and later detailed tables in Chapters 1 through 10 of the national books. These data should be used when measuring the change in the size of the occupied inventory over time. These data provide the most accurate count of the total number of occupied homes in the United States for the years 1985, 1987, and 1989.

Wiring.

1997. Plastic coverings began to be counted as acceptable, along with metal coverings, since the building industry accepts them. This change should reduce the count of "exposed wiring" compared to 1995.

Table O. Occupied Housing Units Using 1990-Based Weighting: 1985, 1987, and 1989

[Numbers in thousands]

Characteristic	1985		1987		1989	
	Owner	Renter	Owner	Renter	Owner	Renter
United States ..	54,394	31,279	56,649	31,885	58,193	32,809
Northeast	10,922	7,106	11,418	7,089	11,660	7,011
Midwest	14,226	7,242	14,696	7,133	15,122	7,234
South	19,217	9,876	19,985	10,190	20,627	10,694
West	10,030	7,056	10,550	7,472	10,784	7,870
Race						
White and other	50,222	25,866	52,323	26,253	53,772	26,924
Black	4,172	5,413	4,326	5,632	4,420	5,885