ICPSR | INTER-UNIVERSITY CONSORTIUM FOR POLITICAL AND SOCIAL RESEARCH

ICPSR 25203

Housing Affordability Data System (HADS), 2002

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Codebook

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http://www.icpsr.umich.edu/cocoon/ICPSR/TERMS/25203.xml

ICPSR PROCESSING NOTE FOR # 25203
Housing Affordability Data System (HADS), 2002

1) **Sequential record identifier:** ICPSR created a unique sequential record identifier variable named **CASEID** for use with online analysis.

2) **Variable formats:** The formats of the weight variable and variables measuring percentage of cost and income were adjusted in order to accommodate the values present in these variables. The variable **SMSA** was converted from character to numeric. Variable names containing more than 16 characters were truncated in order to be compatible with current statistical programs. Therefore, variable names may differ slightly from those listed in the original documentation.

3) **Value labels**: Value labels for the variables **SMSA, VACANCY, METRO, FMTMETRO, BUILT** and **TYPE** were added from the codebook documentation of the American Housing Survey, 2002: Metropolitan Microdata (ICPSR 4589).

4) **Codebook frequencies:** Due to space limitations, frequencies for the variables **CASEID, CONTROL, NUNITS,** and many of the cost, income, and weight variables are not shown in the ICPSR codebook.

Data Completeness Report

Notes: (1) Variables are individually listed only if they have greater than 5% missing data. These variables are listed under the appropriate percentage category in the order in which they appear in the data file. (2) The Data Completeness Report only captures information about system missing or other values that are declared missing. Codes that have a label implying that they are missing but that are not declared missing values are not reflected in this report. Data users should consult the codebook for more specific information about missing values. (3) Some variables that have 100% missing data may have been blanked by ICPSR to protect respondent confidentiality. Data users should consult the codebook for more specific information about blanked variables. (4) Data do not contain skip patterns or skip patterns are not reflected in the data as coded.

Table 1: Distribution of Variables by Percentage of Missing Values

Variable Name and Label (Total Cases = 52132)		Percent of Cases with Missing Values
83.3% (80 of 96 variables)	have 0% Missing Values	
0.0% (0 of 96 variables)	have 0% - 1% Missing Values	
0.0% (0 of 96 variables)	have 1% - 3% Missing Values	
0.0% (0 of 96 variables)	have 3% - 5% Missing Values	
13.5% (13 of 96 variables)	have 5% - 10% Missing Values	
AGE1	Age of head of household	7.3%
PER	# of persons in household	7.3%
ZINC2	Household Income	7.3%
ZSMHC	Monthly housing costs	7.3%
TOTSAL	Total Wage Income	7.3%
APLMED	Median Income Adjusted for # of Persons	7.3%
BURDEN	Housing cost as a fraction of income	7.3%
INCRELAMIPCT	HH Income relative to AMI (percent)	7.3%
INCRELAMICAT	HH Income relative to AMI (category)	7.3%
INCRELPOVPCT	HH Income Relative to Poverty Income (Percent)	7.3%
INCRELPOVCAT	INCRELPOVCAT. HH Income Relative to Poverty Income (Category)	7.3%
INCRELFMRPCT	HH Income Relative to FMR (Percent)	7.3%
INCRELFMRCAT	INCRELFMRCAT. HH Income Relative to FMR (Category)	7.3%
0.0% (0 of 96 variables)	have 10% - 20% Missing Values	
1.0% (1 of 96 variables)	have 20% - 40% Missing Values	
VALUE	Current market value of unit	38.5%
2.1% (2 of 96 variables)	have 40% - 99% Missing Values	
VACANCY	Vacancy status	92.7%
ASSISTED	ASSISTED. Assisted Housing	66.8%
0.0% (0 of 96 variables)	have 100% missing values	

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Variable Description and Frequencies

Note: Frequencies displayed for the variables are not weighted. They are purely descriptive and may not be representative of the study population. Please review any sampling or weighting information available with the study.

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CASEID	Sequential Record Identifier

| Location: | 1-7(width: 7; decimal: 0) |
| Variable Type: | numeric (ISO) |

- Mean: 26066.50
- Minimum: 1.00
- Maximum: 52132.00
- Standard Deviation: 15049.36

Based upon 52132 valid cases out of 52132 total cases.

SMSA	1980 design PMSA code

| Location: | 8-11(width: 4; decimal: 0) |
| Variable Type: | numeric (ISO) |

Value	Label	Unweighted Frequency	%
360	Anaheim-Santa Ana (Orange County), CA	4101	7.9 %
1280	Buffalo, NY (Metro surveys only)	3365	6.5 %
1520	Charlotte, NC (Metro surveys only)	4216	8.1 %
1840	Columbus, OH	4178	8.0 %
1920	Dallas, TX	4220	8.1 %
2800	Fort Worth-Arlington, TX	3680	7.1 %
3760	Kansas City, MO-KS	4103	7.9 %
5000	Miami-Ft. Lauderdale, FL	3875	7.4 %
5080	Milwaukee, WI	3780	7.3 %
6200	Phoenix, AZ	3976	7.6 %
6440	Portland, OR - WA (Metro surveys only)	4266	8.2 %
7280	Riverside-San Bernardino (6780 in all national surveys), CA	4460	8.6 %
7320	San Diego, CA	3912	7.5 %

- Mean: 3942.29
- Median: 3760.00
- Mode: 7280.00
- Minimum: 360.00
- Maximum: 7320.00
- Standard Deviation: 2367.93

Based upon 52132 valid cases out of 52132 total cases.

CONTROL	Control number

| Location: | 12-23(width: 12; decimal: 0) |
| Variable Type: | character (ISO) |

Based upon 52132 valid cases out of 52132 total cases.

AGE1	Age of head of household

Location:	24-25(width: 2; decimal: 0)
Variable Type:	numeric (ISO)

Value	Unweighted Frequency	%
13	20	0.0 %
14	3	0.0 %
15	2	0.0 %
16	10	0.0 %
17	308	0.6 %
18	77	0.1 %
19	190	0.4 %
20	290	0.6 %
21	439	0.8 %
22	476	0.9 %
23	564	1.1 %
24	628	1.2 %
25	772	1.5 %
26	713	1.4 %
27	833	1.6 %
28	902	1.7 %
29	869	1.7 %
30	1064	2.0 %
31	1051	2.0 %
32	1055	2.0 %
33	1050	2.0 %
34	1022	2.0 %
35	1117	2.1 %
36	1038	2.0 %
37	1120	2.1 %
38	1181	2.3 %
39	1092	2.1 %
40	1260	2.4 %
41	1165	2.2 %
42	1154	2.2 %
43	1155	2.2 %
44	1129	2.2 %
45	1183	2.3 %
46	1136	2.2 %
47	1055	2.0 %
48	1019	2.0 %
49	991	1.9 %

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Value	Unweighted Frequency	%
50	1050	2.0 %
51	858	1.6 %
52	864	1.7 %
53	914	1.8 %
54	885	1.7 %
55	898	1.7 %
56	662	1.3 %
57	645	1.2 %
58	625	1.2 %
59	643	1.2 %
60	628	1.2 %
61	541	1.0 %
62	507	1.0 %
63	503	1.0 %
64	495	0.9 %
65	509	1.0 %
66	433	0.8 %
67	427	0.8 %
68	417	0.8 %
69	413	0.8 %
70	439	0.8 %
71	445	0.9 %
72	434	0.8 %
73	441	0.8 %
74	408	0.8 %
75	395	0.8 %
76	401	0.8 %
77	350	0.7 %
78	321	0.6 %
79	380	0.7 %
80	342	0.7 %
81	311	0.6 %
82	252	0.5 %
83	223	0.4 %
84	198	0.4 %
85	178	0.3 %
86	169	0.3 %
87	118	0.2 %
88	125	0.2 %
89	95	0.2 %

Value	Unweighted Frequency	%
90	74	0.1 %
93	98	0.2 %
94	80	0.2 %
95	12	0.0 %
.	3793	7.3 %

- Mean: 47.26
- Median: 45.00
- Mode: 40.00
- Minimum: 13.00
- Maximum: 95.00
- Standard Deviation: 16.85

Based upon 48339 valid cases out of 52132 total cases.

BEDRMS	BEDRMS. # of bedrooms in unit

Location: 26-27(width: 2; decimal: 0)

Variable Type: numeric (ISO)

Value	Label	Unweighted Frequency	%
0	Studio	406	0.8 %
1	-	6815	13.1 %
2	-	15103	29.0 %
3	-	19563	37.5 %
4	-	8462	16.2 %
5	-	1555	3.0 %
6	-	182	0.3 %
7	-	36	0.1 %
8	-	4	0.0 %
9	-	4	0.0 %
10	-	2	0.0 %

- Mean: 2.66
- Median: 3.00
- Mode: 3.00
- Minimum: 0.00
- Maximum: 10.00
- Standard Deviation: 1.05

Based upon 52132 valid cases out of 52132 total cases.

BUILT	BUILT. Year unit was built

Location: 28-31(width: 4; decimal: 0)

Variable Type: numeric (ISO)

Value	Label	Unweighted Frequency	%
1919	1919 or earlier	2001	3.8 %
1920	-	1466	2.8 %
1930	-	1969	3.8 %
1940	-	2705	5.2 %
1950	-	5430	10.4 %
1960	-	7437	14.3 %
1970	-	5483	10.5 %
1975	-	4951	9.5 %
1980	-	4004	7.7 %
1985	-	5396	10.4 %
1990	-	1184	2.3 %
1991	-	659	1.3 %
1992	-	710	1.4 %
1993	-	658	1.3 %
1994	-	794	1.5 %
1995	-	761	1.5 %
1996	-	766	1.5 %
1997	-	898	1.7 %
1998	-	985	1.9 %
1999	-	1061	2.0 %
2000	-	1032	2.0 %
2001	-	1094	2.1 %
2002	-	688	1.3 %

- Mean: 1968.53
- Median: 1970.00
- Mode: 1960.00
- Minimum: 1919.00
- Maximum: 2002.00
- Standard Deviation: 22.72

Based upon 52132 valid cases out of 52132 total cases.

STATUS	Interview status

Location: 32-32(width: 1; decimal: 0)

Variable Type: character (ISO)

Value	Label	Unweighted Frequency	%
1	Occupied	48339	92.7 %
3	Vacant	3793	7.3 %

Based upon 52132 valid cases out of 52132 total cases.

VACANCY	Vacancy status

Location: 33-33(width: 1; decimal: 0)

Variable Type: numeric (ISO)

Value	Label	Unweighted Frequency	%
1	For rent only	2532	4.9 %
2	For rent or for sale	124	0.2 %
3	For sale only	744	1.4 %
4	Rented, but not yet occupied	101	0.2 %
5	Sold, but not yet occupied	292	0.6 %
.	-	48339	92.7 %

- Mean: 1.81
- Median: 1.00
- Mode: 1.00
- Minimum: 1.00
- Maximum: 5.00
- Standard Deviation: 1.28

Based upon 3793 valid cases out of 52132 total cases.

NUNITS	# of units in building

Location: 34-36(width: 3; decimal: 0)

Variable Type: numeric (ISO)

- Mean: 7.10
- Minimum: 1.00
- Maximum: 675.00
- Standard Deviation: 30.48

Based upon 52132 valid cases out of 52132 total cases.

TENURE	Owner/renter status of unit

Location: 37-37(width: 1; decimal: 0)

Variable Type: character (ISO)

Value	Label	Unweighted Frequency	%
1	Owner	31040	59.5 %
2	Renter	16812	32.2 %
3	No Cash Rent	487	0.9 %
B	Not applicable	3793	7.3 %

Based upon 52132 valid cases out of 52132 total cases.

TYPE	TYPE. Structure type

Location:	38-38(width: 1; decimal: 0)	
Variable Type:	numeric (ISO)	

Value	Label	Unweighted Frequency	%
1	House, apartment, flat	50099	96.1 %
2	Mobile home with no permanent room added	1349	2.6 %
3	Mobile home with permanent room added	205	0.4 %
4	HU, in nontransient hotel, motel, etc	13	0.0 %
5	HU, in permanent transient hotel, motel, etc	7	0.0 %
6	HU, in rooming house	19	0.0 %
7	Boat or recreation vehicle	23	0.0 %
9	HU, not specified above	417	0.8 %

- Mean: 1.10
- Median: 1.00
- Mode: 1.00
- Minimum: 1.00
- Maximum: 9.00
- Standard Deviation: 0.76

Based upon 52132 valid cases out of 52132 total cases.

VALUE	Current market value of unit

Location:	39-45(width: 7; decimal: 0)
Variable Type:	numeric (ISO)

- Mean: 191903.82
- Minimum: 1.00
- Maximum: 1965414.00
- Standard Deviation: 189329.55

Based upon 32076 valid cases out of 52132 total cases.

PER	# of persons in household

Location:	46-47(width: 2; decimal: 0)
Variable Type:	numeric (ISO)

Value	Unweighted Frequency	%
1	12158	23.3 %
2	15212	29.2 %
3	8031	15.4 %
4	7418	14.2 %
5	3494	6.7 %
6	1252	2.4 %
7	429	0.8 %

Value	Unweighted Frequency	%
8	185	0.4 %
9	76	0.1 %
10	44	0.1 %
11	19	0.0 %
12	9	0.0 %
13	7	0.0 %
14	2	0.0 %
16	1	0.0 %
17	1	0.0 %
19	1	0.0 %
.	3793	7.3 %

- Mean: 2.64
- Median: 2.00
- Mode: 2.00
- Minimum: 1.00
- Maximum: 19.00
- Standard Deviation: 1.51

Based upon 48339 valid cases out of 52132 total cases.

ZINC2	**Household Income**

| Location: | 48-55(width: 8; decimal: 0) |
| Variable Type: | numeric (ISO) |

- Mean: 65345.51
- Minimum: -10000.00
- Maximum: 1130392.00
- Standard Deviation: 75792.96

Based upon 48339 valid cases out of 52132 total cases.

ROOMS	**# of rooms in unit**

| Location: | 56-57(width: 2; decimal: 0) |
| Variable Type: | numeric (ISO) |

Value	Unweighted Frequency	%
1	142	0.3 %
2	441	0.8 %
3	5063	9.7 %
4	10167	19.5 %
5	11378	21.8 %
6	9902	19.0 %

Value	Unweighted Frequency	%
7	6682	12.8 %
8	4354	8.4 %
9	2128	4.1 %
10	846	1.6 %
11	365	0.7 %
12	241	0.5 %
13	218	0.4 %
14	134	0.3 %
15	46	0.1 %
16	13	0.0 %
17	8	0.0 %
18	3	0.0 %
19	1	0.0 %

- Mean: 5.66
- Median: 5.00
- Mode: 5.00
- Minimum: 1.00
- Maximum: 19.00
- Standard Deviation: 1.97

Based upon 52132 valid cases out of 52132 total cases.

ZADEQ	**Recoded adequacy of housing**

Location: 58-58(width: 1; decimal: 0)

Variable Type: character (ISO)

Value	Label	Unweighted Frequency	%
1	1 Adequate	45739	87.7 %
2	2 Moderately Inadequate	1849	3.5 %
3	3 Severely Inadequate	751	1.4 %
B	Vacant--no information	3793	7.3 %

Based upon 52132 valid cases out of 52132 total cases.

ZSMHC	**Monthly housing costs**

Location: 59-63(width: 5; decimal: 0)

Variable Type: numeric (ISO)

- Mean: 972.08
- Minimum: 0.00
- Maximum: 35315.00
- Standard Deviation: 753.69

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Based upon 48339 valid cases out of 52132 total cases.

METRO	METRO. Central city / suburban status

Location: 64-64(width: 1; decimal: 0)

Variable Type: character (ISO)

Value	Label	Unweighted Frequency	%
1	Primary central city of the MSA	13522	25.9 %
2	Secondary central cities of the MSA	2155	4.1 %
3	Secondary central cities of the MSA	341	0.7 %
7	Suburb of the MSA	36114	69.3 %

Based upon 52132 valid cases out of 52132 total cases.

WEIGHT	Final weight using 1980 geography

Location: 65-78(width: 14; decimal: 8)

Variable Type: numeric (ISO)

- Mean: 227.94087637
- Minimum: 0.00000000
- Maximum: 2434.52171784
- Standard Deviation: 106.33797836

Based upon 52132 valid cases out of 52132 total cases.

STRUCTURETYPE	Recoded structure type

Location: 79-79(width: 1; decimal: 0)

Variable Type: numeric (ISO)

Value	Label	Unweighted Frequency	%
1	Single Family	38110	73.1 %
2	2-4 units	4129	7.9 %
3	5-19 units	5119	9.8 %
4	20-49 units	1758	3.4 %
5	50+ units	1462	2.8 %
6	Mobile Home	1554	3.0 %

- Mean: 1.64
- Median: 1.00
- Mode: 1.00
- Minimum: 1.00
- Maximum: 6.00
- Standard Deviation: 1.25

Based upon 52132 valid cases out of 52132 total cases.

OWNRENT	Tenure (adjusted)

| | Location: | 80-80(width: 1; decimal: 0) |
| Variable Type: | character (ISO) |

Value	Label	Unweighted Frequency	%
1	Own	32076	61.5 %
2	Rent	20056	38.5 %

Based upon 52132 valid cases out of 52132 total cases.

UTILITY — Monthly utility cost

Location: 81-86(width: 6; decimal: 2)

Variable Type: numeric (ISO)

- Mean: 130.09
- Minimum: 0.00
- Maximum: 838.08
- Standard Deviation: 90.97

Based upon 52132 valid cases out of 52132 total cases.

OTHERCOST — Insurance, condo, land rent, other mobile home fees

Location: 87-93(width: 7; decimal: 2)

Variable Type: numeric (ISO)

- Mean: 55.39
- Minimum: 0.00
- Maximum: 8000.00
- Standard Deviation: 135.87

Based upon 52132 valid cases out of 52132 total cases.

COST06 — Housing cost at 6 percent interest

Location: 94-101(width: 8; decimal: 2)

Variable Type: numeric (ISO)

- Mean: 1218.84
- Minimum: 0.00
- Maximum: 14138.72
- Standard Deviation: 1127.11

Based upon 52132 valid cases out of 52132 total cases.

COST12 — Housing cost at 12 percent interest

Location: 102-109(width: 8; decimal: 2)

Variable Type: numeric (ISO)

- Mean: 1674.79
- Minimum: 0.00
- Maximum: 21728.28

- Standard Deviation: 1783.08

Based upon 52132 valid cases out of 52132 total cases.

COST08	Housing cost at 8 percent interest

Location: 110-117(width: 8; decimal: 2)

Variable Type: numeric (ISO)

- Mean: 1361.46
- Minimum: 0.00
- Maximum: 16512.79
- Standard Deviation: 1330.00

Based upon 52132 valid cases out of 52132 total cases.

COSTMED	Housing cost at Median interest

Location: 118-125(width: 8; decimal: 2)

Variable Type: numeric (ISO)

- Mean: 1288.71
- Minimum: 0.00
- Maximum: 15301.79
- Standard Deviation: 1226.12

Based upon 52132 valid cases out of 52132 total cases.

TOTSAL	Total Wage Income

Location: 126-131(width: 6; decimal: 0)

Variable Type: numeric (ISO)

- Mean: 51919.66
- Minimum: 0.00
- Maximum: 558764.00
- Standard Deviation: 55497.56

Based upon 48339 valid cases out of 52132 total cases.

ASSISTED	ASSISTED. Assisted Housing

Location: 132-132(width: 1; decimal: 0)

Variable Type: numeric (ISO)

Value	Label	Unweighted Frequency	%
0	Not Assisted	14417	27.7 %
1	Assisted	2882	5.5 %
.	-	34833	66.8 %

- Mean: 0.17
- Median: 0.00

- Mode: 0.00
- Minimum: 0.00
- Maximum: 1.00
- Standard Deviation: 0.37

Based upon 17299 valid cases out of 52132 total cases.

IPOV	Poverty income threshhold

Location:	133-137(width: 5; decimal: 0)
Variable Type:	numeric (ISO)

Value	Unweighted Frequency	%
8628	3838	7.4 %
9359	12113	23.2 %
10874	3723	7.1 %
12047	9929	19.0 %
12353	38	0.1 %
12400	1522	2.9 %
14072	2745	5.3 %
14480	4248	8.1 %
14494	1038	2.0 %
18244	4758	9.1 %
18307	427	0.8 %
18556	913	1.8 %
18859	1320	2.5 %
21141	142	0.3 %
21469	2015	3.9 %
22007	721	1.4 %
22377	198	0.4 %
22703	418	0.8 %
23588	45	0.1 %
24038	556	1.1 %
24797	279	0.5 %
25307	221	0.4 %
25738	43	0.1 %
25840	108	0.2 %
25865	13	0.0 %
26924	120	0.2 %
27890	101	0.2 %
28718	102	0.2 %
29162	62	0.1 %
29350	4	0.0 %
29601	44	0.1 %

Value	Unweighted Frequency	%
29615	7	0.0 %
29799	24	0.0 %
30589	31	0.1 %
31538	46	0.1 %
32285	36	0.1 %
32812	18	0.0 %
33121	2	0.0 %
33414	4	0.0 %
34780	21	0.0 %
36173	25	0.0 %
36399	31	0.1 %
37313	27	0.1 %
38323	22	0.0 %
39057	23	0.0 %
39504	9	0.0 %
39843	1	0.0 %
40036	1	0.0 %

- Mean: 13584.92
- Median: 12047.00
- Mode: 9359.00
- Minimum: 8628.00
- Maximum: 40036.00
- Standard Deviation: 4729.28

Based upon 52132 valid cases out of 52132 total cases.

FMR	**Fair market rent (average)**

| Location: | 138-144(width: 7; decimal: 2) |
| Variable Type: | numeric (ISO) |

- Mean: 924.06
- Median: 894.00
- Mode: 894.00
- Minimum: 401.00
- Maximum: 2718.40
- Standard Deviation: 282.43

Based upon 52132 valid cases out of 52132 total cases.

LMED	**Area median income (average)**

| Location: | 145-149(width: 5; decimal: 0) |
| Variable Type: | numeric (ISO) |

Value	Unweighted Frequency	%
48200	3875	7.4 %
50300	4460	8.6 %
50800	3365	6.5 %
57200	4266	8.2 %
57900	3976	7.6 %
60100	3912	7.5 %
61300	3680	7.1 %
63400	4178	8.0 %
64100	4216	8.1 %
64500	4103	7.9 %
66500	4220	8.1 %
67200	3780	7.3 %
75600	4101	7.9 %

- Mean: 60642.82
- Median: 61300.00
- Mode: 50300.00
- Minimum: 48200.00
- Maximum: 75600.00
- Standard Deviation: 7399.40

Based upon 52132 valid cases out of 52132 total cases.

L50	Very low income limit (average)

Location: 150-157(width: 8; decimal: 2)

Variable Type: numeric (ISO)

- Mean: 25707.28
- Median: 25150.00
- Mode: 30240.00
- Minimum: 16870.00
- Maximum: 52920.00
- Standard Deviation: 5344.11

Based upon 52132 valid cases out of 52132 total cases.

L80	Low income limit (average)

Location: 158-165(width: 8; decimal: 2)

Variable Type: numeric (ISO)

- Mean: 40713.70
- Median: 39240.00
- Mode: 36120.00
- Minimum: 26985.00
- Maximum: 76160.00

- Standard Deviation: 8004.68

Based upon 52132 valid cases out of 52132 total cases.

GLMED	Growth-adjusted median income	

Location:	166-173(width: 8; decimal: 2)
Variable Type:	numeric (ISO)

Value	Unweighted Frequency	%
54167.16	3875	7.4 %
56527.14	4460	8.6 %
57089.04	3365	6.5 %
64281.36	4266	8.2 %
65068.02	3976	7.6 %
67540.38	3912	7.5 %
68888.94	3680	7.1 %
71248.92	4178	8.0 %
72035.58	4216	8.1 %
72485.10	4103	7.9 %
74732.70	4220	8.1 %
75519.36	3780	7.3 %
84959.28	4101	7.9 %

- Mean: 68150.41
- Median: 68888.94
- Mode: 56527.14
- Minimum: 54167.16
- Maximum: 84959.28
- Standard Deviation: 8315.44

Based upon 52132 valid cases out of 52132 total cases.

GL50	Growth-adjusted very low income	

Location:	174-181(width: 8; decimal: 2)
Variable Type:	numeric (ISO)

- Mean: 28889.85
- Median: 28263.57
- Mode: 33983.71
- Minimum: 18958.51
- Maximum: 59471.50
- Standard Deviation: 6005.71

Based upon 52132 valid cases out of 52132 total cases.

GL80	Growth-adjusted low income	

Location:	182-189(width: 8; decimal: 2)

Variable Type:	numeric (ISO)

- Mean: 45754.06
- Median: 44097.91
- Mode: 40591.66
- Minimum: 30325.74
- Maximum: 85588.61
- Standard Deviation: 8995.66

Based upon 52132 valid cases out of 52132 total cases.

APLMED	**Median Income Adjusted for # of Persons**
Location:	190-198(width: 9; decimal: 2)
Variable Type:	numeric (ISO)

- Mean: 58575.58
- Median: 57089.04
- Mode: 67967.42
- Minimum: 37917.01
- Maximum: 146129.96
- Standard Deviation: 12120.87

Based upon 48339 valid cases out of 52132 total cases.

ABL50	**Very Low Income Adjusted for # of Bedrooms**
Location:	199-206(width: 8; decimal: 2)
Variable Type:	numeric (ISO)

- Mean: 33639.96
- Median: 33426.31
- Mode: 37458.50
- Minimum: 18095.58
- Maximum: 69666.61
- Standard Deviation: 6336.68

Based upon 52132 valid cases out of 52132 total cases.

ABL80	**Low Income Adjusted for # of Bedrooms**
Location:	207-215(width: 9; decimal: 2)
Variable Type:	numeric (ISO)

- Mean: 53294.31
- Median: 53470.40
- Mode: 59956.98
- Minimum: 28960.12
- Maximum: 109017.59
- Standard Deviation: 9520.71

Based upon 52132 valid cases out of 52132 total cases.

ABLMED	Median Income Adjusted for # of Bedrooms

Location: 216-224(width: 9; decimal: 2)

Variable Type: numeric (ISO)

- Mean: 67292.26
- Median: 66852.61
- Mode: 74917.00
- Minimum: 37917.01
- Maximum: 139333.22
- Standard Deviation: 12681.57

Based upon 52132 valid cases out of 52132 total cases.

BURDEN	Housing cost as a fraction of income

Location: 225-239(width: 15; decimal: 8)

Variable Type: numeric (ISO)

- Mean: 6.43816594
- Minimum: -1.00000000
- Maximum: 22104.00000000
- Standard Deviation: 250.51767018

Based upon 48339 valid cases out of 52132 total cases.

INCRELAMIPCT	HH Income relative to AMI (percent)

Location: 240-253(width: 14; decimal: 8)

Variable Type: numeric (ISO)

- Mean: 111.62615549
- Minimum: -26.37338617
- Maximum: 2570.09736158
- Standard Deviation: 132.06213524

Based upon 48339 valid cases out of 52132 total cases.

INCRELAMICAT	HH Income relative to AMI (category)

Location: 254-254(width: 1; decimal: 0)

Variable Type: numeric (ISO)

Value	Label	Unweighted Frequency	%
1	LTE 30% AMI	7209	13.8 %
2	30 - 50% AMI	6972	13.4 %
3	50 - 60% AMI	3579	6.9 %
4	60 - 80% AMI	6303	12.1 %
5	80 - 100% AMI	5516	10.6 %
6	100 - 120% AMI	4508	8.6 %
7	120% AMI +	14252	27.3 %

Value	Label	Unweighted Frequency	%
.	-	3793	7.3 %

- Mean: 4.38
- Median: 5.00
- Mode: 7.00
- Minimum: 1.00
- Maximum: 7.00
- Standard Deviation: 2.23

Based upon 48339 valid cases out of 52132 total cases.

INCRELPOVPCT	HH Income Relative to Poverty Income (Percent)

Location: 255-262(width: 8; decimal: 2)

Variable Type: numeric (ISO)

- Mean: 482.08
- Minimum: -115.90
- Maximum: 9670.11
- Standard Deviation: 578.72

Based upon 48339 valid cases out of 52132 total cases.

INCRELPOVCAT	INCRELPOVCAT. HH Income Relative to Poverty Income (Category)

Location: 263-263(width: 1; decimal: 0)

Variable Type: numeric (ISO)

Value	Label	Unweighted Frequency	%
1	LTE Poverty	5034	9.7 %
2	100-150% Poverty	3987	7.6 %
3	150-200% Poverty	4017	7.7 %
4	200%+ Poverty	35301	67.7 %
.	-	3793	7.3 %

- Mean: 3.44
- Median: 4.00
- Mode: 4.00
- Minimum: 1.00
- Maximum: 4.00
- Standard Deviation: 1.02

Based upon 48339 valid cases out of 52132 total cases.

INCRELFMRPCT	HH Income Relative to FMR (Percent)

Location: 264-271(width: 8; decimal: 2)

Variable Type: numeric (ISO)

- Mean: 170.69
- Minimum: -51.33
- Maximum: 2766.76
- Standard Deviation: 180.68

Based upon 48339 valid cases out of 52132 total cases.

INCRELFMRCAT	INCRELFMRCAT. HH Income Relative to FMR (Category)		

Location:	272-272(width: 1; decimal: 0)		
Variable Type:	numeric (ISO)		

Value	Label	Unweighted Frequency	%
1	LTE 50% FMR	7420	14.2 %
2	50.1 - 100% FMR	10985	21.1 %
3	GT FMR	29934	57.4 %
.	-	3793	7.3 %

- Mean: 2.47
- Median: 3.00
- Mode: 3.00
- Minimum: 1.00
- Maximum: 3.00
- Standard Deviation: 0.75

Based upon 48339 valid cases out of 52132 total cases.

COST06RELAMIPCT	Cost06 Relative to Median Income (Percent)

Location:	273-286(width: 14; decimal: 8)
Variable Type:	numeric (ISO)

- Mean: 70.41074126
- Minimum: 0.00000000
- Maximum: 930.38789070
- Standard Deviation: 58.20506853

Based upon 52132 valid cases out of 52132 total cases.

COST06RELAMICAT	COST06RELAMICAT. Cost06 Relative to Median Income (Category)		

Location:	287-287(width: 1; decimal: 0)		
Variable Type:	numeric (ISO)		

Value	Label	Unweighted Frequency	%
1	LTE 30% AMI	5531	10.6 %
2	30 - 50% AMI	15531	29.8 %
3	50 - 60% AMI	7532	14.4 %
4	60 - 80% AMI	9525	18.3 %

Value	Label	Unweighted Frequency	%
5	80 - 100% AMI	5457	10.5 %
6	100 - 120% AMI	3193	6.1 %
7	120% AMI +	5363	10.3 %

- Mean: 3.48
- Median: 3.00
- Mode: 2.00
- Minimum: 1.00
- Maximum: 7.00
- Standard Deviation: 1.81

Based upon 52132 valid cases out of 52132 total cases.

COST06RELPOVPCT	Cost06 Relative to Poverty Income (Percent)

Location: 288-301(width: 14; decimal: 8)

Variable Type: numeric (ISO)

- Mean: 380.16842956
- Minimum: 0.00000000
- Maximum: 6042.83326392
- Standard Deviation: 360.47436122

Based upon 52132 valid cases out of 52132 total cases.

COST06RELPOVCAT	COST06RELPOVCAT. Cost06 Relative to Poverty Income (Category)

Location: 302-302(width: 1; decimal: 0)

Variable Type: numeric (ISO)

Value	Label	Unweighted Frequency	%
1	LTE Poverty	3071	5.9 %
2	100-150% Poverty	4294	8.2 %
3	150-200% Poverty	6218	11.9 %
4	200%+ Poverty	38549	73.9 %

- Mean: 3.54
- Median: 4.00
- Mode: 4.00
- Minimum: 1.00
- Maximum: 4.00
- Standard Deviation: 0.88

Based upon 52132 valid cases out of 52132 total cases.

COST06RELFMRPCT	Cost06 Relative to FMR (Percent)

Location: 303-316(width: 14; decimal: 8)

| Variable Type: | numeric (ISO) |

- Mean: 126.01147175
- Minimum: 0.00000000
- Maximum: 1427.36741175
- Standard Deviation: 88.77730451

Based upon 52132 valid cases out of 52132 total cases.

COST06RELFMRCAT   COST06RELFMRCAT. Cost06 Relative to FMR (Category)

| Location: | 317-317(width: 1; decimal: 0) |
| Variable Type: | numeric (ISO) |

Value	Label	Unweighted Frequency	%
1	LTE 50% FMR	3721	7.1 %
2	50.1 - 100% FMR	18699	35.9 %
3	GT FMR	29712	57.0 %

- Mean: 2.50
- Median: 3.00
- Mode: 3.00
- Minimum: 1.00
- Maximum: 3.00
- Standard Deviation: 0.63

Based upon 52132 valid cases out of 52132 total cases.

COST08RELAMIPCT   Cost08 Relative to Median Income (Percent)

| Location: | 318-331(width: 14; decimal: 8) |
| Variable Type: | numeric (ISO) |

- Mean: 78.23516388
- Minimum: 0.00000000
- Maximum: 1086.61216446
- Standard Deviation: 68.62607129

Based upon 52132 valid cases out of 52132 total cases.

COST08RELAMICAT   COST08RELAMICAT. Cost08 Relative to Median Income (Category)

| Location: | 332-332(width: 1; decimal: 0) |
| Variable Type: | numeric (ISO) |

Value	Label	Unweighted Frequency	%
1	LTE 30% AMI	5063	9.7 %
2	30 - 50% AMI	13583	26.1 %
3	50 - 60% AMI	6951	13.3 %
4	60 - 80% AMI	9421	18.1 %

Value	Label	Unweighted Frequency	%
5	80 - 100% AMI	6001	11.5 %
6	100 - 120% AMI	3578	6.9 %
7	120% AMI +	7535	14.5 %

- Mean: 3.74
- Median: 4.00
- Mode: 2.00
- Minimum: 1.00
- Maximum: 7.00
- Standard Deviation: 1.92

Based upon 52132 valid cases out of 52132 total cases.

COST08RELPOVPCT	**Cost08 Relative to Poverty Income (Percent)**

Location: 333-346(width: 14; decimal: 8)
Variable Type: numeric (ISO)

- Mean: 423.57372221
- Minimum: 0.00000000
- Maximum: 7057.50386261
- Standard Deviation: 423.86717374

Based upon 52132 valid cases out of 52132 total cases.

COST08RELPOVCAT	**COST08RELPOVCAT. Cost08 Relative to Poverty Income (Category)**

Location: 347-347(width: 1; decimal: 0)
Variable Type: numeric (ISO)

Value	Label	Unweighted Frequency	%
1	LTE Poverty	2909	5.6 %
2	100-150% Poverty	3807	7.3 %
3	150-200% Poverty	5594	10.7 %
4	200%+ Poverty	39822	76.4 %

- Mean: 3.58
- Median: 4.00
- Mode: 4.00
- Minimum: 1.00
- Maximum: 4.00
- Standard Deviation: 0.85

Based upon 52132 valid cases out of 52132 total cases.

COST08RELFMRPCT	**Cost08 Relative to FMR (Percent)**

Location: 348-361(width: 14; decimal: 8)

| Variable Type: | numeric (ISO) |

- Mean: 139.44545979
- Minimum: 0.00000000
- Maximum: 1677.65136708
- Standard Deviation: 104.71314841

Based upon 52132 valid cases out of 52132 total cases.

| **COST08RELFMRCAT** | **COST08RELFMRCAT. Cost08 Relative to FMR (Category)** |

| Location: | 362-362(width: 1; decimal: 0) |
| Variable Type: | numeric (ISO) |

Value	Label	Unweighted Frequency	%
1	LTE 50% FMR	3391	6.5 %
2	50.1 - 100% FMR	16176	31.0 %
3	GT FMR	32565	62.5 %

- Mean: 2.56
- Median: 3.00
- Mode: 3.00
- Minimum: 1.00
- Maximum: 3.00
- Standard Deviation: 0.61

Based upon 52132 valid cases out of 52132 total cases.

| **COST12RELAMIPCT** | **Cost12 Relative to Median Income (Percent)** |

| Location: | 363-376(width: 14; decimal: 8) |
| Variable Type: | numeric (ISO) |

- Mean: 95.42424031
- Minimum: 0.00000000
- Maximum: 1429.81333233
- Standard Deviation: 92.13490564

Based upon 52132 valid cases out of 52132 total cases.

| **COST12RELAMICAT** | **COST12RELAMICAT. Cost12 Relative to Median Income (Category)** |

| Location: | 377-377(width: 1; decimal: 0) |
| Variable Type: | numeric (ISO) |

Value	Label	Unweighted Frequency	%
1	LTE 30% AMI	4507	8.6 %
2	30 - 50% AMI	11276	21.6 %
3	50 - 60% AMI	5580	10.7 %
4	60 - 80% AMI	8141	15.6 %

Value	Label	Unweighted Frequency	%
5	80 - 100% AMI	6100	11.7 %
6	100 - 120% AMI	4355	8.4 %
7	120% AMI +	12173	23.4 %

- Mean: 4.19
- Median: 4.00
- Mode: 7.00
- Minimum: 1.00
- Maximum: 7.00
- Standard Deviation: 2.07

Based upon 52132 valid cases out of 52132 total cases.

COST12RELPOVPCT	**Cost12 Relative to Poverty Income (Percent)**

Location: 378-391(width: 14; decimal: 8)

Variable Type: numeric (ISO)

- Mean: 518.92860383
- Minimum: 0.00000000
- Maximum: 9286.58213649
- Standard Deviation: 566.12462184

Based upon 52132 valid cases out of 52132 total cases.

COST12RELPOVCAT	**COST12RELPOVCAT. Cost12 Relative to Poverty Income (Category)**

Location: 392-392(width: 1; decimal: 0)

Variable Type: numeric (ISO)

Value	Label	Unweighted Frequency	%
1	LTE Poverty	2708	5.2 %
2	100-150% Poverty	3291	6.3 %
3	150-200% Poverty	4783	9.2 %
4	200%+ Poverty	41350	79.3 %

- Mean: 3.63
- Median: 4.00
- Mode: 4.00
- Minimum: 1.00
- Maximum: 4.00
- Standard Deviation: 0.82

Based upon 52132 valid cases out of 52132 total cases.

COST12RELFMRPCT	**Cost12 Relative to FMR (Percent)**

Location: 393-406(width: 14; decimal: 8)

Variable Type:	numeric (ISO)

- Mean: 168.95790540
- Minimum: 0.00000000
- Maximum: 2227.48746939
- Standard Deviation: 141.18854363

Based upon 52132 valid cases out of 52132 total cases.

COST12RELFMRCAT	COST12RELFMRCAT. Cost12 Relative to FMR (Category)

Location:	407-407(width: 1; decimal: 0)
Variable Type:	numeric (ISO)

Value	Label	Unweighted Frequency	%
1	LTE 50% FMR	3072	5.9 %
2	50.1 - 100% FMR	13184	25.3 %
3	GT FMR	35876	68.8 %

- Mean: 2.63
- Median: 3.00
- Mode: 3.00
- Minimum: 1.00
- Maximum: 3.00
- Standard Deviation: 0.59

Based upon 52132 valid cases out of 52132 total cases.

COSTMEDRELAMIPCT	CostMed Relative to Median Income (Percent)

Location:	408-421(width: 14; decimal: 8)
Variable Type:	numeric (ISO)

- Mean: 74.24395549
- Minimum: 0.00000000
- Maximum: 1006.92275321
- Standard Deviation: 63.27858494

Based upon 52132 valid cases out of 52132 total cases.

COSTMEDRELAMICAT	COSTMedRELAMICAT. CostMed Relative to Median Income (Category)

Location:	422-422(width: 1; decimal: 0)
Variable Type:	numeric (ISO)

Value	Label	Unweighted Frequency	%
1	LTE 30% AMI	5267	10.1 %
2	30 - 50% AMI	14505	27.8 %
3	50 - 60% AMI	7257	13.9 %
4	60 - 80% AMI	9549	18.3 %

Value	Label	Unweighted Frequency	%
5	80 - 100% AMI	5748	11.0 %
6	100 - 120% AMI	3390	6.5 %
7	120% AMI +	6416	12.3 %

- Mean: 3.61
- Median: 3.00
- Mode: 2.00
- Minimum: 1.00
- Maximum: 7.00
- Standard Deviation: 1.87

Based upon 52132 valid cases out of 52132 total cases.

COSTMEDRELPOVPCT — CostMed Relative to Poverty Income (Percent)

Location: 423-436(width: 14; decimal: 8)
Variable Type: numeric (ISO)

- Mean: 401.43284658
- Minimum: 0.00000000
- Maximum: 6539.92422738
- Standard Deviation: 391.37712643

Based upon 52132 valid cases out of 52132 total cases.

COSTMEDRELPOVCAT — COSTMedRELPOVCAT. CostMed Relative to Poverty Income (Category)

Location: 437-437(width: 1; decimal: 0)
Variable Type: numeric (ISO)

Value	Label	Unweighted Frequency	%
1	LTE Poverty	2991	5.7 %
2	100-150% Poverty	4037	7.7 %
3	150-200% Poverty	5887	11.3 %
4	200%+ Poverty	39217	75.2 %

- Mean: 3.56
- Median: 4.00
- Mode: 4.00
- Minimum: 1.00
- Maximum: 4.00
- Standard Deviation: 0.86

Based upon 52132 valid cases out of 52132 total cases.

COSTMEDRELFMRPCT — CostMed Relative to FMR (Percent)

Location: 438-451(width: 14; decimal: 8)

Variable Type:	numeric (ISO)

- Mean: 132.59283329
- Minimum: 0.00000000
- Maximum: 1549.98246796
- Standard Deviation: 96.50840735

Based upon 52132 valid cases out of 52132 total cases.

COSTMEDRELFMRCAT	COSTMedRELFMRCAT. CostMed Relative to FMR (Category)
Location:	452-452(width: 1; decimal: 0)
Variable Type:	numeric (ISO)

Value	Label	Unweighted Frequency	%
1	LTE 50% FMR	3536	6.8 %
2	50.1 - 100% FMR	17356	33.3 %
3	GT FMR	31240	59.9 %

- Mean: 2.53
- Median: 3.00
- Mode: 3.00
- Minimum: 1.00
- Maximum: 3.00
- Standard Deviation: 0.62

Based upon 52132 valid cases out of 52132 total cases.

FMTZADEQ	ADEQUACY OF UNIT
Location:	453-475(width: 23; decimal: 0)
Variable Type:	character (ISO)

Value	Unweighted Frequency	%
1 Adequate	45739	87.7 %
2 Moderately Inadequate	1849	3.5 %
3 Severely Indadequate	751	1.4 %
Vacant--no information	3793	7.3 %

Based upon 52132 valid cases out of 52132 total cases.

FMTMETRO	FMTMETRO. CENTRAL CITY / SUBURBAN STATUS
Location:	476-515(width: 40; decimal: 0)
Variable Type:	character (ISO)

Value	Unweighted Frequency	%
Primary central city of the MSA	13522	25.9 %
Secondary central cities of the MSA	2496	4.8 %

Value	Unweighted Frequency	%
Suburb of the MSA	36114	69.3 %

Based upon 52132 valid cases out of 52132 total cases.

FMTBUILT	**FMTBUILT. YEAR UNIT WAS BUILT**

Location:	516-529(width: 14; decimal: 0)
Variable Type:	character (ISO)

Value	Unweighted Frequency	%
Not Applicable	52132	100.0 %

Based upon 52132 valid cases out of 52132 total cases.

FMTSTRUCTURETYPE	**FMTSTRUCTURETYPE. Structure Type**

Location:	530-544(width: 15; decimal: 0)
Variable Type:	character (ISO)

Value	Unweighted Frequency	%
1 Single Family	38110	73.1 %
2 2-4 units	4129	7.9 %
3 5-19 units	5119	9.8 %
4 20-49 units	1758	3.4 %
5 50+ units	1462	2.8 %
6 Mobile Home	1554	3.0 %

Based upon 52132 valid cases out of 52132 total cases.

FMTBEDRMS	**FMTBEDRMS. # OF Bedrooms In Unit**

Location:	545-552(width: 8; decimal: 0)
Variable Type:	character (ISO)

Value	Unweighted Frequency	%
0 Studio	406	0.8 %
1 1BR	6815	13.1 %
2 2BR	15103	29.0 %
3 3BR	19563	37.5 %
4 4BR+	10245	19.7 %

Based upon 52132 valid cases out of 52132 total cases.

FMTOWNRENT	**Owner/Renter Status (adjusted)**

Location:	553-566(width: 14; decimal: 0)
Variable Type:	character (ISO)

Value	Unweighted Frequency	%
1 Owner	32076	61.5 %
2 Renter	20056	38.5 %

Based upon 52132 valid cases out of 52132 total cases.

FMTCOST06RELPOV	**FMTCOST06RELPOVCAT. Cost06 Relative to Poverty Income (Category)**

Location: 567-584(width: 18; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
1 LTE Poverty	3071	5.9 %
2 100-150% Poverty	4294	8.2 %
3 150-200% Poverty	6218	11.9 %
4 200%+ Poverty	38549	73.9 %

Based upon 52132 valid cases out of 52132 total cases.

FMTCOST08RELPOV	**FMTCOST08RELPOVCAT. Cost08 Relative to Poverty Income (Category)**

Location: 585-602(width: 18; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
1 LTE Poverty	2909	5.6 %
2 100-150% Poverty	3807	7.3 %
3 150-200% Poverty	5594	10.7 %
4 200%+ Poverty	39822	76.4 %

Based upon 52132 valid cases out of 52132 total cases.

FMTCOST12RELPOV	**FMTCOST12RELPOVCAT. Cost12 Relative to Poverty Income (Category)**

Location: 603-620(width: 18; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
1 LTE Poverty	2708	5.2 %
2 100-150% Poverty	3291	6.3 %
3 150-200% Poverty	4783	9.2 %
4 200%+ Poverty	41350	79.3 %

Based upon 52132 valid cases out of 52132 total cases.

FMTCOSTMEDRELPOV	**FMTCOSTMEDRELPOV. CostMed Relative to Poverty Income (Category)**

Location: 621-638(width: 18; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
1 LTE Poverty	2991	5.7 %
2 100-150% Poverty	4037	7.7 %
3 150-200% Poverty	5887	11.3 %
4 200%+ Poverty	39217	75.2 %

Based upon 52132 valid cases out of 52132 total cases.

FMTINCRELPOVCAT	FMTINCRELPOVCAT. HH Income Relative to Poverty Income (Category)

Location: 639-656(width: 18; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
.	3793	7.3 %
1 LTE Poverty	5034	9.7 %
2 100-150% Poverty	3987	7.6 %
3 150-200% Poverty	4017	7.7 %
4 200%+ Poverty	35301	67.7 %

Based upon 52132 valid cases out of 52132 total cases.

FMTCOST06RELFMR	FMTCOST06RELFMRCAT. Cost06 Relative to FMR (Category)

Location: 657-673(width: 17; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
1 LTE 50% FMR	3721	7.1 %
2 50.1 - 100% FMR	18699	35.9 %
3 GT FMR	29712	57.0 %

Based upon 52132 valid cases out of 52132 total cases.

FMTCOST08RELFMR	FMTCOST08RELFMRCAT. Cost08 Relative to FMR (Category)

Location: 674-690(width: 17; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
1 LTE 50% FMR	3391	6.5 %
2 50.1 - 100% FMR	16176	31.0 %
3 GT FMR	32565	62.5 %

Based upon 52132 valid cases out of 52132 total cases.

FMTCOST12RELFMR	FMTCOST12RELFMRCAT. Cost12 Relative to FMR (Category)

Location: 691-707(width: 17; decimal: 0)

Variable Type:	character (ISO)		

Value	Unweighted Frequency	%
1 LTE 50% FMR	3072	5.9 %
2 50.1 - 100% FMR	13184	25.3 %
3 GT FMR	35876	68.8 %

Based upon 52132 valid cases out of 52132 total cases.

FMTCOSTMEDRELFMR — FMTCOSTMEDRELFMRCAT. CostMed Relative to FMR (Category)

Location: 708-724(width: 17; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
1 LTE 50% FMR	3536	6.8 %
2 50.1 - 100% FMR	17356	33.3 %
3 GT FMR	31240	59.9 %

Based upon 52132 valid cases out of 52132 total cases.

FMTINCRELFMRCAT — FMTINCRELFMRCAT. HH Income Relative to FMR (Category)

Location: 725-741(width: 17; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
.	3793	7.3 %
1 LTE 50% FMR	7420	14.2 %
2 50.1 - 100% FMR	10985	21.1 %
3 GT FMR	29934	57.4 %

Based upon 52132 valid cases out of 52132 total cases.

FMTCOST06RELAMI — FMTCOST06RELAMICAT. Cost06 Relative to Median Income (Category)

Location: 742-757(width: 16; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
1 LTE 30% AMI	5531	10.6 %
2 30 - 50% AMI	15531	29.8 %
3 50 - 60% AMI	7532	14.4 %
4 60 - 80% AMI	9525	18.3 %
5 80 - 100% AMI	5457	10.5 %
6 100 - 120% AMI	3193	6.1 %
7 120% AMI +	5363	10.3 %

Based upon 52132 valid cases out of 52132 total cases.

FMTCOST08RELAMI	FMTCOST08RELAMICAT. Cost08 Relative to Median Income (Category)

Location: 758-773(width: 16; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
1 LTE 30% AMI	5063	9.7 %
2 30 - 50% AMI	13583	26.1 %
3 50 - 60% AMI	6951	13.3 %
4 60 - 80% AMI	9421	18.1 %
5 80 - 100% AMI	6001	11.5 %
6 100 - 120% AMI	3578	6.9 %
7 120% AMI +	7535	14.5 %

Based upon 52132 valid cases out of 52132 total cases.

FMTCOST12RELAMI	FMTCOST12RELAMICAT. Cost12 Relative to Median Income (Category)

Location: 774-789(width: 16; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
1 LTE 30% AMI	4507	8.6 %
2 30 - 50% AMI	11276	21.6 %
3 50 - 60% AMI	5580	10.7 %
4 60 - 80% AMI	8141	15.6 %
5 80 - 100% AMI	6100	11.7 %
6 100 - 120% AMI	4355	8.4 %
7 120% AMI +	12173	23.4 %

Based upon 52132 valid cases out of 52132 total cases.

FMTCOSTMEDRELAMI	FMTCOSTMEDRELAMI. CostMed Relative to Median Income (Category)

Location: 790-805(width: 16; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
1 LTE 30% AMI	5267	10.1 %
2 30 - 50% AMI	14505	27.8 %
3 50 - 60% AMI	7257	13.9 %
4 60 - 80% AMI	9549	18.3 %
5 80 - 100% AMI	5748	11.0 %
6 100 - 120% AMI	3390	6.5 %
7 120% AMI +	6416	12.3 %

Based upon 52132 valid cases out of 52132 total cases.

FMTINCRELAMICAT	**HH Income Relative to Median Income (Category)**

Location: 806-821(width: 16; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
.	3793	7.3 %
1 LTE 30% AMI	7209	13.8 %
2 30 - 50% AMI	6972	13.4 %
3 50 - 60% AMI	3579	6.9 %
4 60 - 80% AMI	6303	12.1 %
5 80 - 100% AMI	5516	10.6 %
6 100 - 120% AMI	4508	8.6 %
7 120% AMI +	14252	27.3 %

Based upon 52132 valid cases out of 52132 total cases.

FMTASSISTED	**FMTASSISTED. Assisted Housing**

Location: 822-835(width: 14; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
.	34833	66.8 %
0 Not Assisted	14417	27.7 %
1 Assisted	2882	5.5 %

Based upon 52132 valid cases out of 52132 total cases.

FMTBURDEN	**Cost Burden**

Location: 836-850(width: 15; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
.	3793	7.3 %
1 Less than 30%	33553	64.4 %
2 30% to 50%	8563	16.4 %
3 50% or More	5678	10.9 %
4 No Income	545	1.0 %

Based upon 52132 valid cases out of 52132 total cases.

FMTSTATUS	**Occupancy Status**

Location: 851-871(width: 21; decimal: 0)

Variable Type: character (ISO)

Value	Unweighted Frequency	%
Occupied	48339	92.7 %
Vacant	3793	7.3 %

Based upon 52132 valid cases out of 52132 total cases.

Housing Affordability Data System
David A. Vandenbroucke, HUD
March 1, 2007

I. Introduction

The Housing Affordability Data System (HADS) is a set of housing-unit level datasets that measures the affordability of housing units and the housing cost burdens of households, relative to area median incomes, poverty level incomes, and Fair Market Rents. The purpose of these datasets is to provide housing analysts with consistent measures of affordability and burdens over a long period. The datasets are based on the American Housing Survey (AHS) national files from 1985 through 2005 and the metropolitan files for 2002 and 2004. Users can link records in HADS files to AHS records, allowing access to all of the AHS variables.

The HADS grew out of a project to provide similar tabulations to the Millennial Housing Commission (MHC) for the years 1985, 1995, and 1999.[1] The strength and value of the HADS is that it incorporates twenty years of housing data using assumptions and computations consistent with the practice of the housing analysts that contributed to the MHC. This allows policy deliberations to focus on real policy choices, without the distraction of debating how to handle minor or insignificant data changes. Note that HADS development continued after the commission published its report. Thus, tabulations using the HADS datasets will not be exactly the same as those published by the MHC.

This document is a summary of how we constructed the HADS. It is a description of data selection, affordability calculation, and tabulation categories. The document is aimed at housing analysts who are familiar with current issues and techniques of measuring housing affordability. Technical points concerning computer programming are relegated to footnotes. Those who are proficient in reading SAS code are encouraged to consult the program listings that accompany the datasets.

A. Data Sources

The main data sources are the American Housing Survey (AHS) national sample microdata, for the odd-numbered years in 1985-2005 and the AHS metropolitan sample microdata for 2002 and 2004.[2] Poverty income is based on the Census Bureau's official thresholds[3]. Area median income (AMI) and Fair Market Rent (FMR) data come from HUD calculations, as discussed below. We selected only records representing completed interviews for occupied and vacant units, excluding usual residence elsewhere (URE) and noninterview records.

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[1] The Millennial Housing Commission was established by the U.S. Congress in 2000 with the mission "to identify, analyze, and develop recommendations that highlight the importance of housing, improve the housing delivery system, and provide affordable housing for the American people, including recommending possible legislative and regulatory initiatives." MHC Research Director Eric Belskey asked HUD for assistance in tabulating American Housing Survey data to meet the Commission's data needs. For more information on the MHC, see http://govinfo.library.unt.edu/mhc/home.html .

[2] We plan to add additional files as new AHS survey results become available. Thus, the HADS may include additional files, for surveys conducted after this document was written.

[3] http://www.census.gov/hhes/poverty/threshld.html .

B.   Disclaimers

The work here is based on consensus agreements made among a group of about six HUD and MHC analysts. The techniques used do not necessarily represent HUD standards. The HADS datasets contain no proprietary or confidential data. The primary data source is the Public Use Files (PUFs) of the American Housing Survey. As the name implies, these files are available to the public.[4] The secondary sources of data are the HUD Fair Market Rents and Income Limits, which are public data.[5] HADS also makes use of the published poverty income thresholds. Thus, there is nothing in the HADS that anyone with the patience and programming skill could not reproduce.

HADS tabulations have no official sanction from the U.S. Department of Housing and Urban Development. We are making the datasets available as a tool for researchers to use as they wish. Any conclusions drawn from the analysis of HADS are those of the analysts, and not of HUD.

II.   Custom Variable Definitions for HADS Data

Each record in the HADS dataset represents one sampled housing unit.[6] The variables in the record include a subset of standard AHS variables plus custom, derived variables. This section discusses the latter. See appendix A for a complete list of the variables in each HADS file.

A.   Tenure

Tenure for occupied and vacant housing units is collapsed into the OWNRENT variable:

- Rental: Occupied units rented for cash and without payment of cash rent. Vacant for rent, vacant for rent or sale, and rented but not occupied.

- Owner: Owner occupied, vacant for sale, and sold but not occupied.

B.   Monthly Housing Costs

1. Housing Cost Concept

HADS measures monthly housing cost using a cash flow concept. It is the monthly expenditure for shelter, including utilities, insurance, and some other costs, as described below. For renters, our measurement is straightforward. For owners, we make four specific assumptions about interest rates, as explained below. The monthly housing cost variables are COST06, COST08, COST12, and COSTMED.

Note that our measure of housing cost does not account for the income tax deductibility of mortgage interest. Neither does it include an estimate of the opportunity cost of owners' capital investment. Finally, it

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[4] See http://www.huduser.org/datasets/ahs.html for information on how to download the datasets or order them on CD-ROM.

[5] Admittedly, some of the older files are difficult to find, particularly in electronic form.

[6] Since the AHS is a probability sample each sampled household represents many other households when making estimates using the sample weight.

also excludes expenditures for major repairs and replacements. It is simply a month-to-month cash flow measure.

The HADS includes housing cost estimates for both occupied and vacant units.

2. *Definition of Renter Costs*

For renters, housing cost is contract rent plus utility costs[7].

As is explained in the next section, there are four housing cost variables. Their values are identical for renters.

3. *Definition of Owner Costs*

Actual housing cost expenditures for owner-occupied units vary whether or not the household has a mortgage and, among mortgaged units, because of the historical contingency of the market interest rate when each household obtained or refinanced its mortgage. In order to measure affordability free of this contingency, we assume that *owners* hold fully amortizing 30-year fixed rate mortgages with 10 percent down payments.[8] The four basic cost measures are estimates of mortgage payments at 6, 8, and 12 per cent interest rates, plus the median interest rate in the AHS dataset for the survey year.[9] The amount financed is assumed to be the value of the unit, minus 10 per cent for the down payment. To each basic cost are added utility cost, other cost (see below), and an allowance for property insurance and property taxes. The combined amount of taxes and insurance is set at 1.5 percent of value per year.

Table 1 compares the median interest rate used in each HADS dataset with the mean rate reported by Freddie Mac's Primary Mortgage Market Survey (PMMS)[10]. Note that the HADS median is based on the stock of owner-occupied units in the given year, regardless of when the mortgage was made, while the PMMS mean is based on mortgage originations during the year.

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[7] For most renter households, this is the variable ZSMHC. However, in order to be consistent with current practice, cost for no-cash renters (TENURE=3) in 1985-1995 is calculated as UTILITY + OTHERCOST. (These variables are described later in the document.)

[8] Note that when we calculate housing cost burden for occupied units, we use the reported monthly housing cost, not this computed cost.

[9] The mortgage payment calculation uses the SAS function MORT.

[10] http://www.freddiemac.com/pmms/pmms30.htm .

Table 1
AHS and PMMS Interest Rates

Year	AHS Median	AHS Mean	PMMS Mean
1985	9.75	9.90	12.43
1987	9.50	9.41	10.21
1989	9.75	9.66	10.32
1991	9.50	9.58	9.25
1993	8.25	8.52	7.31
1995	8.00	8.37	7.93
1997	8.00	8.12	7.60
1999	7.38	7.68	7.44
2001	7.25	7.60	6.97
2002	7.00	7.32	6.54
2003	6.25	6.60	5.83
2004	6.00	6.11	5.84

4. *Imputing Utility Costs for Vacant Units*

Housing cost includes utility costs. The AHS does not collect utility costs for vacant units. However, the survey does ask if the costs would be paid by the tenant or included in rent. We use this information to impute utility costs to vacant units using a hot-deck procedure.

For each utility (gas, oil, electricity, other fuel, trash collection, and water), the allocation matrix has four dimensions:

- Monthly rent or mortgage payment (16 categories, $100 intervals). We estimate the mortgage payment the same way as in the housing cost section above, assuming an 8 per cent interest rate.

- Structure type (2 categories). Single-unit or multi-unit.

- Region (4 categories). The four Census regions.

- Tenure (2 categories). Owner or renter.

As the data is processed, we assign the utility costs paid by occupied units to the allocation matrix in the appropriate cells. When a vacant unit is encountered and the appropriate variables indicate that the occupant would pay the costs, then we read the utility cost from the appropriate cell and assign it to the unit.

A separate utility cost variable (UTILITY) is included in the dataset, the sum of all applicable utility costs.

5. *Other Costs*

The components of monthly housing cost (ZSMHC) in the AHS have varied over the life of the survey. In order to measure cost consistently, certain non-utility costs are included in the HADS cost measure:

- Home owners' or renters' insurance. For vacant units, this is allocated by the same hot-deck procedure as utility cost.

- Land rent, where distinct from unit rent.

- Condominium fees, where applicable.

- Other mobile home fees, where applicable.

A separate variable (OTHERCOST) is the sum of these items.

C. Housing Cost Burden

Housing cost burden is simply a household's monthly housing cost divided by its monthly income[11]. In particular, note that we *do not* use mortgage payment assumptions discussed in the "Housing Costs" section above when calculating burden.[12] Households with zero or negative income are given the special code of BURDEN = -1. Vacant units, not being households, have missing values for BURDEN.

D. Assisted Housing

In the 1985-1995 datasets, a unit is assisted if:

- Proj = 1   [Unit is public housing]
- OR Sub = 1   [Household receiving a subsidy]
- OR SubInc = 1   [Household reports income for setting rent]
- OR SubLoc = 1   [Household receiving state or local subsidy]

In the 1997 and later datasets, a unit is assisted if:

- Renew = '1' AND (RepHA = '1' OR RepHA = '2'))   [Income reporting needed for lease renewal and this is reported to the landlord, building manager, or housing authority]
- OR SubRnt = '1'   [Household receiving a subsidy]
- OR Proj = '1'   [Unit is public housing]
- OR Vcher='1'   [Household has a voucher]
- OR Apply='1'   [Applied to management to get public housing]

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[11] In most cases, BURDEN = ZSMHC / ZINC2. However, for no-cash rent households, BURDEN = (UTILITY + OTHERCOST)/ZINC2.

[12] Affordability measures where a housing unit fits in the cost distribution, regardless of the circumstances of the current occupants. Housing cost burden measures the actual expenditures of the household that occupies the unit.

Note that the AHS has known problems with over reporting of subsidy status[13]. Thus, this classification should be used with caution.

E.   Total Salary Income

Total salary income (TotSal) is useful for identifying the "working poor" and measuring the labor force attachment of a household. This variable is simply the sum of wage and salary income (Sal) over all members of the household.[14]

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[13] For example, see Gordon, Erika L.; Chipungu, Sandra; Bagley, Lisa Marie; and Zanakos, Sophia I. 2005. *Improving Housing Subsidy Surveys: Data Collection Techniques for Identifying the Housing Subsidy Status of Survey Respondents*. Prepared for Office of Policy Development and Research, U.S. Department of Housing and Urban Development by ORC Macro Calverton, Maryland, March. http://www.huduser.org/publications/pdf/datacollect.pdf

[14] In AHS surveys before 2005, the SAL variable for non-family household members (lodgers, roomates, etc.) included those persons' non-labor as well as labor income. Thus, TotSal may be an overestimate of household labor income.

III.   Affordability Measurement Standards

The three commonly used affordability measures express cost of a housing unit relative to 1) the cost of safe, sound and adequate housing, 2) what a family earning the median income could be expected to pay for housing, or 3) what a family with income at the poverty level could be expected to pay for housing. Specifically, we provide three standards for assessing the affordability of housing units: fair market rent (FMR), area median income (AMI), and poverty-level income. For FMR, we express the monthly cost of each unit as a percentage of FMR. For the other two, we rate units as affordable at a certain percentage of the income measure, assuming that 30 percent of income is spent on housing. These three standards were chosen because each is commonly used in affordability discussions. Housing cost relative to AMI is perhaps the most common affordability standard. The FMR is the payment standard for housing assistance programs and is often used as a proxy for the cost of an "affordable" unit in housing literature. Poverty income is a widely recognized threshold, and is often used in the general press.

The affordability standards are used for two purposes:

- To classify *households* according to their ability to pay for housing.

- To classify *housing units* according to how expensive they are to occupy.

HADS includes variables that accomplish both of these purposes.[15]

A.   Assigning Area Median Income and Fair Market Rent

HUD estimates AMI and FMR annually for all metropolitan areas and non-metropolitan counties.[16] However, the AHS public use file does not provide county identification, nor does it identify metropolitan areas of less than 100,000 population. Thus, HADS relies on certain procedures for linking AHS records to the appropriate AMIs and FMRs. The data system uses a somewhat crude system for this linking for files covering 1985-2001, but a more straightforward and accurate system is used for national files beginning with 2003 and all metropolitan files.

For the years 1985-2001, we estimate *AMI* and *FMR* for each unit using a computer program that was developed over time by a number of HUD analysts. This program uses the official HUD AMIs and FMRs in a base year and adjusts it for inflation[17] to estimate the corresponding values in the year desired, for each location. Locations include the metropolitan areas that are identified in the AHS (SMSA). Units for which we do not

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[15] There is a set of continuous and categorical variables for each of the three standards. For example, the continuous variable called IncRelFMRPct (Income Relative to FMR—Percent), and the corresponding categorical variable is IncRelFMRCat (Income Relative to FMR—Category). Similarly, the files contain variables that classify the housing units according to their monthly costs. Note that since there are four definitions of housing costs (based on interest rates) and three affordability standards, there are twelve measures of affordability for each unit, each with a continuous and a categorical variable. Thus, the continuous variable that measures cost relative to FMR, assuming a 6 percent interest rate is Cost06RelFMRPct, and the corresponding categorical variable is Cost06RelFMRCat.

[16] Analysts of the Economic Market Analysis Division, within the Office of Policy Development and Research, perform this task. Data for recent years is available at http://www.huduser.org/datasets/pdrdatas.html . Follow the "income limits" link for AMI.

[17] Inflation adjustment is based on the national Consumer Price Index, all items, all urban consumers.

have this information are classified by heating degree-days, metropolitan status, and Census region[18]. Within each such area, the AMI and FMR are estimated as a weighted average, using 1990 population as weights. Estimates for 1985-1991 use a base year of 1993, adjusted backwards for inflation. Estimates for 1993-1995 use data from the year in question, with no need for an inflation adjustment. Estimates for 1997-2001 use a base year of 1995, adjusted forwards for inflation.

Beginning with the 2003 survey, the national AHS public use file (PUF) includes AMI and FMR estimates based on HUD published data for the current year. Thus, there is no need for inflation adjustment. HUD data were matched to AHS records by metropolitan area or county, using the (confidential) Census internal file. In order to preserve confidentiality, the values for records representing units located outside of the metropolitan areas that the AHS identifies were replaced with weighted averages as described above, except that the standard AHS weight variable is used.

The HADS files based on the AHS metropolitan surveys for 2002 and 2004 simply use the published AMI and FMR data for the appropriate metropolitan areas and years, without further adjustment. (Since the metro area is, necessarily, identified for records in metropolitan surveys, there was no need to use averaged values.)

B.   Measuring Household Income and Unit Affordability Relative to Area Median Income

AMI is used for two purposes: 1) To classify *households* on the basis of income received, and 2) to classify *housing units* on the basis of the income needed to afford them ("affordability"). These two purposes require different kinds of adjustments to the basic income measures.

1. AMI Income Variables

What we are calling AMI is actually based on four related income measures:

1. *Median Income* (LMed), which is not adjusted for the number of persons in the household.
2. *Low Income* (L80), which *is* adjusted for the number of persons in the household.
3. *Very Low Income* (L50), which *is* adjusted for the number of persons in the household.
4. *Extremely Low Income* (L30), which *is* adjusted for the number of persons in the household. L30 is available in the AHS PUF only for 2003 and later national surveys.

L80 and L50 are HUD programmatic income limits. As their variable names imply, they are based on 80 percent and 50 percent of area median income, respectively. However, these income limits are subject to a number of administrative adjustments, most of which serve to put floors under their values. Thus, these income limits are often *higher* than simply 80 or 50 percent of the corresponding median income.[19] These adjustments affect L50 more than L80. We use the official programmatic income limits in order to classify households and housing units in a way consistent with the rules for program eligibility.

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[18] That is to say, using DEGREE, METRO or METRO3, and REGION variables. METRO and METRO3 indicate whether a unit is in a central city, suburb, or outside a metropolitan area. Further subdivision is available for some survey years.

[19] Explaining the adjustments that go into Low Income and Very Low Income is beyond the scope of this document. Interested parties might want to read the official summary at http://www.huduser.org/datasets/il/fmr02/briefing02.pdf .

2. *Real Income Growth Adjustment*

While the AMI estimation program for 1985-2001 adjusts for inflation, median incomes have been rising faster than inflation. In order to correct for this tendency to underestimate median income, HADS applies an additional real income growth adjustment:[20]

Table 2
Real Income Growth Adjustment Factors

	(1)	(2)	(3)	(4)	(5)
Year	Median Income[a]	Ratio to Base Year[b]	CPI	Ratio to Base Year[b]	Adjustment Factor[c]
1985	28,261	0.7119	107.6	0.7446	0.9560
1987	30,400	0.7657	113.6	0.7862	0.9740
1989	34,000	0.8564	124.0	0.8581	0.9980
1991	38,000	0.9572	136.2	0.9426	1.0155
1993	**39,700**	**1.0000**	**144.5**	**1.0000**	**1.0000**
1995	**40,200**	**1.0000**	**152.4**	**1.0000**	**1.0000**
1997	43,500	1.0821	160.5	1.0531	1.0275
1999	47,800	1.1891	166.6	1.0932	1.0877
2001	52,500	1.3060	177.1	1.1621	1.1238

[a]Source: HUD Economic Market Analysis Division
[b]Base year for 1985-1991 is 1993. Base year for 1997-2001 is 1995.
[c]Column (2) divided by column (4).

Note that the data after 2001 do not need this adjustment.

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[20] In the dataset, the adjusted quantities are the variables GLMED, GL80, and GL50, "**G**rowth-adjusted income." To simplify programming, these variables are present in all datasets, even when no adjustment is required.

3. Classifying Household Incomes by AMI

HUD programmatic income eligibility rules allow larger households to have higher incomes while still qualifying for program participation. As noted above, the published L80, L50, and L30 income measures include these adjustments for the number of persons in the household, but LMed does not. In order to classify households by income in a consistent manner, we apply the adjustments to LMed as well. We multiply LMed by these standard HUD adjustment factors:[21]

Table 3
Household Size Adjustments to Income

Persons	Adjustment
1	0.70
2	0.80
3	0.90
4	1.00
5	1.08
6	1.16
7+	(1.16 + 0.08(Persons-6))

After making these adjustments, we divide households into income classes, as shown in the table below.[22] Note that the lower income classes are based on L30, L50, and L80, and thus include the effects of the HUD administrative adjustments.

We make a final check of households with zero or negative income. The AHS underestimates household income, compared to other surveys. In particular, an unusually high proportion of households reports zero or negative incomes, compared to other surveys. To partially correct for this bias, households that report zero or negative incomes but are living in adequate, uncrowded[23] units and paying at least the Fair Market Rent in housing costs are assigned to the income category 5 ($\leq$ LMED).

Table 4
Income Categories

Category	Income is…	Label	Comments
1	$\leq 0.60 * L50$	LTE 30% AMI	0.60*0.50 = 0.30 (1985-2001, metros)
1	$\leq$ L30	LTE 30% AMI	2003 and later nationals
2	$\leq$ L50	30.1 - 50% AMI	
3	$\leq 1.20 * L50$	50.1 - 60% AMI	1.20*0.50 = 0.60
4	$\leq$ L80	60.1 - 80% AMI	
5	$\leq$ LMED	80.1 - 100% AMI	
6	$\leq 1.20 *$ LMED	100.1 - 120% AMI	
7	$> 1.20 *$ LMED	120% AMI +	

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[21] In the dataset, this is the variable APLMed, with the "AP" standing for "adjusted for persons."

[22] In the dataset, these are the "IncRelAMI" variables.

[23] "Adequate" means ZAdeq=1. "Uncrowded" means no more than 1 person per room (Per/Rooms $\leq$ 1).

4. *Classifying Unit Affordability by AMI*

Unit affordability relative to AMI is the percentage of area median income needed to afford the monthly housing cost associated with that unit. We use the standard assumption that a unit is affordable if the household spends no more than 30 percent of its income on housing. Thus, the basic relationship is:

$$\text{Affordability} = \frac{(\text{Monthly Housing Cost}) \times 12}{\text{AMI} \times 0.30} \times 100$$

Because the number of persons in the current household is irrelevant to measuring the affordability of the unit, we do not apply the household size adjustment to LMED. In addition, we de-adjust L30, L50, and L80 (which are already adjusted for number of persons), by dividing them by the adjustment factors listed above.[24] Because the number of bedrooms in the unit reflects the likely household size the unit would attract, we adjust the AMI for number of bedrooms, as shown in Table 5.[25]

Table 5
Number of Bedrooms Adjustments to Income[26]

Bedrooms	Adjustment
0	0.70
1	0.75
2	0.90
3	1.04
4	1.16
5	1.28
6	1.40
7+	1.40 + 0.12(bedrooms - 6)

We then express the percentage of AMI needed to afford the unit, using the categories described above in Table 4.[27]

C. Measuring Household Income and Unit Affordability Relative to Fair Market Rent

Unit affordability relative to FMR is simply a matter of expressing the monthly housing cost as a percentage of the FMR.[28]

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[24] The income limits estimation program treats vacant units as 1-person households. Thus, these units are deadjusted as if they were 1-person households.

[25] The income levels adjusted for number of bedrooms are called ABL30, ABL50, ABL80, and ABLMed, where the "AB" stands for "adjusted for bedrooms."

[26] The adjustment factors are the ones required by statute for the Low Income Housing Tax Credit.

[27] In the dataset, these are the "CostnnRelAMIPct" and CostnnRelAMICat variables, where "nn" is a number indicating the interest rate (06, 08, 12, or "med" for median). The continuous variables, CostnnRelAMIPct, uses ABLMed in its divisor. The values of the categorical variables, CostnnRelAMICat, are assigned by beginning at the top of the list in Table 4 and choosing the first condition that is true.

We calculate household income relative to FMR by calculating the maximum amount the household could afford to spend on housing (30 percent of monthly income[29]) and expressing this as a percentage of the FMR.[30] We use these categories:

Table 8
Fair Market Rent Categories

Category	Label
1	LTE 50% FMR
2	50.1-100% FMR
3	GT FMR

D.   Measuring Affordability Relative to Poverty Income

We base poverty income on official poverty thresholds, given year, number of persons, number of children[31], and whether the householder is above age 65. For vacant units, we allocate the number of persons and number of adults according to number of bedrooms, as shown in Table 6.

Table 6
Poverty Income Household Size Assumptions
for Vacant Units

Bedrooms	Persons	Children	Elderly
0-1	1	0	No
2	2	1	No
3+	4	2	No

We calculate household income relative to poverty income as a multiple of the poverty threshold.[32]

Unit affordability relative to poverty income is the income a household would need in order to afford the monthly housing cost, expressed as a multiple of the poverty income threshold.[33]

We use these classes for the categorical variables:

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[28] In the dataset, these are the "CostnnRelFMR" variables.

[29] Thus, $0.30*ZInc2/12$ as a percentage of FMR.

[30] In the dataset, these are the "IncRelFMR" variables.

[31] The number of children is calculated as $Per – ZAdult$. However, if $Zadult = 0$, then the number of children is reduced by 1. In other words, the householder is always considered to be an adult.

[32] In the dataset, these are the "IncRelPov" variables.

[33] In the dataset, these are the "CostnnRelPov" variables.

Table 7
Poverty Income Categories

Category	Label
1	LTE Poverty
2	100-150% Poverty
3	150-200% Poverty
4	200%+ Poverty

IV. Dataset Notes

A. Summary of Classification Categories

This section summarizes the classification intervals used for all variables in the dataset.

- Adequacy: adequate, moderately inadequate, severely inadequate, vacant–no information.

- Affordability and household income with respect to AMI: less than 30%, 30-50%, 50-60%, 60-80%, 80-100%, 100-120%, over 120%.

- Affordability and household income with respect to FMR: less than 50%, 50-100%, greater than FMR.

- Affordability and household income with respect to poverty income: below poverty, 100-150%, 150-200%, over 200%.

- Bedrooms: Studio (0 bedrooms), 1 bedroom, 2 bedrooms, 3 bedrooms, 4 or more bedrooms.

- Burden: Less than 30%, 30% to 50%, 50% or More, No Income.

- Location: central city, suburb, nonmetropolitan.

- Structure type: Single unit, 2-4 units, 5-19 units, 20-49 units, 50+ units, mobile homes.

- Tenure: Owner, renter.

- Year Built (age): 2000-2004, 1990-1999, 1980-1989, 1960-1979, 1940-1959, Pre-1940.

B. Formatted Variables

Analysts often use the HADS datasets to perform tabulations using SAS, which are then output to spreadsheets for presentation or further analysis. However, SAS PROC EXPORT simply exports the numerical codes of categorical variables instead of the formatted value labels. In order to make spreadsheets easier to understand, the HADS datasets include a set of formatted variables. These are character variables containing value labels rather than numeric codes. Formatted variable names are of the form FMTvarname, where "varname" is the name of the corresponding numeric variable in the dataset. For example, FMTIncRelAMICat is the formatted version of IncRelAMICat (income relative to area median income, category).

C. Variable Names

While we tried to keep variable names consistent across datasets, in some cases variables names differ. The most common reason for this is that variable names changed in the AHS. We decided to keep the HADS variable names consistent with the AHS, even if that meant they would differ across years. The table below lists the variable names that are not constant.

<div align="center">

Table 8
Variable Names That Differ by Year

Description	Name, 1985-1995	Name, 1997-2005
Age of householder	AGE	AGE1
Formatted metro status	FMTMetro	FMTMetro3
Interview status	ISTATUS	STATUS
Metro status	METRO	METRO3[34]

</div>

Any variable name that is common between HADS and AHS is the same as AHS. Whenever we modified an AHS variable for HADS purposes, we did so by creating a new variable. Thus, OWNRENT is a collapsed version of TENURE.

D.   Linking Files

The HADS files are based on the AHS public use files, but they include only those AHS variables that we believe to be most useful in analyzing housing affordability. However, users can make use of all the AHS variables by linking the HADS files to the standard AHS PUFs. In addition, since the AHS is a longitudinal survey, successive HADS files can be linked in order examine changes in housing affordability over time, at the housing unit level.

1. *Linking to AHS Files*

National HADS files may be linked to the corresponding AHS PUFs by matching records on the CONTROL variable. As released, the national HADS files are already sorted in CONTROL order. The metropolitan HADS files may be linked to the corresponding PUFs by matching on SMSA and CONTROL. As released, the metropolitan SAS files are already sorted in SMSA and CONTROL order. Note that some components of the PUF, such as the PERSON file, have a one-to-many relationship with the housing units. For details on linking to these files, see the notes in the main AHS codebook.

2. *Longitudinal Linking*

HADS files may be linked to one another for longitudinal analysis. The technique for linking records is the same as for linking to the AHS: match on CONTROL (CONTROL and SMSA for metro surveys). Note that the AHS (and hence HADS) follows housing units, not households. Thus, analysts interested in households must be careful to use the SAMEHH variable[35] to detect whether the household has changed in the interval between surveys. Another consideration is how to weight the linked records. The AHS WEIGHT variable is adjusted to current-year control totals and will not provide consistent longitudinal estimates. For a discussion

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[34] The metropolitan surveys files use METRO, regardless of year. The meaning of the codes in the metropolitan METRO variable is different from the

[35] SAMEHH is not on the HADS files. You must link to the AHS to use it.

on longitudinally weighting AHS files, see HUD's Components of Inventory Change reports at
http://www.huduser.org/datasets/cinch.html.

E.   Optional Cost Patch for 1985-1993

About 8-9 per cent of owner-occupied cases in the 1985-1993 AHS have missing values for monthly housing cost (ZSMHC). This can occur because mortgage payment information is missing. In order to avoid arbitrary data changes, we left these missing values in HADS. However, we provide an optional program, *HADS85-93 Cost Patch.SAS*, for users who would like to patch these cases with reasonable values. The program estimates ZSMHC values using this procedure:

1. If the mortgage amount is missing, assume 90% of Value (10% down payment).
2. If the interest rate is missing, assume the median interest rate over units in that year's AHS.
3. If term is missing, assume 30 years.
4. If property tax & insurance are missing, assume 1.5% of value per year.

Given the above information, the program estimates the monthly mortgage payment using the SAS MORT function. The allocated value of ZSMHC is the sum of this mortgage payment, utility cost, and the property tax & insurance amount. The optional program adds an additional variable to the dataset, EstCostFlag, which is equal to 1 when this allocation has been performed and zero otherwise. It also calculates BURDEN for the patched records.

See the comments in the program itself for instructions on how to use it.

V.   <u>Contact Information</u>

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Appendix A. Variable Listing

This is a list of all variables in the HADS datasets. A few variables (noted below) are available only in files for certain years.

Variable	Description	Notes
ABL30	Extremely Low Income Adjusted for # of Bedrooms	Only national, 2003 & later
ABL50	Very Low Income Adjusted for # of Bedrooms	
ABL80	Low Income Adjusted for # of Bedrooms	
ABLMED	Median Income Adjusted for # of Bedrooms	
AGE	Age of head of household	1985-1995
age1	Age of head of household	1997& later
APLMED	Median Income Adjusted for # of Persons	
ASSISTED	Assisted Housing	
BEDRMS	# of bedrooms in unit	
BUILT	Year unit was built	
BURDEN	Housing cost as a fraction of income	
CONTROL	AHS control number	
COST06	Housing cost at 6 percent interest	
COST06RELAMICAT	Cost06 Relative to Median Income (Category)	
COST06RELAMIPCT	Cost06 Relative to Median Income (Percent)	
COST06RELFMRCAT	Cost06 Relative to FMR (Category)	
COST06RELFMRPCT	Cost06 Relative to FMR (Percent)	
COST06RELPOVCAT	Cost06 Relative to Poverty Income (Category)	
COST06RELPOVPCT	Cost06 Relative to Poverty Income (Percent)	
COST08	Housing cost at 8 percent interest	
COST08RELAMICAT	Cost08 Relative to Median Income (Category)	
COST08RELAMIPCT	Cost08 Relative to Median Income (Percent)	
COST08RELFMRCAT	Cost08 Relative to FMR (Category)	
COST08RELFMRPCT	Cost08 Relative to FMR (Percent)	
COST08RELPOVCAT	Cost08 Relative to Poverty Income (Category)	
COST08RELPOVPCT	Cost08 Relative to Poverty Income (Percent)	
COST12	Housing cost at 12 percent interest	
COST12RELAMICAT	Cost12 Relative to Median Income (Category)	
COST12RELAMIPCT	Cost12 Relative to Median Income (Percent)	
COST12RELFMRCAT	Cost12 Relative to FMR (Category)	
COST12RELFMRPCT	Cost12 Relative to FMR (Percent)	
COST12RELPOVCAT	Cost12 Relative to Poverty Income (Category)	
COST12RELPOVPCT	Cost12 Relative to Poverty Income (Percent)	
COSTMED	Housing cost at Median interest	
COSTMedRELAMICAT	CostMed Relative to Median Income (Category)	
COSTMedRELAMIPCT	CostMed Relative to Median Income (Percent)	
COSTMedRELFMRCAT	CostMed Relative to FMR (Category)	
COSTMedRELFMRPCT	CostMed Relative to FMR (Percent)	
COSTMedRELPOVCAT	CostMed Relative to Poverty Income (Category)	
COSTMedRELPOVPCT	CostMed Relative to Poverty Income (Percent)	
FMR	Fair market rent (average)	
FMTASSISTED	Assisted Housing	
FMTBEDRMS	# of bedrooms in unit	
FMTBUILT	Year unit was built	

Variable	Description	Notes
FMTBURDEN	Cost Burden	
FMTCOST06RELAMICAT	Cost06 Relative to Median Income (Category)	
FMTCOST06RELFMRCAT	Cost06 Relative to FMR (Category)	
FMTCOST06RELPOVCAT	Cost06 Relative to Poverty Income (Category)	
FMTCOST08RELAMICAT	Cost08 Relative to Median Income (Category)	
FMTCOST08RELFMRCAT	Cost08 Relative to FMR (Category)	
FMTCOST08RELPOVCAT	Cost08 Relative to Poverty Income (Category)	
FMTCOST12RELAMICAT	Cost12 Relative to Median Income (Category)	
FMTCOST12RELFMRCAT	Cost12 Relative to FMR (Category)	
FMTCOST12RELPOVCAT	Cost12 Relative to Poverty Income (Category)	
FMTCOSTMEDRELAMICAT	CostMed Relative to Median Income (Category)	
FMTCOSTMEDRELFMRCAT	CostMed Relative to FMR (Category)	
FMTCOSTMEDRELPOVCAT	CostMed Relative to Poverty Income (Category)	
FMTINCRELAMICAT	HH Income Relative to Median Income (Category)	
FMTINCRELFMRCAT	HH Income Relative to FMR (Category)	
FMTINCRELPOVCAT	HH Income Relative to Poverty Income (Category)	
FMTMETRO	CENTRAL CITY / SUBURBAN STATUS	National 1985-1995, all metro
FMTMETRO3	CENTRAL CITY / SUBURBAN STATUS	National 1997 & later
FMTOWNRENT	Owner/Renter Status (adjusted)	
FMTREGION	Census Region	National only
FMTSTATUS	Occupancy Status	
FMTSTRUCTURETYPE	Structure Type	
FMTZADEQ	ADEQUACY OF UNIT	
GL30	Growth-adjusted extremely low income	National 2003 & later
GL50	Growth-adjusted very low income	
GL80	Growth-adjusted low income	
GLMED	Growth-adjusted median income	
INCRELAMICAT	HH Income relative to AMI (category)	
INCRELAMIPCT	HH Income relative to AMI (percent)	
INCRELFMRCAT	HH Income Relative to FMR (Category)	
INCRELFMRPCT	HH Income Relative to FMR (Percent)	
INCRELPOVCAT	HH Income Relative to Poverty Income (Category)	
INCRELPOVPCT	HH Income Relative to Poverty Income (Percent)	
IPOV	Poverty Income	
ISTATUS	Interview status	1985-1995
L30	Extremely low income limit (average)	National 2003 & later
L50	Very low income limit (average)	
L80	Low income limit (average)	
LMED	Area median income (average)	
METRO	CENTRAL CITY / SUBURBAN STATUS	National 1985-1995, all metro
METRO3	CENTRAL CITY / SUBURBAN STATUS	National 1997 & later
NUNITS	# of units in building	
OTHERCOST	Insurance, condo, land rent, other mobile home fees	
OWNRENT	Tenure (adjusted)	
PER	# of persons in household	
REGION	Census Region	
ROOMS	# of rooms in unit	
SMSA	1980 design PMSA code	Metro only
STATUS	Interview status	1997 & later

Variable	Description	Notes
STRUCTURETYPE	Recoded structure type	
TENURE	Owner/renter status of unit	
TOTSAL	Total Wage Income	
TYPE	Structure Type	
UTILITY	Monthly utility cost	
VACANCY	Vacancy status	
VALUE	Current market value of unit	
WEIGHT	Final weight	
ZADEQ	Recoded adequacy of housing	
ZINC2	Household Income	
ZSMHC	Monthly housing costs	

Appendix B.
Sample Design and Weighting

SAMPLE AREAS

The 2002 American Housing Survey Metropolitan Sample (AHS-MS) provides information on eight 1970-based metropolitan areas and five 1990-based metropolitan areas interviewed as part of the American Housing Survey (AHS), which was conducted by the U.S. Census Bureau for the Department of Housing and Urban Development.

The eight 1970-based metropolitan areas are:

- Anaheim-Santa Ana, CA
- Buffalo, NY
- Dallas, TX
- Fort Worth-Arlington, TX
- Milwaukee, WI
- Phoenix, AZ
- Riverside-San Bernardino-Ontario, CA
- San Diego, CA

These eight metropolitan areas were last interviewed in 1994.

The five 1990-based metropolitan areas are:

- Charlotte, NC-SC
- Columbus, OH
- Kansas City, MO-KS
- Miami-Fort Lauderdale, FL
- Portland, OR-WA

These five metropolitan areas were last interviewed in 1995.

Most of these metropolitan areas are consistent with the 1993 Office of Management and Budget (OMB) definitions of the metropolitan statistical area (MSA), consolidated metropolitan statistical area (CMSA), or primary metropolitan statistical area (PMSA) with the following exceptions:

- Dallas, TX does not include Henderson and Hunt Counties, TX from the 1993 OMB definition for the Dallas, TX PMSA.
- Fort Worth-Arlington, TX does not include Hood and Parker Counties, TX from the 1993 OMB definition for the Fort Worth-Arlington, TX PMSA.
- Phoenix, AZ does not include Pinal County, AZ from the 1993 OMB definition for the Phoenix, AZ MSA.

Interview Schedules

The metropolitan areas selected for AHS-MS are scheduled to be interviewed on a rotating basis once every six years. The Census Bureau collected 2002 AHS-MS data between late February and late September 2002. Initially, the sample in each metropolitan area was uniformly distributed throughout nine panels.

Due to budget constraints, panels were dropped in the following metropolitan areas in 2002:

- In Miami-Fort Lauderdale, all units in five and a half panels
- In Phoenix, all units in three panels
- In all other metropolitan areas, all units in one panel

The cases in the eight remaining panels were assigned to three clusters to be sent out for interview. Cluster 1 was made up of three panels; cluster 2 was made up of four panels; and cluster 3 was made up of one panel. Interviewing for cluster 1 began on February 25, 2002; interviewing for cluster 2 began on May 1; and interviewing for cluster 3 began on July 15. All interviewing was completed by September 30, 2002.

Sample Size

Table B-1 summarizes the interview activity for each of the 2002 metropolitan areas in this report series. The table provides the weighted response rate, the number of eligible units (comprised of completed interviews and noninterviews), and the number of units visited but ineligible for interview.

Designation of AHS-MS Sample Housing Units

The sample housing units in the areas designated to be interviewed for the 2002 AHS-MS consisted of the following categories which are described in the following sections:

1. All sample housing units that were interviewed in the previous survey.

2. All sample housing units that were Type A noninterviews (that is, units eligible to be interviewed) or Type B noninterviews (that is, units not eligible for interview at the time of the survey but which could become eligible in the future) in the previous survey.

Table B-1. **Interview Activity for the 2002 American Housing Survey Metropolitan Areas**

Metropolitan area	Weighted response rate[1] (percent)	Eligible units			Ineligible units[3]
		Total	Interviewed	Not interviewed[2]	
2002 AHS-MS total	**92**	**58,791**	**54,022**	**4,769**	**2,701**
Anaheim-Santa Ana, CA	92	4,537	4,178	359	108
Buffalo, NY	93	3,826	3,565	261	277
Charlotte, NC-SC	92	4,736	4,352	384	262
Columbus, OH	91	4,686	4,270	416	201
Dallas, TX	90	4,790	4,283	507	315
Fort Worth-Arlington, TX	90	4,186	3,759	427	284
Kansas City, KS	93	4,493	4,178	315	232
Miami-Fort Lauderdale, FL	94	4,467	4,203	264	200
Milwaukee, WI	92	4,206	3,860	346	195
Phoenix, AZ	93	4,527	4,197	330	162
Portland, OR-WA	92	4,736	4,352	384	112
Riverside-San Bernardino-Ontario, CA	92	5,240	4,816	424	225
San Diego, CA	92	4,361	4,009	352	128

[1]The weighted response rate is computed by dividing the number of weighted interviews by the total weighted number of cases eligible for interview and multiplying by 100.

[2]Sample units were visited but occupants were not at home after repeated visits or were unavailable for other reasons.

[3]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.

For a list of reasons for Type A and Type B noninterviews, see Appendix A for the definition of "Noninterview."

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

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

Sample Selection for 1970-Based Metropolitan Areas

The Census Bureau grouped the housing units enumerated in the 1970 Census of Population and Housing in the United States into two frames: the unit/group quarters and the area frame. These frames were defined as follows:

1. Housing units in an area where construction of new homes was monitored by building permits were placed in the unit/group quarters frame.

2. Housing units in an area that did not issue permits for new construction were placed in the area frame.

In addition to these two frames, all new construction housing units that were built after the 1970 Census in areas that issued building permits were placed into a separate frame, called the permit frame.

Table B-2 presents the percentage of AHS-MS sample drawn from each frame.

Unit/group quarters frame. The Census Bureau selected the major portion of the sample in each of the metropolitan areas from a file that represented the 1970 Census 20-percent sample of housing units enumerated in permit-issuing areas. The occupied housing unit records were stratified by race of the head of household (non-Black/Black), tenure (renter/owner), family size, central city/balance, and family income. The vacant records were stratified into four categories pertaining to central city/balance, and the value or rent associated with the vacant housing units. Whenever a record was selected to be in sample, the housing unit record adjacent to it on the file was also included in sample, resulting in a clustered sample.

The Census Bureau stratified the group quarters and special place records 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 that contained an expected four housing units was then selected.

Permit frame. Before February 1984, the Census Bureau sorted the list of permits by the date the permits were issued and then selected clusters of an expected four (usually adjacent) housing units. From February 1984 through April 1994, the list of permits was sorted 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 selected and then subsampled so that two of the four housing units originally selected were kept in sample. After April 1994, the list of permits was sorted by 1990 central city and balance of the metropolitan area, permit office, and the date the permit was issued. Clusters of approximate size four were selected and then were

sampled down to one unit. If the original clusters were larger than four, the units were sampled at 1 in 4.

Area frame. The Census Bureau selected the remainder of the AHS-MS sample from areas not under the jurisdiction of permit-issuing offices. The first step was the selection of a sample of census enumeration districts. The EDs were stratified by census tract within the central city and within the balance of the metropolitan area and were then divided into segments with an expected size of four housing units. One of these segments within each sample ED was selected and all housing units in existence at the time of interview in these selected segments were eligible for sample.

Sample Selection for the AHS-MS Coverage Improvement Program

The Census Bureau implemented the AHS-MS Coverage Improvement Program to correct the following deficiencies in the AHS-Metropolitan Area sample from the 1970-based unit frame universe and the 1970-based permit frame:

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

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

3. Housing units missed in the 1970 Census.

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

5. Houses moved onto their present site since the 1970 Census.

6. 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 reports in the H170 series for the years 1976 through 1981.

AHS-MS Sample Adjustment

In order to meet their needs, the survey sponsor requested changes to the sample design for these 1970-based metropolitan areas. These sample adjustments were initially reflected in 1984 for Buffalo and Milwaukee; in 1985 for Dallas, Fort Worth, and Phoenix; in 1986 for Anaheim and Riverside; and in 1987 for San Diego.

The sample adjustments achieved two criteria:

1. A sample size of 4,250 in each metropolitan area.

2. A sample having an equal number of owners and renters

Sample Selection for the 1990-Based Metropolitan Areas

The Census Bureau initially grouped the housing units enumerated in the 1990 Census of Population and Housing into census blocks and divided these blocks into two frames; the unit/group quarters frame and the area frame, as follows:

1. Blocks located in an area that issued permits for new construction were placed in the unit/group quarters frame.

2. All other blocks were assigned to the area frame.

The unit/group quarters frame was then split into the unit frame and the group quarters frame by removing all groups quarters and placing them in a separate frame. In addition, to coordinate with another Census Bureau survey a subset of census blocks in the unit frame which contained sample units selected by this other survey was moved to the area frame.

All new construction housing units that were built after the 1990 Census in areas where construction of new homes was monitored by building permits were placed into a separate frame, called the permit frame.

Sampling operations for all frames were performed separately within a designated group of counties in each state. Prior to the AHS-MS sample selection, records selected by other surveys were removed from each of the frames to avoid having the same housing unit in sample for more than one survey. The Census Bureau selected the AHS-MS sample from the remaining records. Table B-2 presents the percentage of AHS-MS sample drawn from each frame.

Unit frame. The Census Bureau stratified the 1990 Census housing units by the central city and balance of the metropolitan area, by the rent or value of the unit, and by the number of rooms. A systematic sample of housing units was then selected across these strata.

Group quarters frame. In the first stage, the Census Bureau systematically sampled census blocks with a probability proportional to the group quarters measure of size. Based upon a block's measure of size, clusters expected to yield four housing units were then sampled in the second stage. Field representatives monitored these group quarters and sampled housing units that came into existence after April 1, 1990.

Permit frame. The Census Bureau selected sample units in the permit frame from a list of new construction building permits issued in each metropolitan area. Prior to sample selection, the list of permits was sorted by 1990 central city and balance of the metropolitan area, permit office, and the date the permit was issued. Clusters of approximate size four were selected and then were sampled down to one unit. If the original clusters were larger than four, the units were sampled at 1 in 4.

Table B-2. Percentage of 2002 AHS-MS Sample by Frame

2002 AHS metropolitan areas	Unit frame	Group quarters frame	Permit frame	Area frame
Anaheim-Santa Ana, CA	45.8	0.7	53.6	-
Buffalo, NY	78.3	1.9	18.5	1.4
Charlotte, NC-SC	55.0	0.2	29.5	15.4
Columbus, OH	71.8	0.4	23.1	4.6
Dallas, TX	34.8	1.0	56.1	8.1
Fort Worth-Arlington, TX	37.2	0.8	53.8	8.2
Kansas City, MO-KS	71.8	0.2	18.5	9.5
Miami-Fort Lauderdale, FL	78.3	0.2	16.8	4.7
Milwaukee, WI	66.2	1.6	32.2	-
Phoenix, AZ	26.9	0.4	72.8	-
Portland, OR-WA	70.7	0.1	24.8	4.5
Riverside-San Bernardino-Ontario, CA	40.8	0.6	58.6	-
San Diego, CA	42.3	0.9	56.9	-

- Means not applicable.

Area frame. The Census Bureau sorted census blocks by central city and balance and by the percentage of renter-occupied housing units in the block. Each block was assigned a measure of size equivalent to total housing units in the block divided by four and a systematic sample of blocks was selected. The sample blocks were listed and clusters of expected four units were sampled. In blocks that issued building permits, nonmobile home housing units built since the 1990 Census were screened out since these units are covered by the building permit system.

To reduce field listing costs, a subset of the blocks from the unit frame (that was moved to the area frame to coordinate with another survey) were matched to the census and the 1990 Census list of housing units in this subset of blocks was created. These housing units were sorted by address within census block and a systematic sample of housing units (yielding approximately four units per block) was then selected from this sample of blocks. New construction since the 1990 Census was captured in the permit frame since new construction in these blocks was covered by the building permit system.

Estimation

The 2002 AHS-MS produced estimates of housing inventory characteristics at the time of the interview based on the sample in the metropolitan areas.

The sample housing units were weighted according to a multiple-stage ratio estimation procedure. Before implementing the ratio estimation procedure, the basic weight (that is, the inverse of the probability of selection) for each interviewed sample housing unit was adjusted to account for Type A noninterviews.

Type A noninterview adjustment. Type A noninterviews are sample units for which occupants:

- Were not home
- Refused to be interviewed
- Were unavailable for some other reason

The calculations for this adjustment included occupied units. The Census Bureau computed the Type A noninterview adjustment separately for the following:

1. All occupied housing units with data used in the adjustment available from a previous survey.

   The adjustment for these units was calculated separately for owners in the central city, for owners in the balance, for renters in the central city, and renters in the balance of the metropolitan area. All owner-occupied housing units were categorized into cells by the number of rooms and the value. All renter-occupied housing units were categorized into cells by the number of rooms and the rent.

2. All occupied housing units with data used in the adjustment not available from the data from a previous survey.

   The occupied housing units with incomplete or no data from a previous survey were divided into two groups by central city and balance. Within central city and balance, the housing units were subdivided by frame (1970-, 1980-, or 1990-based). Finally, the housing units were split on tenure status (owner/renter) at the time of the interview.

Within a given cell, the Type A noninterview adjustment factor was equal to the following ratio:

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

Ratio estimation procedure for the unit frame. The Census Bureau computed a unit frame ratio estimation factor separately within each cell which was formed by combining strata used in the sample selection of the unit frame. This procedure corrected the probabilities of selection in each of the sample strata. Prior to the AHS-MS sample selection housing units already selected for other Census Bureau surveys were deleted from the unit frame.

The same probability of selection was then applied to the remaining units to select the AHS-MS sample. Since the proportion of housing units deleted from each of the unit frame strata was not necessarily equal as was assumed, some variation between strata in the actual probability of selection was introduced during the sample selection. The unit frame ratio estimation factor for each cell was equivalent to:

$$\frac{\text{Census count of housing units from the unit frame in 1990 (1970) in the corresponding cell}}{\text{AHS-MS sample estimate of housing units in the unit frame in 1990 (1970) in the corresponding cell}}$$

For each 1990-based (1970-based) metropolitan area, the numerators of the factors were obtained from the 1990 (1970) Census of Population and Housing.

The denominators of these factors come from weighted estimates of all the AHS-MS housing units in existence at the time of the 1990 (1970) Census from the unit frame, using the product of the basic weight and the Type A non-interview adjustment factor available at the time of calculation.

Mobile home ratio estimation. To adjust for under-coverage of mobile homes, the Census Bureau, assuming the same undercoverage of mobile homes experienced in the last enumeration, applied the undercoverage factors from 1994 for the eight 1970-based metropolitan areas and from 1995 for the five 1990-based metropolitan areas. For more details on the calculation of these under-coverage factors, refer to Current Housing Reports, Series H170/94 and H170/95 for the appropriate metropolitan areas.

Independent total housing unit ratio estimation. For the ratio estimation procedure described below, each metropolitan area was subdivided into geographic areas consisting of individual counties or a combination of counties.

To lower the undercoverage of nonmobile homes, the Census Bureau applied the following ratio estimation procedure in all areas:

$$\frac{\text{Independent estimate of the total housing inventory (excluding mobile homes) for the corresponding geographic subdivision of the metropolitan area}}{\text{Sample estimate of the total housing inventory (excluding mobile homes) for the corresponding geographic subdivision of the metropolitan area}}$$

The numerator of this ratio was determined by making adjustments to the Census 2000 data to account for residential new construction as well as losses to the housing inventory. These estimates were generated at the county level and combined to form geographic subdivisions. For a more detailed description of the determination of these numbers, see *http://eire.census.gov/popest/topics/methodology/hu-meth.php.* The denominator was obtained using the product of the basic weight and the weighting factors of AHS-MS sample units, excluding mobile homes.

The computed ratio estimation factors were then applied to all appropriate housing units in the corresponding geographic area of each metropolitan area, and the resulting product was used as the final weight for tabulation purposes.

The ratio estimation procedure reduced 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, one can expect that the sample housing population, or different portions of it, is brought into agreement with known good estimates of the metropolitan area housing population.