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SAMPLE DESIGN

Introduction. The estimates for each of the 11 metropolitan areas in this report series (H170/85) are based on data collected from the 1985 American Housing Survey Metropolitan Sample (AHS-MS) and the 1985 American Housing Survey National Sample, which were conducted by the Bureau of the Census acting as collection agent for the Department of Housing and Urban Development.

The sample areas covered for metropolitan areas that remained in the AHS sample after survey year 1983 are consistent with the 1983 Office of Management and Budget (OMB) definitions of a metropolitan statistical area (MSA), consolidated metropolitan statistical area (CMSA), or primary metropolitan statistical area (PMSA). In some instances, a given metropolitan area is a combination of primary metropolitan statistical areas and will be referred to as PMSA's. In addition to adding new areas to some metropolitan samples in order to comply with the 1983 definitional changes, some new metropolitan areas have been added. Thus, each of the 1985 metropolitan areas will fall into one of three categories--

a. Areas of the same geographic area as defined for surveys prior to 1984 (i.e., areas in which the 1970 OMB definition of a standard metropolitan statistical area is the same as the 1983 MSA, PMSA, or CMSA definition, 1970-based area)—Dallas, TX PMSA; Los Angeles-Long Beach, CA PMSA; Philadelphia, PA-NJ PMSA; Phoenix, AZ MSA; and San Francisco-Oakland, CA PMSA.

b. Areas consisting of new area in addition to the 1970-based area—Boston, MA-NH CMSA; Detroit, MI PMSA; Ft. Worth-Arlington, TX PMSA; Minneapolis-St. Paul, MN-WI MSA; and Washington, DC-MD-VA MSA.

c. Areas that are in sample for the first time--Tampa-St. Petersburg, FL MSA.

The metropolitan areas selected for the 1985 AHS-MS are interviewed on a rotating basis once every 4 years. Each metropolitan area had an expected sample size of 8,500 or 4,250 housing units, uniformly distributed throughout nine panels (panels 4-12). The areas having an expected sample size of 8,500 housing units include the Detroit, MI PMSA; Los Angeles-Long Beach, CA PMSA; Philadelphia, PA-NJ PMSA; San Francisco-Oakland, CA PMSA; and Washington, DC-MD-VA MSA. The remaining six metropolitan areas had an expected sample size of 4,250

housing units. Due to budget constraints, panel 12 was dropped from sample in all metropolitan areas; and with the exception of the Boston, MA-NH CMSA; Minneapolis-St. Paul, MN-WI MSA; Phoenix, AZ MSA; and Tampa-St. Petersburg, FL MSA, panel 11 was dropped as well. In metropolitan areas where only panel 12 was dropped from sample, interviewing was scheduled for April 1985 through November 1985; in the other seven metropolitan areas, interviewing was scheduled for April 1985 through October 1985. Hence, the expected sample sizes were lower than the original goals of 4,250 and 8,500 sample units. Table 1 summarizes the data on interviews for AHS-MS and AHS-National in 1985. In these metropolitan areas, 53,477 AHS-MS housing units were eligible for interview. Of these sample housing units, 2,772 interviews were not obtained because for occupied sample units, the occupants refused to be interviewed, were not at home after repeated visits, or were unavailable for some other reason; or, for vacant units, no informed respondent could be found after repeated visits. In addition to the AHS-MS housing units eligible for interview, 1,455 AHS-MS units were visited but were not eligible for interview because they were condemned, unfit, demolished, converted to group quarters use, etc.

The AHS-National sample is interviewed biennially in odd-numbered years. It was conducted from August 1985 through December 1985. The sample covers 878 counties and independent cities with coverage in each of the 50 states and the District of Columbia. In order to increase the reliability of the AHS-MS sample estimates, information from AHS-National sample units was used in the estimation process. For each metropolitan area, interviewed AHS-National units that were located within the 1985 AHS-MS definition of the metropolitan area were used in the estimation procedure. In these metropolitan areas, 6,585 AHS-National units were used.

Designation of AHS-MS sample housing units for the 1985 survey. The sample housing units designated to be interviewed in the 1985 survey consisted of the following categories, which are described in the following sections:

Housing units that were in the 1970-based area include the following:

a. All sample housing units that were interviewed in the previous survey and remained in sample after the 1985 reduction. This sample includes housing units that were selected as part of the 1976-1981 Coverage Improvement Program. These Coverage Improvement cases represented most of the housing units which, until these procedures were implemented, did not have a chance of selection.

b. All sample housing units that were type A noninterviews (i.e., units eligible to be interviewed) or type B noninterviews (i.e., units not eligible for interview at the time of the survey but which could become eligible in the future) in the previous survey and remained in sample after the 1985 reduction. (For a list of reasons for type A and type B noninterviews, see the facsimile of the 1985 AHS questionnaire.)

c. All sample housing units selected from a listing of new residential construction building permits issued since the previous survey that remained in sample after the 1985 reduction. This sample represented the housing units built in permit-issuing areas since the previous survey.

d. All sample housing units that were added since the previous survey in sample segments from the nonpermit universe that remained in sample after the 1985 reduction. This sample represented additions to the housing inventory since the previous survey in nonpermit-issuing areas.

e. In the 1970-based areas of the Boston, MA-NH CMSA; Detroit, MI PMSA; Ft. Worth-Arlington, TX PMSA; Minneapolis-St. Paul, MN-WI MSA; and Washington, DC-MD-VA MSA, all sample housing units selected from the 1980 Census of Population and Housing.

f. All sample housing units reinstated in sample in 1985. This sample represents units which had been dropped from sample, due to sample reductions prior to 1985.

Housing units within new areas added to the metropolitan area in 1980 and for metropolitan areas that are in sample for the first time (1980-based area):

a. All housing units selected from the 1980 Census of Population and Housing.

b. All housing units that were selected from a list of new residential construction building permits. This sample represents the housing units built in permit-issuing areas since the 1980 Census.

c. All sample housing units that were selected in sample segments added from the nonpermit universe. This sample represents units enumerated in the 1980 Census as well as additions to the housing inventory in nonpermit-issuing areas since the 1980 Census.

The following table shows the percent of the AHS-MS old construction sample that is 1970-based and 1980-based for each metropolitan area:

Metropolitan area	Percent 1970-based area	Percent 1980-based area
Boston, MA-NH CMSA	70.1	29.9
Dallas, TX PMSA	100.0	0.0
Detroit, MI PMSA	91.7	8.3
Ft. Worth-Arlington, TX PMSA	96.2	3.8
Los Angeles-Long Beach, CA PMSA	100.0	0.0
Minneapolis-St. Paul, MN-WI MSA	91.6	8.4
Philadelphia, PA-NJ PMSA	100.0	0.0
Phoenix, AZ MSA	100.0	0.0
San Francisco-Oakland, CA PMSA	100.0	0.0
Tampa-St. Petersburg, FL MSA	0.0	100.0
Washington, DC-MD-VA MSA	93.3	6.7

1985 AHS-MS original sample selection for the 1970-based area sample of the metropolitan areas. The 1985 AHS-MS original sample for the 1970-based area of the metropolitan areas was selected from two frames: Housing units enumerated in the 1970 Census of Population and Housing in areas under the jurisdiction of permit-issuing areas (the 1970-based permit-issuing universe); and housing units constructed in permit-issuing areas since the 1970 census (the 1970-based new construction universe). In addition, the sample for those metropolitan areas that were not 100-percent permit-issuing in 1970 included a sample selected from a third frame: housing units located in areas not under the jurisdiction of permit-issuing offices (the 1970-based non-permit universe)

In 1970, the Boston, MA-NH CMSA; Los Angeles-Long Beach, CA PMSA; Phoenix, AZ MSA; San Francisco-Oakland, CA PMSA; and Washington, DC-MD-VA, were the only metropolitan areas that were 100-percent permit-issuing.

Sampling operations, described in the following paragraphs, were performed separately within the central city and balance, using the 1970 OMB definitions of the central city of each metropolitan area for each of the sample frames. The overall sampling rate used to select the sample for each metropolitan area was determined by the size of the sample. Each metropolitan area had a sampling rate about the same for the central city and the balance, since the sample was distributed proportionately between the two, according to the corresponding distribution of total housing units.

Sample from the 1970-based permit-issuing universe. The major portion of the sample in each of the metropolitan areas was selected from a file that represented the 20-percent sample of housing units enumerated in permit-issuing areas of the metropolitan areas during the 1970 Census of Population and Housing. This file contained records for occupied housing units, vacant housing units, and housing units in certain special places or group quarters. Sampling operations were done separately for the special place and group quarters records, and for the occupied and vacant housing unit records. Before the sample was selected from the occupied and vacant housing unit records, the records were stratified by race of the head of household (non-Black/Black), and the vacant records were stratified into four categories pertaining to the value or rent associated with the vacant housing units. The occupied housing unit records were further stratified so that each unit was assigned to 1 of 50 strata according to its tenure (owner/renter), family size, and family income category as illustrated by the following table:

Family income	Tenure									
	Owner family income					Renter family size				
	1	2	3	4	5+	1	2	3	4	5+
Under $3,000										
$3,000 to $5,999										
$6,000 to $9,999										
$10,000 to $14,999										
$15,000 and over										

Thus, the occupied housing unit records from the permit-issuing universe were assigned to 1 of 100 strata for either the central city or for the balance, and the vacant housing unit records were assigned to one of the four vacant strata for either the central city or for the balance of the metropolitan areas. A sample selection procedure was then instituted that would produce one-half of the desired sample. However, whenever a record was selected to be in sample, the housing unit record adjacent to it on the file was also selected to be in sample, thereby insuring the necessary designated sample size.

Before the sample was selected from the group quarters and special place records, the records were stratified by census tract and census enumeration district (ED) within the central city and within the balance of the metropolitan areas. A sample of special place records was then selected by a procedure that produced one-quarter of the desired sample size. However, at the time of the survey, the housing units at each of the special places were listed and subsampled at a rate that produced an expected four sample units, thereby insuring the necessary designated sample size.

Sample from the 1970-based new construction universe. The second frame from which the metropolitan area sample was selected was a list of new construction building permits issued since 1970 (i.e., the new construction universe). The sample selection from the list of new construction building permits was an independent operation within the metropolitan area. Under clerically selected procedures, the list of permits was stratified by the date the permits were issued, and clusters of an expected four (usually adjacent) housing units were formed. These clusters were then sampled for inclusion at the overall sampling rate. In February 1984, the new construction sampling operations for the 1970-based and 1980 based areas were combined into one computerized system. The universe sampled in the computerized system will be referred to in the estimation section as the 1980-based permit universe. Under these procedures, prior to sample selection, the list of permits was stratified by the date of issue, State, 1980 central city and balance, county or minor civil division, and permit office. Clusters of an expected four (usually adjacent) housing units were formed. These clusters were then sampled for inclusion at twice the overall

sampling rate. The housing units within each of the clusters were then subsampled so that two of the four housing units originally selected were kept in the sample.

Sample from the 1970-based nonpermit universe. For those metropolitan areas that were not 100-percent permit-issuing, the remainder of the AHS-MS sample was selected from a frame consisting of areas not under the jurisdiction of permit-issuing offices (i.e., the nonpermit universe). The first step in the sampling operation for the nonpermit universe was the selection of a sample of census enumeration districts. Prior to this sample selection, the ED's were stratified by census tract within the central city and within the balance of the metropolitan area. The probability of selection of an ED was proportionate to the following:

$$\frac{\text{Number of housing units in 1970 census ED} + \dfrac{\text{Group quarters population in 1970 census ED}}{3}}{4}$$

The sample ED's were then divided into segments (i.e., small land areas with well-defined boundaries having an expected size of four, or a multiple of four, housing units). At the time of the survey, those segments that did not have an expected size of four were further subdivided to produce an expected four sample housing units. The next step was the selection of one of these segments within each sample ED. All housing units in existence at the time of interview in these selected segments were eligible for sample. Thus, housing units enumerated in the 1970 Census as well as housing units built since the 1970 Census were included.

Sample selection for the AHS-MS Coverage Improvement Program. The AHS-MS Coverage Improvement Program was undertaken to correct certain deficiencies in the AHS-Metropolitan Area sample from the 1970 permit-issuing universe and the 1970 new construction universe within the 1970-based area. The coverage deficiencies included the following units:

a. New construction from building permits issued prior to January 1970, but completed after April 1, 1970.

b. Mobile homes placed in parks either missed during the 1970 Census or established since the 1970 Census.

c. Housing units missed in the 1970 Census.

d. Housing units converted to residential use that were nonresidential at the time of the 1970 Census.

e. Houses that have been moved onto their present site since the 1970 Census.

f. Mobile homes placed outside parks since the 1970 Census or vacant at the time of the 1970 Census.

For a detailed description of the coverage improvement sample selection process, see earlier reports in the H170 series for the years 1976 through 1981.

1985 AHS-MS sample reduction and sample reinstatement. The 1985 AHS-MS sample reduction dropped units from sample, whereas, the 1985 AHS-MS sample reinstatement added enumerated units that were previously dropped from sample. The universes involved were: the 1970-based permit-issuing universe; the 1970-based new construction universe; and the 1970-based nonpermit universe.

Sample reduction and reinstatement involved dropping or adding individual housing units from the permit-issuing universe; whole clusters from the new construction universe; and whole segments from the nonpermit universe.

The reduction/reinstatement was implemented to achieve two criteria:

a. A sample size of 8,500 in the Detroit, MI PMSA; Los Angeles-Long Beach, CA PMSA; Philadelphia, PA-NJ PMSA; San Francisco-Oakland, CA PMSA; and Washington, DC-MD-VA MSA; and a sample size of 4,250 in the other six metropolitan areas;

b. a sample having an equal number of owners and renters.

In order to achieve these results, each unit was classified according to the original panel number (the original sample was divided into 12 panels, with one-twelfth of the sample being in each panel) and 1985 tenure (each housing unit was given a 1985 tenure based on the previous year's tenure status). In order to simplify field procedures, panels 1-3 (i.e., a random one-fourth of the original sample) were dropped from sample whenever possible. More sample reductions were implemented separately for each 1985 tenure group (using different selection rates) across the remaining panels.

AHS-MS sample selection for the 1980-based area sample of the metropolitan areas. The sample for new areas added to the 1970-based metropolitan areas and metropolitan areas in sample for the first time that, in 1980, were 100-percent permit issuing was selected from two frames— housing units enumerated in the 1980 Census of Population and Housing in areas under the jurisdiction of permit-issuing areas (the 1980-based permit-issuing universe); and housing units constructed in permit-issuing areas since the 1980 census (1980-based new construction universe).

In addition, the sample for those metropolitan areas that were not 100-percent permit-issuing in 1980 included a sample from a third frame— housing units not under the jurisdiction of permit-issuing offices (1980-based non-permit universe).

In 1980, the Boston, MA-NH CMSA; Ft. Worth-Arlington, TX PMSA; Minneapolis-St. Paul, MN-WI MSA; and Washington, DC-MD-VA MSA were the only metropolitan areas that added new areas which were not 100-percent permit-issuing. In order to satisfy confidentiality requirements in

the Boston, MA-NH CMSA; Ft. Worth-Arlington, TX PMSA; and Washington, DC-MD-VA MSA; it was necessary to supplement the existing sample within the 1970-based area. The additional housing units were selected separately for each metropolitan area from the 1980-based permit-issuing universe.

Sample from the 1980-based permit-issuing universe. The major portion of the sample in each metropolitan area was selected from a file that represented all the housing units enumerated in permit-issuing areas during the 1980 Census of Population and Housing. This file contained records for occupied housing units, vacant housing units, and housing units in group quarters. Sampling operations were done separately for noninstitutionalized group quarters and for all other housing units in permit-issuing areas. In addition, in order that an equal number of owner and renter housing units were selected in each metropolitan area, a selection rate that differed by tenure group was used. Before the sample was selected, the housing units that were not classified as group quarters were stratified into 60 categories by tenure, contract rent, value, and number of rooms as illustrated by the following table:

Contract rent and value	Number of rooms		
	1-3	4-5	6+
RENTER			
Contract rent:			
Less than $100			
$100 to $149			
$150 to $199			
$200 to $249			
$250 to $299			
$300 to $349			
$350 to $399			
$400 or more			
Not available			
OWNER			
Value:			
Less than $20,000			
$20,000 to $29,999			
$30,000 to $34,999			
$35,000 to $39,999			
$40,000 to $49,999			
$50,000 to $64,999			
$65,000 to $79,999			
$80,000 to $99,999			
$100,000 to $149,999			
$150,000 or more			
Not available			

The group quarters housing units were grouped into two strata: (1) institutionalized group quarters; and (2) noninstitutionalized group quarters.

The following sample selection procedures were then implemented separately within the central city and balance of the metropolitan area. For the Boston, MA-NH CMSA; Ft. Worth-Arlington, TX PMSA; and Washington, DC-MD-VA MSA, the sample selections were implemented separately by the 1970-based and 1980-based areas. All units were sorted by the 1980 central city and balance, stratum, State, district office, ED, and census serial number. The sample selection procedure was then implemented separately for institutionalized group and nongroup quarters housing units and noninstitutionalized group quarters. Individual housing units were selected for the nongroup quarters, while each institutionalized group quarters had one chance of selection. Before the sample selection for the noninstitutionalized group quarters was implemented, the following measure of size was calculated for each record:

$$(1/4) \times \frac{\text{(Total group quarters population)}}{2.75}$$

The noninstitutionalized group quarters were then selected proportionate to the measure of size.

Sample selection from the 1980-based new construction universe. The second frame from which the metropolitan area sample was selected was a list of new construction building permits issued since 1980 (i.e., the new construction universe). The sample selection from the list of new construction building permits was an independent operation within each metropolitan area. This operation was described in the discussion of the 1970-based new construction universe. The following table shows the percent of the new construction sample that was clerically selected since the previous survey (i.e., cluster size = 4) and computer selected (i.e., cluster size = 2) for each metropolitan area:

Metropolitan area	Percent clerically selected	Percent computer selected
Boston, MA-NH CMSA	17.0	83.0
Dallas, TX PMSA	66.7	33.3
Detroit, MI PMSA	41.4	58.6
Ft. Worth-Arlington, TX PMSA	62.1	37.9
Los Angeles-Long Beach, CA PMSA	48.0	52.0
Minneapolis-St. Paul, MN-WI MSA	53.4	46.6
Philadelphia, PA-NJ PMSA	48.8	51.2
Phoenix, AZ MSA	52.4	47.6
San Francisco-Oakland, CA PMSA	44.3	55.7
Tampa-St. Petersburg, FL MSA	0.0	100.0
Washington, DC-MD-VA MSA	49.0	51.0

Sample from the 1980-based nonpermit universe. For those metropolitan areas that were not 100-percent permit-issuing, the remainder of the AHS-MS sample was selected from a frame consisting of areas not under the jurisdiction of permit-issuing offices (i.e., the 1980-based nonpermit universe). The first step in the sampling operation for the nonpermit universe was the selection of a sample of census ED's within these areas (using the overall sampling rate). Prior to this sample selection, the ED's were sorted by State, district office, and enumeration district number.

The probability of selection of an ED was proportionate to the following:

$$\frac{\text{Number of housing units in 1980 census ED} + \dfrac{\text{Noninstitutionalized group quarters population in 1980 census ED}}{2.75}}{4}$$

The sample ED's were then divided into segments (i.e., small land areas with well-defined boundaries having an expected size of four, or a multiple of four, housing units). At the time of the survey, those segments that did not have an expected size of four housing units were further subdivided to produce an expected four sample housing units. Following the division, a segment from each sample ED was selected. All housing units in existence at the time of interview in these selected segments were eligible for sample. Thus, housing units enumerated in the 1980 Census as well as housing units built since the 1980 Census are included.

AHS-National sample selection. This sample was set up as a multistage design in which the United States was divided into areas made up of counties and independent cities called primary sampling units (PSU's). These PSU's were grouped into strata consisting of one or more PSU's and then one PSU was selected from each stratum to represent all PSU's in that stratum.

Selection from the 1980 census. Sample units were selected from 1980 census units in these PSU's at an overall sampling rate of one in 2,148. The procedure for sampling housing units in a given area depended on the completeness of addresses and the degree of monitoring of new construction by permits. In areas where addresses were mostly complete and where new construction is monitored by permits, a sample was selectd from a list of housing units that received the long-form questionnaire in the 1980 census. This list was based on housing and geographic information on the housing unit.

In areas where at least 4 percent of the addresses were incomplete or inadequate, or where new construction was not monitored by building permits (most rural areas), a sample of 1980 "long-form questionnaire" census units was selected in several steps:

a. The areas were grouped, and a sample of areas was chosen.

b. A segment was selected within each sample area.

c. A sample of housing units that received 1980 Census long forms was selected within the segment.

Selection of new construction housing units in permit-issuing areas. The sample of permit new construction was selected from issued building permits such that the units were expected to be completed after April 1, 1980. The sampling procedure was similar to that of AHS-MS; however, the subsampling rate used was one in four.

Selection of units from the nonpermit universe. Housing units added to the inventory since the 1980 Census were represented using two methods:

a. Within-structure additions are units in structures that contained at least one unit enumerated in the 1980 census.

b. Whole-structure additions include units in structures that contained no units enumerated in the 1980 census.

Additional information concerning the 1985 AHS-National survey is available in the Current Housing Report series H150/85.

ESTIMATION

The 1985 AHS-Metropolitan area sample produced estimates pertaining to characteristics of the housing inventory at the time of the interview (i.e., the 1985 housing inventory). The combined estimates used information from both the AHS-MS and AHS-National samples (i.e., the combined sample estimates).

AHS-MS. Prior to performing estimation procedures using the combined sample, the AHS-MS sample housing units were weighted according to a one-stage ratio estimation procedure. Before the implementation of the ratio estimation procedure, the basic weight (i.e., the inverse of the probability of selection) for each interviewed sample housing unit was adjusted to account for Type M and Type A noninterviews.

Type M noninterview adjustment. The Type M noninterviews are sample units that were dropped due to selection by another survey. These noninterviews occur in the 1980-based permit-issuing area universe, the 1980-based nonpermit-issuing area universe, and the 1980-based new construction universe. The adjustment was done separately for the above universes for the central city and balance for each metropolitan area. The adjustment was equal to the following:

$$\frac{\text{AHS-MS sample estimate of 1980 housing units in the cell} + \text{Weighted count of Type M noninterviewed housing units}}{\text{AHS-MS sample estimate of 1980 housing units in the cell}}$$

Type A noninterview adjustment. Type A noninterviews are sample units for which: occupants were not home, occupants refused to be interviewed, or occupants were unavailable for some other reason. The adjustment was done on occupied units and was computed separately for units in the 1980-based permit-issuing area universe new construction; and all other housing units (this includes the

1970-based permit-issuing universe, the 1970-based and 1980-based nonpermit-issuing universes and the 1970-based new construction housing units built prior to the last survey).

For units in the 1980-based permit-issuing universe, a Type A noninterview adjustment factor was computed separately, for each of the 62 strata used in the sample selection process, by central city and balance. For new construction units a Type A noninterview adjustment factor was computed separately for each of the central city and balance. For all other units, a Type A noninterview adjustment factor was calculated separately by tenure and 1970 central city and balance for each of the following: (1) 24 noninterview cells for sample housing units from the permit-issuing universe (each cell was derived from one or more of the 50 different strata used in the 1970-based permit-issuing universe, illustrated earlier); (2) 1 noninterview cell for new construction housing units; (3) 1 noninterview cell for mobile homes or trailers from the nonpermit-issuing universe; (4) 1 noninterview cell for units that were not mobile homes or trailers from the nonpermit-issuing universe: (5) 3 noninterview cells for units from the coverage improvement universe; (6) 1 noninterview cell for units classified as vacants at the time of the 1970 census; and (7) 1 noninterview cell for units classified as group quarters at the time of the 1970 Census. Within a given cell, the Type A noninterview adjustment factor was equal to the following ratio using the basic weight times the Type M noninterview adjustment factor for the sample weight:

$$\frac{\text{Weighted count of interviewed housing units} + \text{Weighted count of Type A noninterviewed housing units}}{\text{Weighted count of interviewed housing units}}$$

AHS-MS ratio estimation procedure (1970-based permit-issuing universe). The following ratio estimation procedure was employed for all sample housing units from the permit-issuing universe. This factor was computed separately for all sample housing units within each 1970-based permit-issuing universe noninterview cell mentioned previously. The ratio estimation factor for each cell was equal to the following:

$$\frac{\text{1970 census count of housing units from the 1970-based permit-issuing universe in the corresponding cell}}{\text{AHS sample estimate of 1970-based housing units from the permit-issuing universe in the corresponding cell}}$$

For each metropolitan area, the numerators of the ratios were obtained from the 1970 Census of Population and Housing 20-percent file (long forms) of housing units enumerated in areas under the jurisdiction of permit-issuing offices.

The denominators of the ratio estimation factors were then obtained from weighted estimates of all the AHS-MS sample housing units from the 1970-based permit-issuing universe, using the existing weights (i.e., the basic weight times the Type A noninterview adjustment). The computed ratio estimation factor was then applied to the existing weight for each sample housing unit within the corresponding ratio estimation cells. This ratio estimation procedure was introduced to correct the probabilities of selection for samples, in each of the strata used in the sample selection of the 1970-based permit-issuing universe. Prior to the AHS-MS sample selection within each metropolitan area, housing units already selected for other Census Bureau surveys were deleted from the permit-issuing universe. The same probability of selection was then applied to the remaining units to select the AHS-MS sample. Since the number of housing units deleted from the AHS-MS universe frame was not necessarily proportional among all strata, some variation in the actual probability of selection between strata was introduced during the sample selection process.

AHS-MS ratio estimation procedure (1980-based permit-issuing universe). The following ratio estimation procedure was employed for all sample units from the 1980-based permit-issuing universe. This factor was computed separately for all metropolitan areas (excluding the Dallas, TX PMSA; Los Angeles-Long Beach, CA PMSA; Philadelphia, PA-NJ PMSA; Phoenix, AZ MSA; and San Francisco-Oakland, CA area PMSA's), within each 1980-based permit-issuing universe noninterview cell mentioned previously. The ratio estimation factor was equal to the following:

$$\frac{\text{1980 Census count of housing units from the 1980 permit-issuing universe in the corresponding cell}}{\text{AHS-MS sample estimate of 1980 housing units from the 1980 permit-issuing universe in the corresponding cell}}$$

For each metropolitan area, the numerator of the ratio was obtained from the 1980 Census of Population and Housing 100-percent file of housing units enumerated in areas under the jurisdiction of permit- issuing offices. The denominator of the ratio was obtained from weighted estimates of all the AHS-MS sample housing units within the corresponding ratio estimation categories using the existing weight (i.e., the basic weight times the Type M noninterview adjustment factor times the Type A noninterview adjustment factor).

The computed ratio estimation factor was then applied to the existing weight for each sample housing unit within the corresponding ratio estimation categories.

This ratio estimation procedure was introduced to adjust the sample estimate in each of the strata used in the sample selection of the 1980-based permit issuing universe to an independent estimate (1980 census count) for the strata. This adjustment was necessary since some sample units were dropped during the processing procedures.

AHS-National. Before implementing estimation procedures using the AHS-National units for the combined sample, the AHS-National sample units were assigned a weight that reflected the probability of selection for the unit. The AHS-National weighting procedure then made adjustments for units that could not be interviewed for a variety of reasons. For each of these adjustments, a factor was computed and applied to the appropriate units.

The first of these adjustments was done for permit segments only, to account for permits that could not be sampled and units which could not be located. These were represented by all other units in permit segments including both interviews and noninterviews (excluding unable-to-locate noninterviews).

The second of the adjustments was done for units in structures built before April 1, 1980. It was done to account for units that could not be located. The unlocatable units were represented by both interviews and noninterviews (excluding unable-to-locate noninterviews).

The last of these adjustments was done to account for units that could not be interviewed because either no one was home after repeated visits or the respondent refused to be interviewed. When 1980 Census data was available, this information was used to determine the noninterview adjustment cell. The cells included characteristics such as tenure, geography, units in structure and number of rooms. When 1980 Census data was not available, adjustment factors were computed separately using more general characteristics such as type of area and type of housing unit (i.e., mobile home, nonmobile home). Additional information on the AHS-National weighting procedure can be found in the current housing reports H150/85 series.

COMBINED SAMPLE WEIGHTING

Introduction. The estimates for the combined sample were obtained by summing the sample weights of interviewed AHS-MS and AHS-National units. For AHS-MS sample units, the starting weight was obtained after the AHS-MS ratio estimation procedure. For AHS-National units, the starting weight was obtained after the Type A noninterview adjustment. In order to account for the use of two different samples representing one metropolitan area, weighting factors were assigned to each unit prior to the combined sample ratio estimation procedures.

Weighting factor adjustment. The weighting factor adjustment was computed separately for each metropolitan area by sample design (AHS-MS or AHS-National) according to "new construction" or "old construction" classification. New construction was defined as units built in permit-issuing areas since the 1980 Census; old construction units were then categorized by tenure classification (renter/owner).

For a given characteristic, the AHS-MS weighting factor adjustment was a function of the sample size in each survey and the variance associated with each survey's estimates.

The corresponding weighting factor was then applied to the existing weight of each AHS-MS and AHS-National sample unit and the weights were then combined according to characteristic (i.e., AHS-MS new construction + AHS-National new construction, etc.).

Combined sample ratio estimation procedures.

Los Angeles-Long Beach, CA PMSA. The following ratio estimation procedure was applied only in the Los Angeles-Long Beach, CA PMSA. It involved the ratio estimation of the weighted sample of new construction units in the metropolitan area to an independent estimate of units in the metropolitan area completed during the same time period. This ratio estimation factor was equal to the following:

$$\frac{\text{Independent estimate of housing units completed in November 1980 or later}}{\text{Sample estimate of housing units completed in November 1980 or later}}$$

The numerator of this ratio was determined using Survey of Construction data. The denominator of this ratio was obtained from the weighted estimate of the AHS sample housing units using the existing weight (i.e., the starting weight times the combined sample weighting factor).

The computed ratio estimate factor was then applied to the existing weight for all units in the metropolitan area completed in November 1980 or later.

Phoenix, AZ MSA. The next ratio estimation procedure was applied only in the Phoenix, AZ MSA. This procedure involved the ratio estimation of the weighted sample estimate of occupied mobile homes in the metropolitan area to an independent estimate of occupied mobile homes in the metropolitan area. This factor is given by the following:

$$\frac{\text{Independent estimate of occupied mobile homes in the Phoenix, AZ MSA}}{\text{Sample estimate of occupied mobile homes in the Phoenix, AZ MSA}}$$

The numerator of this ratio was determined using data from the 1980 census and the 1985 special census for the Phoenix, AZ MSA. The denominator was obtained using the existing weight of AHS sample units (i.e., the starting weight times the combined sample weighting factor).

The computed ratio estimate factor was then applied to the existing weight for all interviewed mobile homes in the metropolitan area.

All areas except Phoenix, AZ MSA. The next ratio estimation procedure was applied to all metropolitan areas except the Phoenix, AZ MSA. Each metropolitan area was subdivided into geographic areas consisting of a combination of

counties or minor civil divisions. The ratio estimation procedure involved the ratio estimation of the weighted sample estimate of the July 15, 1985, housing inventory in each geographic area for each metropolitan area to an independent estimate of occupied housing units for the corresponding cell. This ratio estimation factor equalled the following:

$$\frac{\text{Independent estimate of the July 15, 1985, occupied housing unit inventory for the corresponding geographic area of the metropolitan area}}{\text{AHS-Metropolitan area sample estimate of the occupied housing inventory for the corresponding geographic area of the metropolitan area}}$$

Independent estimates. The independent estimates of occupied housing units that were used as the numerator of this ratio are described below. The denominator of this ratio was obtained from the weighted estimate of the occupied AHS sample housing units using the existing weight.

All areas except Boston, Los Angeles-Long Beach, and Phoenix. Independent estimates were derived for the July 15, 1985, occupied housing inventory for each geographic area within each metropolitan area. For all metropolitan areas excluding the Boston, MA-NH CMSA; Los Angeles-Long Beach, CA PMSA; and Phoenix, AZ MSA, the estimates were based on the following ratio:

$$\frac{\text{1985 estimate of population (age 15+) excluding group quarters in the county}}{\text{1985 estimate of population (age 15+) per household excluding group quarters in the county}}$$

Boston, MA-NH CMSA. For the Boston, MA-NH CMSA, the estimate was based on the following ratio:

$$\frac{\text{1985 estimate of total population excluding group quarters in the minor civil division}}{\text{1985 estimate of total population per household excluding group quarters in the minor civil division}}$$

The methodology used to derive the independent estimates for all metropolitan areas, excluding the Los Angeles-Long Beach, CA PMSA and Phoenix, AZ MSA, was based on the population-per-household method as described in the *Proceedings of the Bureau of the Census Second Annual Research Conference*, March 23-26, 1986, pages 83- 110. This method is based on the national trend of the adult population per household and assumes that this trend is uniform throughout the country.

Los Angeles-Long Beach, CA PMSA. For the Los Angeles-Long Beach, CA PMSA, the independent estimates were obtained from the State of California, Department of Finance. In this metropolitan area, the population-per-household methodology could not be applied since the national population-per-household trend underestimated the true population per household in this metropolitan area.

The AHS sample estimate of the housing inventory for the corresponding geographic area was obtained using the existing weight. The computed ratio estimation factors were then applied to all housing units (including vacant units) in the corresponding geographic area of each metropolitan area and the resulting product was used as the final weight for tabulation purposes.

Phoenix, AZ MSA. The following ratio estimation procedure was applied only in the Phoenix, AZ MSA. This procedure involved the ratio estimation of the weighted sample of all combined sample units in the metropolitan area to an independent estimate of all units in the metropolitan area. This factor is equal to the following:

$$\frac{\text{Independent estimate of the total housing inventory in the Phoenix, AZ MSA}}{\text{AHS combined sample estimate of the total housing inventory in the Phoenix, AZ MSA}}$$

The numerator of this ratio was determined using data from the 1985 special census of the Phoenix, AZ MSA. The denominator was obtained from the weighted estimate of AHS combined sample units using the existing weight.

The computed ratio estimate factor was then applied to the existing weight for all combined sample units in the metropolitan area.

The effect of this ratio estimation procedure, as well as the overall estimation procedures, was to reduce the sampling error for most statistics below what would have been obtained by simply weighting the results of the sample by the inverse of the probability of selection. Since the housing population of the sample differed somewhat, by chance, from the metropolitan area as a whole, it can be expected that the sample estimates will be improved when the sample housing population, or different portions of it, is brought into agreement with known good estimates of the metropolitan area housing population.

ACCURACY OF THE ESTIMATES

There are two types of possible errors associated with estimates based on data from sample surveys--nonsampling and sampling errors. The following is a description of the nonsampling and sampling errors associated with the AHS sample estimates.

Nonsampling errors. In general, nonsampling errors can be attributed to many sources: inability to obtain information about all cases; definitional difficulties; differences in the interpretation of questions; inability or unwillingness of respondents to provide correct information; mistakes in recording or coding the data; other errors of collection, response, processing, and coverage; and estimation for missing data. Nonsampling errors are not unique to sample surveys since they can, and do, occur in complete censuses as well.

Obtaining a measurement of the total nonsampling error associated with the estimates from a survey is very difficult, considering the number of possible sources of error. However, an attempt was made to measure some of the nonsampling errors associated with the estimates for the 1985 AHS-Metropolitan area sample. In the following sections, the major sources of nonsampling errors will be discussed.

AHS-MS content errors. A content reinterview program was done for the 1985 AHS-Metropolitan area sample units. A sample of these units was revisited, and answers to some of the questions on the questionnaire were obtained again. The original interview and reinterview were assumed to be two independent readings and, thus, were the basis for the measurement of the accuracy of the data collected from interviewed units.

The 1985 content reinterview program served as an interviewer quality check and a quality analysis of particular survey questions. One-fourth of all interviewers were selected for the quality check, which reviewed the interviewers' proficiency in properly evaluating the items listed below. The other portion of the reinterview program was performed to ensure that certain survey questions elicited consistent responses from the interviewed households. These reinterview items and their response variability are discussed below.

The six interviewer items reviewed were: (1) correct unit visited; (2) area segment coverage; (3) living quarters classification; (4) tenure; (5) interview status; and (6) household composition.

The AHS-MS survey items reviewed generally fell into three categories: (1) major repairs; (2) mortgage; and (3) mobility. In the category of major repairs, all but one item showed moderate response variability; "major repairs over $500 each" had high variability. Of the 11 measurable items in the mortgage category, 7 had low variability, 3 had moderate variability, and "payments the same throughout mortgage" showed high response variability. The mobility category had four items that showed moderate response variability, and two that showed high response variability: "area lived at age 16" and "preferred place to live in 5 years." One final item that had high variability was the size of the lot. It was found that most people did not know their lot size either in square feet, feet by feet, or whole acres.

Low levels of inconsistency indicate that the response error is insignificant relative to the standard error in this report. Moderate levels of inconsistency indicate that the response error is not insignificant compared to the standard error in this report. High levels of inconsistency indicate that the response error is very significant compared to the standard error in this report, and caution should be used when examining estimates of these characteristics.

In this publication, cross-tabulations involving those items that are subject to high levels of inconsistency may also be subject to a large distortion as a consequence and, thus, are considered to be less reliable than comparable cross-tabulations that do not involve these data. Since the reinterview programs only measured inconsistencies for a sample of the items on the AHS questionnaire, there may be other items with high levels of inconsistency.

For additional information on the content reinterview program, refer to the Census Bureau memorandum, "1985 AHS-MS Reinterview Results."

AHS-National content errors. A content reinterview program was conducted for the AHS-National households as well. A subsample of the original households was revisited and certain questions from the original questionnaire were asked again. The original and reinterview were assumed to be two independent readings and, thus, were the basis for the measurement of the response error of these AHS estimates. The reinterview also served as a check for interviewer evaluation and quality control. The AHS-National reinterview program performed an interviewer quality check using questions similar to those described above. The reinterview study for survey questions was done for three groups of items. They are units in structure and description of structure, number and type of rooms, and appliances including the age and fuel of the appliances. For reinterview results, refer to the current housing reports, H150/85 series.

Reinterview studies were also conducted in conjunction with previous AHS-National and AHS-MS enumerations. These studies included items dealing primarily with poor housing quality, attitudes about the neighborhood, and certain housing costs. The following table shows the items that had higher levels of inconsistency. While these questions were not included in the 1985 reinterview studies, questions from previous enumerations were not altered enough to lead one to believe that the level of inconsistent responses would change.

Survey items	Level of inconsistency
Mice and rats	Moderate
Real estate taxes	Moderate
Cost of real estate taxes	Moderate
Prefer to live in same area or somewhere else	Moderate
Open cracks or holes on inside of building	Moderate to High
Holes in floors	Moderate to High
Blown fuses/tripped circuit breakers	Moderate to High
Neighborhood conditions: street noise; roads in need of repair; crime; trash, litter, junk in streets or on properties; boarded up/abandoned structures; nonresidential activities; odors, smoke, gas	Moderate to High
Satisfactory neighborhood services: police protection; hospitals/health clinic; public transporation; shopping; elementary schools shopping; elementary schools	Moderate to High
Electricity cost	Moderate to High
Oil, coal, keroscene, wood or other fuel cost	Moderate to High
Fire/hazard insurance	Moderate to High
Cost of garbage collection	Moderate to High
Broken plaster or peeling paint on ceiling and walls	High
Working electric outlet in all rooms	High
Concealed wiring	High
Gas cost	High
Cost of water supply and sewage disposal	High
Gross income	High

A possible explanation for the results of the reinterview studies, as well as the surveys themselves, is that respondents may lack precise information. Also, since the results of the reinterview studies are derived from sample surveys, there is sampling error associated with these estimates of nonsampling error. The possibility of such errors should be taken into account when considering the results of these studies.

Coverage errors. In errors of coverage and estimation for missing data, the AHS new construction sample had deficiencies in the representation of conventional (nonmobile home or trailer) new construction, except for the Los Angeles-Long Beach, CA PMSA, which was adjusted to an independent estimate. Due to time constraints, only those building permits issued more than 7 months before the survey ended were eligible to be sampled to represent conventional new construction in permit-issuing areas for this metropolitan area. However, those permits issued during the last 7 months of the survey do not necessarily represent missed housing units. Due to the relatively short time span involved, it is possible that construction of these housing units was not completed at the time the survey was conducted, in which case, they would not have been eligible for interview. In addition to these deficiencies, new construction in special places that do not require building permits, such as military bases, is not adequately presented.

AHS-MS misses a significant portion of new mobile homes. It is believed that most of the difference is due to poor coverage of mobile home parks in address ED's. Undercoverage exists for those mobile homes built between the time of the last coverage improvement procedure and the 1980 census. It has been estimated that on a national level as much as 25 percent of those mobile homes built after January 1, 1980, may be missed.

Deficiencies also exist in ED's where area sampling methods are used. It had been assumed that all housing units located inside these ED's would be represented in the sample. However, it has been established that the AHS sample missed as much as 2 percent of all housing units in these ED's because they were not listed during the canvassing. It should be noted that since these ED's were recanvassed each time this metropolitan area was surveyed, the number of missed housing units may be considerably less for the 1985 survey.

The final ratio estimation procedure corrects for these deficiencies as far as the count of total housing is concerned (i.e., it adjusts to the best available estimate). However, biases of subtotals would still remain.

Rounding errors. For errors associated with processing, rounding of estimates introduces another source of error in the data, the severity of which depends upon the statistics being measured. The effect of rounding is significant relative to the sampling error only for small percentages or small medians, when these figures are derived from relatively large bases (e.g., median number of persons per household). This means that confidence intervals formed from the standard errors given may be distorted, and this should be taken into account when considering the results of the survey.

Sampling errors for the AHS combined sample estimates. The particular sample used for this survey is one of a large number of possible samples of the same size that could have been selected using the same sample design. Even if the same questionnaires, instructions, and interviewers were used, estimates from each of the different samples would differ from one another. The sampling error of a survey estimate provides a measure of the variation among the estimates from all possible samples and, thus, is a measure of the precision with which an estimate from a sample approximates the average result of all possible samples.

One common measure of the sampling error is the standard error. As calculated for this report, the standard error reflects the variation in the estimates due to sampling and nonsampling errors, but it does not measure as such any systematic biases in the data. Therefore, the accuracy of the estimates depends upon the standard error, biases, and any additional nonsampling errors not measured by the standard error. The sample estimate and its estimated standard error enable one to construct interval estimates in which the interval includes the average result of all possible samples with a known probability. For example, if all possible samples were selected, each of these surveyed under essentially the same general conditions, and

an estimate and its estimated standard error were calculated from each sample, then:

> Approximately 90 percent of the intervals from 1.6 standard errors below the estimate to 1.6 standard errors above the estimate would include the average result of all possible samples.

The average result of all possible samples either is or is not contained in any particular computed interval. However, for a particular sample, one can say with specified confidence that the average result of all possible samples is included in the constructed interval.

The figures presented in the tables that follow are approximations to the standard errors of various estimates shown in this report for this metropolitan area. In order to derive standard errors that would be applicable to a wide variety of items and also could be prepared at a moderate cost, a number of approximations were required. As a result, the tables of standard errors provide an indication of the order of magnitude of the standard errors rather than precise standard errors for any specific item.

Tables 2a through 12a present the standard errors applicable to estimates of characteristics of the 1985 housing inventory. Linear interpolation should be used to determine the standard errors for estimates not specifically shown in these tables.

The reliability of an estimated percentage, computed by using the sample data for both numerator and denominator, depends upon both the size of the percentage and the size of the total upon which the percentage is based. Estimated percentages are relatively more reliable than the corresponding estimates of the numerators of the percentages, particularly if the percentages are 50 percent or more.

Tables 2b through 12b present the standard errors of estimated percentages for the 1985 housing inventory. Two-way interpolation should be used to determine standard errors for estimated percentages not specifically shown in these tables.

Included in tables 2a through 12a and 2b through 12b are estimates of standard errors for estimates of zero and zero percent. These estimates of standard errors are considered as overestimates of the true standard errors and should be used primarily for construction of confidence intervals for characteristics when estimates of zero are obtained.

For ratios, 100 (x/y), where x is not a subclass of y, tables 2a through 12a underestimate the standard error of the ratio when there is little or no correlation between x and y. For this type of ratio, a better approximation of the standard error may be obtained by letting the standard error of the ratio be approximately equal to:

$$(100)\frac{x}{y}\sqrt{\left(\frac{S_x}{x}\right)^2 + \left(\frac{S_y}{y}\right)^2}$$

where x = the numerator of the ratio
y = the denominator of the ratio
s_x = the standard error of the numerator
s_y = the standard error of the denominator

Illustration of the use of the standard error tables. Table 1-1 of part 5 of this report shows that in Los Angeles-Long Beach there were 1,432,800 units occupied by married couples. Interpolation using table 6a of this appendix shows that the standard error of an estimate of this size is approximately 19,410. The following interpolation procedure was used.

The information presented in the following table was extracted from table 6a. The entry for "x" is the one sought.

Size of estimate	Standard error
1,400,000	19,390
1,432,800	X
1,500,000	19,450

The entry of "x" is determined as follows by vertically interpolating between 19,390 and 19,450.

$$1{,}432{,}800 - 1{,}400{,}000 = 32{,}800$$
$$1{,}500{,}000 - 1{,}400{,}000 = 100{,}000$$
$$19{,}390 + \frac{32{,}800}{100{,}000}(19{,}450 - 19{,}390) = 19{,}410$$

Consequently, the 90-percent confidence interval, as shown by these data, is from 1,401,740 to 1,463,860 housing units. Therefore, a conclusion that the average estimate, derived from all possible samples, of 1985 units occupied by married couples lies within a range computed in this way would be correct for roughly 90 percent of all possible samples.

Table 1-1 also shows that of 1,432,800 units occupied by married couples, 314,600 or 22.0 percent had six rooms. Interpolation using table 6b of this appendix (i.e., interpolation on both the base and percent) shows that the standard error of the 22.0 percent is approximately 0.8 percentage points. The following interpolation procedure was used.

The information presented in the following table was extracted from table 6b:

Base of percentage	Estimated percentage		
	10 or 90	22.0	25 or 75
1,400,000	0.6	a	0.8
1,432,800		p	
1,500,000	0.5	b	0.8

1. The entry for cell "a" is determined by horizontal interpolation between 0.6 and 0.8.

$$22.0 - 10.0 = 12.0$$
$$25.0 - 10.0 = 15.0$$
$$0.6 + \frac{12.0}{15.0}(0.8 - 0.6) = 0.8$$

2. The entry for cell "b" is determined by horizontal interpolation between 0.5 and 0.8.

$$22.0 - 10.0 = 12.0$$
$$25.0 - 10.0 = 15.0$$
$$0.5 + \frac{12.0}{15.0}(0.8 - 0.5) = 0.7$$

3. The entry for "p" is then determined by vertical interpolation between 0.8 and 0.7.

$$1{,}432{,}800 - 1{,}400{,}000 = 32{,}800$$
$$1{,}500{,}000 - 1{,}400{,}000 = 100{,}000$$
$$0.8 + \frac{32{,}800}{100{,}000}(0.7 - 0.8) = 0.8$$

Applying a factor of 1.0 according to the footnote from Table 6b gives a standard error of 0.8 percentage points. Consequently, the 90-percent confidence interval, as shown by these data, is from 20.7 to 23.3 percent.

Differences. The standard errors shown are not directly applicable to differences between two sample estimates. They are quite accurate for the difference between estimates of the same characteristics in two different metropolitan areas or the difference between separate and uncorrelated characteristics in the same metropolitan area. If there is a high positive correlation between the two characteristics, the formula will overestimate the true standard error; but if there is a high negative correlation, the formula will underestimate the true standard error.

Illustration of the computation of the standard error of a difference. Table 1-1 of part 5 of this report shows that in the Los Angeles-Long Beach metropolitan area there were 487,000 occupied housing units with six rooms and 262,900 occupied housing units with seven rooms. Thus, the apparent difference, as shown by these data, between occupied housing units with six rooms and occupied housing units with seven rooms is 224,100. Table 6a, with interpolation, shows that the standard error of 487,000 is approximately 14,270, and the standard error of 262,900 is approximately 10,940. Therefore, the standard error of the estimated difference of 224,100 is about 17,980.

$$17{,}980 = \sqrt{(14{,}270)^2 + (10{,}940)^2}$$

Consequently, the 90-percent confidence interval for the 224,100 difference is from 195,330 to 252,870 housing units. Therefore, a conclusion that the average estimate derived from all possible samples, of this difference, lies within a range computed in this way would be correct for roughly 90 percent of all possible samples. Thus, we can conclude with 90-percent confidence that the number of 1985 occupied housing units with six rooms is greater than the number of occupied units with seven rooms since the 90-percent confidence interval does not include zero or negative values.

Medians. For medians presented in certain tables, the sampling error depends on the size of the base and on the distribution upon which the median is based. An approximate method for measuring the reliability of the estimated median is to determine an interval about the estimated median so that there is a stated degree of confidence, such that the average median from all possible samples lies within the interval. The following procedure may be used to estimate confidence limits of a median based on sample data:

1. From any of the tables 2b through 12b, determine the standard error of a 50 percent characteristic on the base of the median.
2. Add to and subtract, from 50 percent, the standard error determined in step 1.
3. Using the distribution of the characteristics, determine the confidence interval corresponding to the two points established in step 2. To find the lower endpoint of the confidence interval, it is necessary to know into which interval of the distribution the lower percentage limit falls. Similarly, to find the upper endpoint of the confidence interval, it is necessary to know into which interval of the distribution the upper percentage limit falls. Note that these distribution intervals could be different, although this will not happen very often.

A 1.6 standard-error confidence interval may be determined by finding the values corresponding to 50 percent plus and minus 1.6 times the standard error determined in step 1. For about 90 out of 100 possible samples, the average median from all possible samples would lie between these two values.

Illustration of the computation of the 90-percent confidence interval of a median. Table 1-5 of part 5 of this report shows the median distance from home to work in the Los Angeles-Long Beach, CA PMSA, for all renter-occupied units, was 9 miles. After excluding the "works at home" and "no fixed place of work" categories, the base of the distribution from which this median was determined is 1,416,700 persons.

1. Interpolation using table 6b and the applied factor (from footnote) shows that the standard error of 50 percent on a base of 1,416,700 is approximately 0.9 percentage points.
2. To obtain a 90-percent confidence interval on the estimated median, initially add to and subtract from 50 percent 1.6 times the standard error determined in step 1. This yields percentage limits of 48.6 and 51.4.

3. From the distribution for distance from home to work in Table 1-5, the 5- to 9-mile interval contains the 48.6 percent determined in step 2 (for purposes of calculation, the class interval here is considered to be of width 5—from 5 miles to 10 miles). About 417,300 people, or 29.4 percent, fall below this interval, and 373,600 people, or 26.4 percent, fall within this interval. By linear interpolation, the lower limit of the 90-percent confidence interval is found to be about 8.6.

$$5 + (10 - 5)\frac{48.6 - 29.4}{26.4} = 8.6$$

4. Similarly, the 5- to 9- mile interval also contains the 51.4 percent derived in step 2. As stated before, 417,300 people (29.4 percent) fall below this interval, and 373,600 people or 26.4 percent, fall within this interval. The upper limit of the 90-percent confidence interval is found to be about 9.2.

$$5 + (10 - 5)\frac{51.4 - 29.4}{26.4} = 9.2$$

Thus, the 90-percent confidence interval ranges from 8.6 to 9.2 miles.

Finally, note that the medians shown in this report are calculated from unrounded data and then rounded. Thus, they may differ from the medians calculated from the grouped data in the tables of this report.

Table 1. Description of the American Housing Survey—1985 AHS-MS Sample

Metropolitan area	Number of sample units	Units eligible		Units visited, not interviewed[2]	Number of AHS National units
		Interviewed	Not interviewed[1]		
Total	54,932	50,705	2,772	1,455	6,585
Boston, MA-NH	4,024	3,766	183	75	728
Dallas, TX	3,289	2,982	161	146	422
Detroit, MI	6,527	5,852	369	306	758
Ft. Worth-Arlington, TX	3,225	2,965	148	112	221
Los Angeles-Long Beach, CA	6,593	6,039	400	154	1,234
Minneapolis-St. Paul, MN-WI	3,760	3,562	125	73	402
Philadelphia, PA-NJ	6,778	6,267	343	168	853
Phoenix, AZ	3,639	3,464	86	89	347
San Francisco-Oakland, CA	6,648	6,194	381	73	627
Tampa-St. Petersburg, FL	3,753	3,478	173	102	397
Washington, DC-MD-VA	6,696	6,136	403	157	596

[1]Sample units were visited but occupants were not at home after repeated visits or were unavailable for some other reasons; or, for vacant housing units, no informed respondent could be found.

[2]Sample units were visited but did not provide information relevant to the housing inventory. This category includes sample units that were found not to be in the sampling frame.

Table 2a. Standard Errors for Estimated Number of Housing Units in the 1985 Boston, MA-NH CMSA

Size of estimate	Standard error[1]		
	Combined owner and renter housing units[2]	Owner housing units[3]	Renter housing units[4]
0	420	410	410
500	460	450	450
700	540	540	530
1,000	650	640	640
2,500	1,020	1,010	1,010
5,000	1,440	1,430	1,420
10,000	2,030	2,020	2,010
25,000	3,200	3,190	3,160
50,000	4,490	4,470	4,430
75,000	5,460	5,430	5,380
100,000	6,250	6,220	6,160
150,000	7,530	7,490	7,420
200,000	8,540	8,490	8,420
250,000	9,370	9,320	9,240
300,000	10,070	10,020	9,940
400,000	11,170	11,120	11,020
500,000	11,960	11,900	11,800
600,000	12,490	12,420	12,320
700,000	12,790	12,730	12,620
800,000	12,890	12,820	-
900,000	12,780	12,720	-
1,000,000	12,470	-	-
1,100,000	11,920	-	-
1,200,000	11,120	-	-
1,300,000	10,000	-	-
1,400,000	8,440	-	-
1,500,000	6,090	-	-
1,594,620	-	-	-

[1]To compute standard errors for new construction estimates, the standard errors in the table should be multiplied by a factor of 1.1 for owner housing units, 1.1 for renter housing units, and 1.1 for the combined owner and renter housing units.

[2]Some examples that pertain to both owner and renter housing units are: total housing units; all occupied housing units; all year-round housing units; mobile homes or trailers; and total vacant housing units.

[3]The owner housing units pertain to owner-occupied housing units and vacant housing units, excluding vacant-for-rent housing units.

[4]The renter housing units pertain to renter-occupied housing units and vacant-for-rent housing units.

Table 2b. Standard Errors for Estimated Percentages of Housing Units in the 1985 Housing Inventory of the Boston, MA-NH CMSA

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
500	44.8	44.8	44.8	44.8	44.8	45.0
700	36.7	36.7	36.7	36.7	36.7	38.1
1,000	28.8	28.8	28.8	28.8	28.8	31.8
2,500	14.0	14.0	14.0	14.0	17.4	20.1
5,000	7.5	7.5	7.5	8.5	12.3	14.2
10,000	3.9	3.9	4.4	6.0	8.7	10.1
25,000	1.6	1.6	2.8	3.8	5.5	6.4
50,000	0.8	0.9	2.0	2.7	3.9	4.5
75,000	0.5	0.7	1.6	2.2	3.2	3.7
100,000	0.4	0.6	1.4	1.9	2.8	3.2
150,000	0.3	0.5	1.1	1.6	2.3	2.6
200,000	0.2	0.4	1.0	1.4	1.9	2.3
250,000	0.2	0.4	0.9	1.2	1.7	2.0
300,000	0.13	0.4	0.8	1.1	1.6	1.8
400,000	0.10	0.3	0.7	1.0	1.4	1.6
500,000	0.08	0.3	0.6	0.9	1.2	1.4
600,000	0.07	0.3	0.6	0.8	1.1	1.3
700,000	0.06	0.2	0.5	0.7	1.0	1.2
800,000	0.05	0.2	0.5	0.7	1.0	1.1
900,000	0.05	0.2	0.5	0.6	0.9	1.1
1,000,000	0.04	0.2	0.4	0.6	0.9	1.0
1,100,000	0.04	0.2	0.4	0.6	0.8	1.0
1,200,000	0.03	0.2	0.4	0.6	0.8	0.9
1,300,000	0.03	0.2	0.4	0.5	0.8	0.9
1,400,000	0.03	0.2	0.4	0.5	0.7	0.9
1,500,000	0.03	0.2	0.4	0.5	0.7	0.8
1,594,620	0.03	0.2	0.3	0.5	0.7	0.8

[1] Standard errors are presented to the nearest one-tenth of one percentage point except when the standard error is less than or equal to fifteen-hundredths of one percentage point; in those cases, the standard error is shown to the nearest one-hundredth of one percentage point. For estimates pertaining to new construction, the standard errors shown in the table should be multiplied by a factor of 1.1.

The following factors should be applied to estimates that do not pertain strictly to new construction. For estimates pertaining to both owners and renters, apply a factor of 1.0. For estimates pertaining to owner housing units, apply a factor of 1.0. For estimates pertaining to renter housing units, apply a factor of 1.0.

Table 3a. Standard Errors for Estimated Number of Housing Units in the 1985 Dallas, TX PMSA

Size of estimate	Standard error[1]		
	Combined owner and renter housing units[2]	Owner housing units[3]	Renter housing units[4]
0	370	450	370
200	370	450	370
500	430	470	430
700	510	560	510
1,000	610	670	610
2,500	960	1,060	960
5,000	1,360	1,490	1,360
10,000	1,920	2,110	1,920
25,000	3,020	3,310	3,010
50,000	4,210	4,620	4,200
75,000	5,090	5,580	5,070
100,000	5,790	6,350	5,770
150,000	6,890	7,560	6,870
200,000	7,720	8,470	7,690
250,000	8,350	9,160	8,320
300,000	8,830	9,690	8,800
400,000	9,430	10,350	9,400
500,000	9,610	10,540	9,570
600,000	9,390	10,300	-
700,000	8,740	-	-
800,000	7,560	-	-
900,000	5,500	-	-
989,140	-	-	-

[1]To compute standard errors for new construction estimates, the standard errors in the table should be multiplied by a factor of 1.0 for owner housing units, 1.1 for renter housing units, and 1.1 for the combined owner and renter housing units.

[2]Some examples that pertain to both owner and renter housing units are: total housing units; all occupied housing units; all year-round housing units; mobile homes or trailers; and total vacant housing units.

[3]The owner housing units pertain to owner-occupied housing units and vacant housing units, excluding vacant-for-rent housing units.

[4]The renter housing units pertain to renter-occupied housing units and vacant-for-rent housing units.

Table 3b. Standard Errors for Estimated Percentages of Housing Units in the 1985 Housing Inventory of the Dallas, TX PMSA

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
300	55.3	55.3	55.3	55.3	55.3	55.6
500	42.6	42.6	42.6	42.6	42.6	43.1
700	34.6	34.6	34.6	34.6	34.6	36.4
1,000	27.0	27.0	27.0	27.0	27.0	30.4
2,500	12.9	12.9	12.9	12.9	16.7	19.3
5,000	6.9	6.9	6.9	8.2	11.8	13.6
10,000	3.6	3.6	4.2	5.8	8.3	9.6
25,000	1.5	1.5	2.7	3.7	5.3	6.1
50,000	0.7	0.9	1.9	2.6	3.7	4.3
75,000	0.5	0.7	1.5	2.1	3.0	3.5
100,000	0.4	0.6	1.3	1.8	2.6	3.0
150,000	0.2	0.5	1.1	1.5	2.2	2.5
200,000	0.2	0.4	0.9	1.3	1.9	2.2
250,000	0.15	0.4	0.8	1.2	1.7	1.9
300,000	0.12	0.3	0.8	1.1	1.5	1.8
400,000	0.09	0.3	0.7	0.9	1.3	1.5
500,000	0.07	0.3	0.6	0.8	1.2	1.4
600,000	0.06	0.2	0.5	0.7	1.1	1.2
700,000	0.05	0.2	0.5	0.7	1.0	1.2
800,000	0.05	0.2	0.5	0.6	0.9	1.1
900,000	0.04	0.2	0.4	0.6	0.9	1.0
989,140	0.04	0.2	0.4	0.6	0.8	1.0

[1]Standard errors are presented to the nearest one-tenth of one percentage point except when the standard error is less than or equal to fifteen-hundredths of one percentage point; in those cases, the standard error is shown to the nearest one-hundredth of one percentage point. For estimates pertaining to new construction, the standard errors shown in the table should be multiplied by a factor of 1.1.

The following factors should be applied to estimates that do not pertain strictly to new construction. For estimates pertaining to both owners and renters, apply a factor of 1.0. For estimates pertaining to owner housing units, apply a apply a factor of 1.1. For estimates pertaining to renter housing units, apply a factor of 1.0.

Table 4a. Standard Errors for Estimated Number of Housing Units in the 1985 Detroit, MI PMSA

Size of estimate	Standard error[1]		
	Combined owner and renter housing units[2]	Owner housing units[3]	Renter housing units[4]
0	300	340	260
200	300	340	260
500	390	410	360
700	460	480	430
1,000	550	580	510
2,500	870	920	810
5,000	1,230	1,290	1,140
10,000	1,740	1,830	1,610
25,000	2,740	2,880	2,540
50,000	3,840	4,030	3,560
75,000	4,670	4,900	4,330
100,000	5,350	5,620	4,960
150,000	6,440	6,770	5,980
200,000	7,320	7,680	6,780
250,000	8,040	8,440	7,450
300,000	8,640	9,070	8,020
400,000	9,600	10,080	8,900
500,000	10,300	10,810	9,550
600,000	10,780	11,310	9,990
700,000	11,070	11,620	-
800,000	11,190	11,750	-
900,000	11,140	11,700	-
1,000,000	10,930	11,470	-
1,100,000	10,540	11,060	-
1,200,000	9,940	10,440	-
1,300,000	9,110	-	-
1,400,000	7,970	-	-
1,500,000	6,340	-	-
1,600,000	3,640	-	-
1,644,696	-	-	-

[1]To compute standard errors for new construction estimates, the standard errors in the table should be multiplied by a factor of 1.0 for owner housing units, 1.2 for renter housing units, and 1.1 for the combined owner and renter housing units.

[2]Some examples that pertain to both owner and renter housing units are: total housing units; all occupied housing units; all year-round housing units; mobile homes or trailers; and total vacant housing units.

[3]The owner housing units pertain to owner-occupied housing units and vacant housing units, excluding vacant-for-rent housing units.

[4]The renter housing units pertain to renter-occupied housing units and vacant-for-rent housing units.

Table 4b. Standard Errors for Estimated Percentages of Housing Units in the 1985 Housing Inventory of the Detroit, MI PMSA

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
200	56.7	56.7	56.7	56.7	56.7	57.2
500	34.4	34.4	34.4	34.4	34.4	36.2
700	27.2	27.2	27.2	27.2	27.2	30.6
1,000	20.8	20.8	20.8	20.8	22.2	25.6
2,500	9.5	9.5	9.5	9.7	14.0	16.2
5,000	5.0	5.0	5.0	6.9	9.9	11.4
10,000	2.6	2.6	3.5	4.9	7.0	8.1
25,000	1.0	1.0	2.2	3.1	4.4	5.1
50,000	0.5	0.7	1.6	2.2	3.1	3.6
75,000	0.3	0.6	1.3	1.8	2.6	3.0
100,000	0.3	0.5	1.1	1.5	2.2	2.6
150,000	0.2	0.4	0.9	1.3	1.8	2.1
200,000	0.13	0.4	0.8	1.1	1.6	1.8
250,000	0.10	0.3	0.7	1.0	1.4	1.6
300,000	0.09	0.3	0.6	0.9	1.3	1.5
400,000	0.07	0.3	0.6	0.8	1.1	1.3
500,000	0.05	0.2	0.5	0.7	1.0	1.1
600,000	0.04	0.2	0.5	0.6	0.9	1.0
700,000	0.04	0.2	0.4	0.6	0.8	1.0
800,000	0.03	0.2	0.4	0.5	0.8	0.9
900,000	0.03	0.2	0.4	0.5	0.7	0.9
1,000,000	0.03	0.2	0.4	0.5	0.7	0.8
1,100,000	0.02	0.15	0.3	0.5	0.7	0.8
1,200,000	0.02	0.15	0.3	0.4	0.6	0.7
1,300,000	0.02	0.14	0.3	0.4	0.6	0.7
1,400,000	0.02	0.14	0.3	0.4	0.6	0.7
1,500,000	0.02	0.13	0.3	0.4	0.6	0.7
1,600,000	0.02	0.13	0.3	0.4	0.6	0.6
1,700,000	0.02	0.12	0.3	0.4	0.5	0.6

[1]Standard errors are presented to the nearest one-tenth of one percentage point except when the standard error is less than or equal to fifteen-hundredths of one percentage point; in those cases, the standard error is shown to the nearest one-hundredth of one percentage point. For estimates pertaining to new construction, the standard errors shown in the table should be multiplied by a factor of 1.2.

The following factors should be applied to estimates that do not pertain strictly to new construction. For estimates pertaining to both owners and renters, apply a factor of 1.1. For estimates pertaining to owner housing units, apply a factor of 1.1. For estimates pertaining to renter housing units, apply a factor of 1.0.

Table 5a. Standard Errors for Estimated Number of Housing Units in the 1985 Fort Worth-Arlington, TX PMSA

Size of estimate	Standard error[1]		
	Combined owner and renter housing units[2]	Owner housing units[3]	Renter housing units[4]
0	190	210	180
100	190	210	180
200	190	210	190
500	310	320	300
700	360	380	350
1,000	430	460	420
2,500	680	720	670
5,000	970	1,010	940
10,000	1,360	1,430	1,320
25,000	2,120	2,220	2,060
50,000	2,910	3,060	2,830
75,000	3,470	3,640	3,370
100,000	3,890	4,080	3,780
150,000	4,460	4,680	4,330
200,000	4,770	5,010	4,640
250,000	4,880	5,120	4,740
300,000	4,790	5,030	-
400,000	3,960	-	-
500,000	990	-	-
505,300	-	-	-

[1]To compute standard errors for new construction estimates, the standard errors in the table should be multiplied by a factor of 1.0 for owner housing units, 1.1 for renter housing units, and 1.1 for the combined owner and renter housing units.

[2]Some examples that pertain to both owner and renter housing units are: total housing units; all occupied housing units; all year-round housing units; mobile homes or trailers; and total vacant housing units.

[3]The owner housing units pertain to owner-occupied housing units and vacant housing units, excluding vacant-for-rent housing units.

[4]The renter housing units pertain to renter-occupied housing units and vacant-for-rent housing units.

Table 5b. Standard Errors for Estimated Percentages of Housing Units in the 1985 Housing Inventory of the Fort Worth-Arlington, TX PMSA

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
200	47.1	47.1	47.1	47.1	47.1	47.2
500	26.3	26.3	26.3	26.3	26.3	29.8
700	20.3	20.3	20.3	20.3	21.8	25.2
1,000	15.1	15.1	15.1	15.1	18.3	21.1
2,500	6.6	6.6	6.6	8.0	11.6	13.3
5,000	3.4	3.4	4.1	5.7	8.2	9.4
10,000	1.7	1.7	2.9	4.0	5.8	6.7
25,000	0.7	0.8	1.8	2.5	3.7	4.2
50,000	0.4	0.6	1.3	1.8	2.6	3.0
75,000	0.2	0.5	1.1	1.5	2.1	2.4
100,000	0.2	0.4	0.9	1.3	1.8	2.1
150,000	0.12	0.3	0.8	1.0	1.5	1.7
200,000	0.09	0.3	0.7	0.9	1.3	1.5
250,000	0.07	0.3	0.6	0.8	1.2	1.3
300,000	0.06	0.2	0.5	0.7	1.1	1.2
400,000	0.04	0.2	0.5	0.6	0.9	1.1
500,000	0.04	0.2	0.4	0.6	0.8	0.9
600,000	0.03	0.2	0.4	0.5	0.7	0.9

[1]Standard errors are presented to the nearest one-tenth of one percentage point except when the standard error is less than or equal to fifteen-hundredths of one percentage point; in those cases, the standard error is shown to the nearest one-hundredth of one percentage point. For estimates pertaining to new construction, the standard errors shown in the table should be multiplied by a factor of 1.1

The following factors should be applied to estimates that do not pertain strictly to new construction. For estimates pertaining to both owners and renters, apply a factor of 1.0. For estimates pertaining to owner housing units, apply a factor of 1.1. For estimates pertaining to renter housing units, apply a factor of 1.0.

Table 6a. Standard Errors for Estimated Number of Housing Units in the 1985 Los Angeles-Long Beach, CA PMSA

Size of estimate	Standard error[1]		
	Combined owner and renter housing units[2]	Owner housing units[3]	Renter housing units[4]
0	500	460	490
500	500	480	490
700	590	570	580
1,000	710	680	700
2,500	1,120	1,070	1,100
5,000	1,580	1,510	1,560
10,000	2,230	2,140	2,200
25,000	3,520	3,370	3,480
50,000	4,950	4,750	4,900
75,000	6,040	5,790	5,970
100,000	6,950	6,660	6,870
150,000	8,440	8,090	8,340
200,000	9,660	9,260	9,540
250,000	10,700	10,260	10,570
300,000	11,620	11,140	11,480
400,000	13,170	12,620	13,010
500,000	14,440	13,840	14,270
600,000	15,500	14,860	15,320
700,000	16,390	15,720	16,200
800,000	17,150	16,440	16,940
900,000	17,770	17,040	17,560
1,000,000	18,290	17,540	18,070
1,100,000	18,700	17,930	18,480
1,200,000	19,020	18,240	18,800
1,300,000	19,250	18,460	19,020
1,400,000	19,390	18,590	19,160
1,500,000	19,450	18,650	19,220
1,750,000	19,220	-	18,990
2,000,000	18,430	-	-
2,250,000	17,010	-	-
2,500,000	14,790	-	-
3,030,900	-	-	-

[1]To compute standard errors for new construction estimates, the standard errors in the table should be multiplied by a factor of 1.4 for owner housing units, 1.4 for renter housing units, and 1.4 for the combined owner and renter housing units.

[2]Some examples that pertain to both owner and renter housing units are: total housing units; all occupied housing units; all year-round housing units; mobile homes or trailers; and total vacant housing units.

[3]The owner housing units pertain to owner-occupied housing units and vacant housing units, excluding vacant-for-rent housing units.

[4]The renter housing units pertain to renter-occupied housing units and vacant-for-rent housing units.

Table 6b. Standard Errors for Estimated Percentages of Housing Units in the 1985 Housing Inventory of the Los Angeles-Long Beach, CA PMSA

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
500	49.4	49.4	49.4	49.4	49.4	49.4
700	41.1	41.1	41.1	41.1	41.1	41.7
1,000	32.8	32.8	32.8	32.8	32.8	34.9
2,500	16.3	16.3	16.3	16.3	19.1	22.1
5,000	8.9	8.9	8.9	9.4	13.5	15.6
10,000	4.6	4.6	4.8	6.6	9.6	11.0
25,000	1.9	1.9	3.0	4.2	6.0	7.0
50,000	1.0	1.0	2.2	3.0	4.3	4.9
75,000	0.6	0.8	1.8	2.4	3.5	4.0
100,000	0.5	0.7	1.5	2.1	3.0	3.5
150,000	0.3	0.6	1.2	1.7	2.5	2.9
200,000	0.2	0.5	1.1	1.5	2.1	2.5
250,000	0.2	0.4	1.0	1.3	1.9	2.2
300,000	0.2	0.4	0.9	1.2	1.7	2.0
400,000	0.12	0.3	0.8	1.0	1.5	1.7
500,000	0.10	0.3	0.7	0.9	1.4	1.6
600,000	0.08	0.3	0.6	0.9	1.2	1.4
700,000	0.07	0.3	0.6	0.8	1.1	1.3
800,000	0.06	0.2	0.5	0.7	1.1	1.2
900,000	0.05	0.2	0.5	0.7	1.0	1.2
1,000,000	0.05	0.2	0.5	0.7	1.0	1.1
1,100,000	0.04	0.2	0.5	0.6	0.9	1.1
1,200,000	0.04	0.2	0.4	0.6	0.9	1.0
1,300,000	0.04	0.2	0.4	0.6	0.8	1.0
1,400,000	0.03	0.2	0.4	0.6	0.8	0.9
1,500,000	0.03	0.2	0.4	0.5	0.8	0.9
1,750,000	0.03	0.2	0.4	0.5	0.7	0.8
2,000,000	0.02	0.2	0.3	0.5	0.7	0.8
2,250,000	0.02	0.15	0.3	0.4	0.6	0.7
2,500,000	0.02	0.14	0.3	0.4	0.6	0.7
3,030,900	0.02	0.13	0.3	0.4	0.5	0.6

[1]Standard errors are presented to the nearest one-tenth of one percentage point except when the standard error is less than or equal to fifteen-hundredths of one percentage point; in those cases, the standard error is shown to the nearest one-hundredth of one percentage point. For estimates pertaining to new construction, the standard errors shown in the table should be multiplied by a factor of 1.4.

The following factors should be applied to estimates that do not pertain strictly to new construction. For estimates pertaining to both owners and renters, apply a factor of 1.0. For estimates pertaining to owner housing units, apply a factor of 1.0. For estimates pertaining to renter housing units, apply a factor of 1.0.

Table 7a. Standard Errors for Estimated Number of Housing Units in the 1985 Minneapolis-St Paul, MN-WI MSA

Size of estimate	Standard error[1]		
	Combined owner and renter housing units[2]	Owner housing units[3]	Renter housing units[4]
0	270	320	250
100	270	320	250
200	270	320	250
500	370	400	350
700	430	470	410
1,000	520	560	500
2,500	820	890	780
5,000	1,160	1,260	1,110
10,000	1,630	1,770	1,560
25,000	2,560	2,780	2,440
50,000	3,560	3,880	3,410
75,000	4,300	4,680	4,110
100,000	4,890	5,320	4,680
150,000	5,800	6,310	5,550
200,000	6,470	7,040	6,190
250,000	6,980	7,590	6,670
300,000	7,350	7,990	7,030
400,000	7,750	8,440	7,420
500,000	7,770	8,450	-
600,000	7,400	8,040	-
700,000	6,560	7,140	-
800,000	5,060	-	-
900,000	1,460	-	-
908,000	-	-	-

[1]To compute standard errors for new construction estimates, the standard errors in the table should be multiplied by a factor of 1.0 for owner housing units, 1.1 for renter housing units, and 1.1 for the combined owner and renter housing units.

[2]Some examples that pertain to both owner and renter housing units are: total housing units; all occupied housing units; all year-round housing units; mobile homes or trailers; and total vacant housing units.

[3]The owner housing units pertain to owner-occupied housing units and vacant housing units, excluding vacant-for-rent housing units.

[4]The renter housing units pertain to renter-occupied housing units and vacant-for-rent housing units.

Table 7b. Standard Errors for Estimated Percentages of Housing Units in the 1985 Housing Inventory of the Minneapolis-St. Paul, MN-WI MSA

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
200	55.1	55.1	55.1	55.1	55.1	55.4
500	33.0	33.0	33.0	33.0	33.0	35.1
700	26.0	26.0	26.0	26.0	26.0	29.6
1,000	19.7	19.7	19.7	19.7	21.5	24.8
2,500	9.0	9.0	9.0	9.4	13.6	15.7
5,000	4.7	4.7	4.8	6.7	9.6	11.1
10,000	2.4	2.4	3.4	4.7	6.8	7.8
25,000	1.0	1.0	2.2	3.0	4.3	5.0
50,000	0.5	0.7	1.5	2.1	3.0	3.5
75,000	0.3	0.6	1.2	1.7	2.5	2.9
100,000	0.2	0.5	1.1	1.5	2.1	2.5
150,000	0.2	0.4	0.9	1.2	1.8	2.0
200,000	0.12	0.3	0.8	1.1	1.5	1.8
250,000	0.10	0.3	0.7	0.9	1.4	1.6
300,000	0.08	0.3	0.6	0.9	1.2	1.4
400,000	0.06	0.2	0.5	0.7	1.1	1.2
500,000	0.05	0.2	0.5	0.7	1.0	1.1
600,000	0.04	0.2	0.4	0.6	0.9	1.0
700,000	0.04	0.2	0.4	0.6	0.8	0.9
800,000	0.03	0.2	0.4	0.5	0.8	0.9
900,000	0.03	0.2	0.4	0.5	0.7	0.8
1,000,000	0.02	0.2	0.3	0.5	0.7	0.8

[1]Standard errors are presented to the nearest one-tenth of one percentage point except when the standard error is less than or equal to fifteen-hundredths of one percentage point; in those cases, the standard error is shown to the nearest hundredth of one percentage point. For estimates pertaining to new construction, the standard errors shown in the table should be multiplied by a factor of 1.1

The following factors should be applied to estimates that do not pertain strictly to new construction. For estimates pertaining to both owners and renters, apply a factor of 1.0. For estimates pertaining to owner housing units, apply a factor of 1.1. For estimates pertaining to renter housing units, apply a factor of 1.0.

Table 8a. Standard Errors for Estimated Number of Housing Units in the 1985 Philadelphia, PA PMSA

Size of estimate	Standard error[1]		
	Combined owner and renter housing units[2]	Owner housing units[3]	Renter housing units[4]
0	340	380	270
200	340	380	270
500	410	440	370
700	490	520	440
1,000	590	620	520
2,500	920	970	830
5,000	1,310	1,380	1,170
10,000	1,850	1,940	1,650
25,000	2,910	3,060	2,600
50,000	4,080	4,300	3,650
75,000	4,970	5,230	4,440
100,000	5,700	6,000	5,090
150,000	6,880	7,240	6,150
200,000	7,820	8,240	6,990
250,000	8,620	9,070	7,700
300,000	9,290	9,790	8,310
400,000	10,380	10,940	9,280
500,000	11,210	11,810	10,020
600,000	11,820	12,450	10,570
700,000	12,260	12,910	10,960
800,000	12,540	13,200	-
900,000	12,660	13,340	-
1,000,000	12,650	13,320	-
1,100,000	12,480	13,150	-
1,200,000	12,170	12,810	-
1,300,000	11,690	12,310	-
1,400,000	11,020	-	-
1,500,000	10,140	-	-
1,750,000	6,320	-	-
1,875,000	-	-	-

[1]To compute standard errors for new construction estimates, the standard errors in the table should be multiplied by a factor of 1.4 for owner housing units, 1.7 for renter housing units, and 1.5 for the combined owner and renter housing units.

[2]Some examples that pertain to both owner and renter housing units are: total housing units; all occupied housing units; all year-round housing units; mobile homes or trailers; and total vacant housing units.

[3]The owner housing units pertain to owner-occupied housing units and vacant housing units, excluding vacant-for-rent housing units.

[4]The renter housing units pertain to renter-occupied housing units and vacant-for-rent housing units.

Table 8b. Standard Errors for Estimated Percentages of Housing Units in the 1985 Housing Inventory of the Philadelphia, PA PMSA

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
200	57.8	57.8	57.8	57.8	57.8	58.5
500	35.4	35.4	35.4	35.4	35.4	37.0
700	28.1	28.1	28.1	28.1	28.1	31.3
1,000	21.5	21.5	21.5	21.5	22.7	26.2
2,500	9.9	9.9	9.9	9.9	14.3	16.5
5,000	5.2	5.2	5.2	7.0	10.1	11.7
10,000	2.7	2.7	3.6	5.0	7.2	8.3
25,000	1.1	1.1	2.3	3.1	4.5	5.2
50,000	0.5	0.7	1.6	2.2	3.2	3.7
75,000	0.4	0.6	1.3	1.8	2.6	3.0
100,000	0.3	0.5	1.1	1.6	2.3	2.6
150,000	0.2	0.4	0.9	1.3	1.8	2.1
200,000	0.14	0.4	0.8	1.1	1.6	1.8
250,000	0.11	0.3	0.7	1.0	1.4	1.7
300,000	0.09	0.3	0.7	0.9	1.3	1.5
400,000	0.07	0.3	0.6	0.8	1.1	1.3
500,000	0.05	0.2	0.5	0.7	1.0	1.2
600,000	0.05	0.2	0.5	0.6	0.9	1.1
700,000	0.04	0.2	0.4	0.6	0.9	1.0
800,000	0.03	0.2	0.4	0.6	0.8	0.9
900,000	0.03	0.2	0.4	0.5	0.8	0.9
1,000,000	0.03	0.2	0.4	0.5	0.7	0.8
1,100,000	0.02	0.2	0.3	0.5	0.7	0.8
1,200,000	0.02	0.15	0.3	0.5	0.7	0.8
1,300,000	0.02	0.14	0.3	0.4	0.6	0.7
1,400,000	0.02	0.14	0.3	0.4	0.6	0.7
1,500,000	0.02	0.13	0.3	0.4	0.6	0.7
1,750,000	0.02	0.12	0.3	0.4	0.5	0.6
1,875,000	0.01	0.12	0.3	0.4	0.5	0.6

[1]Standard errors are presented to the nearest one-tenth of one percentage point except when the standard error is less than or equal to fifteen-hundredths of one percentage point; in those cases, the standard error is shown to the nearest one-hundredth of one percentage point. For estimates pertaining to new construction, the standard errors shown in the table should be multiplied by a factor of 1.7.

The following factors should be applied to estimates that do not pertain strictly to new construction. For estimates pertaining to both owners and renters, apply a factor of 1.1. For estimates pertaining to owner housing units, apply a factor of 1.2. For estimates pertaining to renter housing units, apply a factor of 1.0.

Table 9a. Standard Errors for Estimated Number of Housing Units in the 1985 Phoenix, AZ MSA

Size of estimate	Standard error[1]			
	Combined owner and renter housing units[2]	Owner housing units[3]	Renter housing units[4]	Mobile homes[5]
0	270	320	230	440
200	270	320	230	440
500	370	400	340	470
700	440	470	400	550
1,000	520	560	480	660
2,500	820	890	750	1,030
5,000	1,160	1,260	1,060	1,440
10,000	1,640	1,770	1,500	1,970
25,000	2,570	2,780	2,350	2,800
50,000	3,570	3,870	3,260	3,050
75,000	4,300	4,650	3,930	2,110
100,000	4,880	5,280	4,460	-
150,000	5,760	6,230	5,260	-
200,000	6,390	6,920	5,840	-
250,000	6,840	7,400	6,250	-
300,000	7,140	7,730	6,530	-
400,000	7,380	7,990	6,740	-
500,000	7,140	7,730	-	-
600,000	6,390	-	-	-
700,000	4,880	-	-	-
800,270	-	-	-	-

[1]To compute standard errors for new construction estimates, the standard errors in the table should be multiplied by a factor of 1.0 for owner housing units, 1.1 for renter housing units, and 1.0 for the combined owner and renter housing units.

[2]Some examples that pertain to both owner and renter housing units are: total housing units; all occupied housing units; all year-round housing units; mobile homes or trailers; and total vacant housing units.

[3]The owner housing units pertain to owner-occupied housing units and vacant housing units, excluding vacant-for-rent housing units.

[4]The renter housing units pertain to renter-occupied housing units and vacant-for-rent housing units.

[5]For estimates pertaining to owner mobile homes, the standard errors in the table should be multiplied by a factor of 1.1.

Table 9b. Standard Errors for Estimated Percentages of Housing Units in the 1985 Housing Inventory of the Phoenix, AZ MSA

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
300	43.1	43.1	43.1	43.1	43.1	43.5
500	31.2	31.2	31.2	31.2	31.2	33.7
700	24.5	24.5	24.5	24.5	24.7	28.5
1,000	18.5	18.5	18.5	18.5	20.6	23.8
2,500	8.3	8.3	8.3	9.0	13.1	15.1
5,000	4.3	4.3	4.6	6.4	9.2	10.7
10,000	2.2	2.2	3.3	4.5	6.5	7.5
25,000	0.9	0.9	2.1	2.9	4.1	4.8
50,000	0.5	0.7	1.5	2.0	2.9	3.4
75,000	0.3	0.5	1.2	1.7	2.4	2.8
100,000	0.2	0.5	1.0	1.4	2.1	2.4
150,000	0.15	0.4	0.8	1.2	1.7	1.9
200,000	0.11	0.3	0.7	1.0	1.5	1.7
250,000	0.09	0.3	0.7	0.9	1.3	1.5
300,000	0.08	0.3	0.6	0.8	1.2	1.4
400,000	0.06	0.2	0.5	0.7	1.0	1.2
500,000	0.05	0.2	0.5	0.6	0.9	1.1
600,000	0.04	0.2	0.4	0.6	0.8	1.0
700,000	0.03	0.2	0.4	0.5	0.8	0.9
800,270	0.03	0.2	0.4	0.5	0.7	0.8

[1]Standard errors are presented to the nearest one-tenth of one percentage point except when the standard error is less than or equal to fifteen-hundredths of one percentage point; in those cases, the standard error is shown to the nearest one-hundredth of one percentage point. For estimates pertaining to new construction, the standard errors shown in the table should be multiplied by a factor of 1.1. The following factors should be applied to estimates that do not pertain strictly to new construction. For estimates pertaining to both owners and renters, apply a factor of 1.1. For estimates pertaining to owner housing units, apply a factor of 1.2. For estimates pertaining to renter housing units, apply a factor of 1.0.

For standard error of estimated percentages where the numerator of the percentage pertains strictly to mobile homes and the denominator of the percentage does not pertain strictly to mobile homes, refer to table 9c. If the numerator and the denominator of the percentage refer strictly to mobile homes, as well as for all other percentages, use the standard errors presented in table 9b. When using table 9b for estimates involving renter mobile homes, apply a factor of 1.4. When using table 9b for estimates involving owner mobile homes, apply a factor of 1.6. When using table 9b for estimates involving both owner and renter mobile homes, apply a factor of 1.4.

Table 9c. Standard Errors for Estimated Percentages of Housing Units in the 1985 Housing Inventory of the Phoenix, AZ MSA

(The numerator of the percentage pertains strictly to mobile homes, and the denominator of the percentage does not pertain strictly to mobile homes)

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
300	51.5	51.5	51.5	51.5	64.1	82.9
500	38.9	38.9	38.9	38.9	49.6	64.2
700	31.3	31.3	31.3	31.3	41.9	54.2
1,000	24.2	24.2	24.2	24.2	35.1	45.3
2,500	11.3	11.3	11.3	14.7	22.1	28.5
5,000	6.0	6.0	7.5	10.4	15.6	20.0
10,000	3.1	3.1	5.3	7.3	10.9	13.8
25,000	1.3	1.5	3.3	4.6	6.7	8.2
50,000	0.6	1.1	2.3	3.2	4.6	5.1
75,000	0.4	0.9	1.9	2.6	3.5	3.5
100,000	0.3	0.8	1.6	2.2	2.9	2.9
150,000	0.2	0.6	1.3	1.7	2.1	-
200,000	0.2	0.5	1.1	1.4	1.5	-
250,000	0.13	0.5	1.0	1.2	1.2	-
300,000	0.11	0.4	0.9	1.1	1.1	-
400,000	0.08	0.4	0.7	0.9	-	-
500,000	0.06	0.3	0.6	0.7	-	-
600,000	0.05	0.3	0.6	0.6	-	-
700,000	0.05	0.3	0.5	0.5	-	-
800,270	0.04	0.3	0.4	0.4	-	-

[1]Standard errors are presented to the nearest one-tenth of one percentage point except when the standard error is less than or equal to fifteen-hundredths of one percentage point; in those cases, the standard error is shown to the nearest one-hundredth of one percentage point.

For standard error of estimated percentages where the numerator of the percentage pertains strictly to mobile homes and the denominator of the percentage does not pertain strictly to mobile homes, refer to table 9c. If the numerator and the denominator of the percentage refer strictly to mobile homes, as well as for all other percentages,use the standard errors presented in table 9b.

Table 10a. Standard Errors for Estimated Number of Housing Units in the 1985 San Francisco-Oakland, CA area PMSA's

Size of estimate	Standard error[1]		
	Combined owner and renter housing units[2]	Owner housing units[3]	Renter housing units[4]
0	250	250	240
200	250	250	240
500	350	350	350
700	410	420	410
1,000	500	500	490
2,500	780	790	780
5,000	1,110	1,110	1,100
10,000	1,560	1,570	1,550
25,000	2,460	2,470	2,430
50,000	3,450	3,460	3,410
75,000	4,180	4,200	4,140
100,000	4,790	4,810	4,740
150,000	5,750	5,780	5,690
200,000	6,510	6,540	6,440
250,000	7,130	7,160	7,060
300,000	7,640	7,680	7,560
400,000	8,430	8,470	8,340
500,000	8,960	9,000	8,860
600,000	9,270	9,320	9,180
700,000	9,400	9,450	9,300
800,000	9,340	9,390	-
900,000	9,100	-	-
1,000,000	8,650	-	-
1,100,000	7,970	-	-
1,200,000	6,980	-	-
1,300,000	5,520	-	-
1,400,000	2,980	-	-
1,436,930	-	-	-

[1]To compute standard errors for new construction estimates, the standard errors in the table should be multiplied by a factor of 1.4.

[2]Some examples that pertain to both owner and renter housing units are: total housing units; all occupied housing units; all year-round housing units; mobile homes or trailers; and total vacant housing units.

[3]The owner housing units pertain to owner-occupied housing units and vacant housing units, excluding vacant-for-rent housing units.

[4]The renter housing units pertain to renter-occupied housing units and vacant-for-rent housing units.

Table 10b. Standard Errors for Estimated Percentages of Housing Units in the 1985 Housing Inventory of the San Francisco-Oakland, CA area PMSA's

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
200	54.7	54.7	54.7	54.7	54.7	54.9
500	32.5	32.5	32.5	32.5	32.5	34.7
700	25.6	25.6	25.6	25.6	25.6	29.3
1,000	19.4	19.4	19.4	19.4	21.3	24.5
2,500	8.8	8.8	8.8	9.3	13.4	15.5
5,000	4.6	4.6	4.8	6.6	9.5	11.0
10,000	2.4	2.4	3.4	4.7	6.7	7.8
25,000	1.0	1.0	2.1	2.9	4.3	4.9
50,000	0.5	0.7	1.5	2.1	3.0	3.5
75,000	0.3	0.6	1.2	1.7	2.5	2.8
100,000	0.2	0.5	1.1	1.5	2.1	2.5
150,000	0.2	0.4	0.9	1.2	1.7	2.0
200,000	0.12	0.3	0.8	1.0	1.5	1.7
250,000	0.10	0.3	0.7	0.9	1.3	1.6
300,000	0.08	0.3	0.6	0.9	1.2	1.4
400,000	0.06	0.2	0.5	0.7	1.1	1.2
500,000	0.05	0.2	0.5	0.7	1.0	1.1
600,000	0.04	0.2	0.4	0.6	0.9	1.0
700,000	0.03	0.2	0.4	0.6	0.8	0.9
800,000	0.03	0.2	0.4	0.5	0.8	0.9
900,000	0.03	0.2	0.4	0.5	0.7	0.8
1,000,000	0.02	0.15	0.3	0.5	0.7	0.8
1,100,000	0.02	0.15	0.3	0.4	0.6	0.7
1,200,000	0.02	0.14	0.3	0.4	0.6	0.7
1,300,000	0.02	0.14	0.3	0.4	0.6	0.7
1,400,000	0.02	0.13	0.3	0.4	0.6	0.7
1,436,930	0.02	0.13	0.3	0.4	0.6	0.6

[1]Standard errors are presented to the nearest one-tenth of one percentage point except when the standard error is less than or equal to fifteen-hundredths of one percentage point; in those cases, the standard error is shown to the nearest one-hundredth of one percentage point. For estimates pertaining to new construction, the standard errors shown in the table should be multiplied by a factor of 1.4.

The following factors should be applied to estimates that do not pertain strictly to new construction. For estimates pertaining to both owners and renters, apply a factor of 1.0. For estimates pertaining to owner housing units, apply a factor of 1.0. For estimates pertaining to renter housing units, apply a factor of 1.0.

Table 11a. Standard Errors for Estimated Number of Housing Units in the 1985 Tampa-St. Petersburg, FL MSA

Size of estimate	Standard error[1]		
	Combined owner and renter housing units[2]	Owner housing units[3]	Renter housing units[4]
0	280	330	230
200	280	330	230
500	380	410	340
700	440	480	400
1,000	530	580	480
2,500	840	910	750
5,000	1,190	1,290	1,070
10,000	1,670	1,810	1,500
25,000	2,630	2,840	2,360
50,000	3,660	3,970	3,290
75,000	4,430	4,790	3,970
100,000	5,040	5,460	4,520
150,000	5,990	6,490	5,380
200,000	6,700	7,260	6,020
250,000	7,250	7,850	6,510
300,000	7,660	8,300	6,880
400,000	8,160	8,840	7,330
500,000	8,290	8,980	-
600,000	8,060	8,730	-
700,000	7,440	8,060	-
800,000	6,330	-	-
900,000	4,340	-	-
971,800	-	-	-

[1]To compute standard errors for new construction estimates, the standard errors in the table should be multiplied by a factor of 1.0 for owner housing units, 1.2 for renter housing units, and 1.1 for the combined owner and renter housing units.

[2]Some examples that pertain to both owner and renter housing units are: total housing units; all occupied housing units; all year-round housing units; mobile homes or trailers; and total vacant housing units.

[3]The owner housing units pertain to owner-occupied housing units and vacant housing units, excluding vacant-for-rent housing units.

[4]The renter housing units pertain to renter-occupied housing units and vacant-for-rent housing units.

Table 11b. Standard Errors for Estimated Percentages of Housing Units in the 1985 Housing Inventory of the Tampa-St. Petersburg, FL MSA

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
200	53.3	53.3	53.3	53.3	53.3	53.4
500	31.3	31.3	31.3	31.3	31.3	33.8
700	24.6	24.6	24.6	24.6	24.7	28.5
1,000	18.6	18.6	18.6	18.6	20.7	23.9
2,500	8.4	8.4	8.4	9.1	13.1	15.1
5,000	4.4	4.4	4.7	6.4	9.2	10.7
10,000	2.2	2.2	3.3	4.5	6.5	7.6
25,000	0.9	1.0	2.1	2.9	4.1	4.8
50,000	0.5	0.7	1.5	2.0	2.9	3.4
75,000	0.3	0.5	1.2	1.7	2.4	2.8
100,000	0.2	0.5	1.0	1.4	2.1	2.4
150,000	0.15	0.4	0.8	1.2	1.7	1.9
200,000	0.11	0.3	0.7	1.0	1.5	1.7
250,000	0.09	0.3	0.7	0.9	1.3	1.5
300,000	0.08	0.3	0.6	0.8	1.2	1.4
400,000	0.06	0.2	0.5	0.7	1.0	1.2
500,000	0.05	0.2	0.5	0.6	0.9	1.1
600,000	0.04	0.2	0.4	0.6	0.8	1.0
700,000	0.03	0.2	0.4	0.5	0.8	0.9
800,000	0.03	0.2	0.4	0.5	0.7	0.8
900,000	0.03	0.2	0.3	0.5	0.7	0.8
1,000,000	0.02	0.15	0.3	0.5	0.7	0.8

[1]Standard errors are presented to the nearest one-tenth of one percentage point except when the standard error is less than or equal to fifteen-hundredths of one percentage point; in those cases, the standard error is shown to the nearest one-hundredth of one percentage point. For estimates pertaining to new construction, the standard errors shown in the table should be multiplied by a factor of 1.2.

The following factors should be applied to estimates that do not pertain strictly to new construction. For estimates pertaining to both owners and renters, apply a factor of 1.1. For estimates pertaining to owner housing units, apply a factor of 1.2. For estimates pertaining to renter housing units, apply a factor of 1.0.

Table 12a. Standard Errors for Estimated Number of Housing Units in the 1985 Washington, DC-MD-VA MSA

Size of estimate	Standard error[1]		
	Combined owner and renter housing units[2]	Owner housing units[3]	Renter housing units[4]
0	250	270	230
200	250	270	230
500	350	370	340
700	420	440	400
1,000	500	520	480
2,500	790	820	760
5,000	1,120	1,160	1,080
10,000	1,580	1,640	1,520
25,000	2,490	2,580	2,390
50,000	3,490	3,620	3,350
75,000	4,230	4,390	4,060
100,000	4,840	5,020	4,640
150,000	5,810	6,030	5,580
200,000	6,570	6,820	6,310
250,000	7,190	7,460	6,910
300,000	7,710	8,000	7,400
400,000	8,480	8,800	8,140
500,000	9,000	9,340	8,640
600,000	9,290	9,640	8,920
700,000	9,390	9,740	-
800,000	9,290	9,640	-
900,000	8,990	9,330	-
1,000,000	8,470	-	-
1,100,000	7,690	-	-
1,200,000	6,550	-	-
1,300,000	4,800	-	-
1,398,600	-	-	-

[1]To compute standard errors for new construction estimates, the standard errors in the table should be multiplied by a factor of 1.1 for owner housing units, 1.2 for renter housing units, and 1.2 for the combined owner and renter housing units.

[2]Some examples that pertain to both owner and renter housing units are: total housing units; all occupied housing units; all year-round housing units; mobile homes or trailers; and total vacant housing units.

[3]The owner housing units pertain to owner-occupied housing units and vacant housing units, excluding vacant-for-rent housing units.

[4]The renter housing units pertain to renter-occupied housing units and vacant-for-rent housing units.

Table 12b. Standard Errors for Estimated Percentages of Housing Units in the 1985 Housing Inventory of the Washington, DC-MD-VA MSA

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
200	53.7	53.7	53.7	53.7	53.7	53.9
500	31.7	31.7	31.7	31.7	31.7	34.1
700	24.9	24.9	24.9	24.9	24.9	28.8
1,000	18.8	18.8	18.8	18.8	20.9	24.1
2,500	8.5	8.5	8.5	9.1	13.2	15.2
5,000	4.4	4.4	4.7	6.5	9.3	10.8
10,000	2.3	2.3	3.3	4.6	6.6	7.6
25,000	0.9	1.0	2.1	2.9	4.2	4.8
50,000	0.5	0.7	1.5	2.0	3.0	3.4
75,000	0.3	0.6	1.2	1.7	2.4	2.8
100,000	0.2	0.5	1.1	1.4	2.1	2.4
150,000	0.15	0.4	0.9	1.2	1.7	2.0
200,000	0.12	0.3	0.7	1.0	1.5	1.7
250,000	0.09	0.3	0.7	0.9	1.3	1.5
300,000	0.08	0.3	0.6	0.8	1.2	1.4
400,000	0.06	0.2	0.5	0.7	1.0	1.2
500,000	0.05	0.2	0.5	0.6	0.9	1.1
600,000	0.04	0.2	0.4	0.6	0.9	1.0
700,000	0.03	0.2	0.4	0.5	0.8	0.9
800,000	0.03	0.2	0.4	0.5	0.7	0.9
900,000	0.03	0.2	0.4	0.5	0.7	0.8
1,000,000	0.02	0.15	0.3	0.5	0.7	0.8
1,100,000	0.02	0.14	0.3	0.4	0.6	0.7
1,200,000	0.02	0.14	0.3	0.4	0.6	0.7
1,300,000	0.02	0.13	0.3	0.4	0.6	0.7
1,400,000	0.02	0.13	0.3	0.4	0.6	0.6

[1]Standard errors are presented to the nearest one-tenth of one percentage point except when the standard error is less than or equal to fifteen-hundredths of one percentage point; in those cases, the standard error is shown to the nearest one-hundredth of one percentage point. For estimates pertaining to new construction, the standard errors shown in the table should be multiplied by a factor of 1.2.

The following factors should be applied to estimates that do not pertain strictly to new construction. For estimates pertaining to both owners and renters, apply a factor of 1.0. For estimates pertaining to owner housing units, apply a factor of 1.1. For estimates pertaining to renter housing units, apply a factor of 1.0.