

American Community Survey Estimate Shows Larger National, State Affordable Rental Housing Shortages

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Introduction

Housing affordability gap analysis, sometimes referred to as mismatch analysis (Hardiman, Martin, Schroder, Steffan, Susin, Vandenbroucke & Yao 2005; Goodman, Belsky, and Drew, 2005), categorizes households by income, irrespective of their current homes' costs, and housing units by the income necessary to afford them irrespective of their current occupants' incomes.³ This allows for a comparison of current conditions, i.e. which income category of household lives in which cost category of unit today, with various "what if" scenarios: What if households below a certain income threshold currently living in unaffordable housing moved to affordable vacant units? What if all units were vacated and units were matched to tenants according to income category? Would the supply of affordable housing meet demand even under these (unlikely) conditions? By addressing these questions, gap analysis provides context for other measures of housing need and an indication of whether people who live in unaffordable housing do so because they face a real shortage of affordable homes.

Until this year there were the two datasets commonly used for gap analysis: a special tabulation of the decennial census made available by HUD for communities developing a Comprehensive Housing Affordability Strategy (CHAS), useful for its accuracy and geographic detail; and the biennial American Housing Survey, valued for its detailed housing cost and quality data and its frequency. Conversely, however, the lack of geographic and programmatic specificity in the AHS data and the infrequency of CHAS data have limited their usefulness for policy analysis and advocacy.⁴

¹ Table four has been corrected and updated to include the most recent Worst Case Needs report (HUD, 2007)

² The author would like to thank NLIHC Research Advisory Committee member Kathy Nelson, Dav Vandenbroucke, Keith Wardrip, and Rebecca Warden for their comments on previous versions of this note.

³ This note uses the 30% of income spent on housing standard of affordability.

⁴ Estimates of shortfalls of affordable housing have been made for many years to inform and influence debates about appropriate housing policy. Because of the limitations of published data, until the early 1990s, estimates of low-rent supply shortfalls tended to compare counts of households with dollar incomes below *approximations* of the poverty level to counts of units *approximately* affordable to them,— e.g. incomes below \$10,000 for a 3-person family in 1989 were compared to rents below \$250. The CHAS data from the 1990 census classified both households and units affordable to them using local statutory income and affordability cutoffs based on HUD Adjusted Median Family Income (HAMFI) and thereby provided more relevant local gap estimates. The 1994 "Worst Case Needs" reported a gap analysis based on the CHAS data (HUD 1994: 19-29). Since the early 1990s the Worst Case Housing Needs reports have reported on the shortage of affordable housing based on the biennial American Housing Survey (AHS). Due to limits imposed by the sample size of the AHS (roughly 60,000 housing units nationwide), however, estimates are only made available for the nation, the four Census regions and a limited number of metro areas using the AHS metro area surveys (e.g. HUD, 1992). Sample size and confidentiality restrictions have meant that in some areas income thresholds are necessarily based on approximations of the HAMFI based limits. Only CHAS data are based on exact HAMFI based cutoffs for each relevant piece of geography, providing highly accurate estimates of renters (or rental units) that fall into each statutory HUD defined program-relevant, income group (or rent range). See also Nelson (1994).

The American Community Survey (ACS), which has appeared annually since 2001, is meant to replace the sample survey of the decennial census, on which the CHAS data have been based. While the ACS cannot provide the same level of geographic detail as the census today, it is an annual survey and by integrating waves of data from successive years it should ultimately provide annual estimates for small area geography similar to what the decennial census up to now has provided only every ten years. In 2005, the survey reached nearly two million households, allowing reliable estimates at the state level. Thus, even today the ACS's sample size, design, and frequency offer the prospect of conducting more frequent analyses of housing conditions at lower levels of geography than was previously possible.

Preparing the ground for the analysis of state and more local level trends from ACS data, this research note presents national and state-level gap estimates

using income categories meant to approximate those used by HUD in its research and by major federal housing programs (see text box). The second half of this report compares these estimates to recent estimates using the CHAS and AHS. An appendix provides further discussion of the gap methodology and the preparation of the ACS data used in this research.

Income Categories

By percent of state median family income (SMFI)

Extremely Low Income (ELI) 0-30% of SMFI

National median ELI renter household income \$7,644

Very Low Income (VLI) 31-50% of SMFI

National median VLI renter household income \$18,345

Low Income 51-80% of SMFI

National median Low Inc. renter household income \$29,557

Moderate Income 81-120% of SMFI

National median Mod. Inc. renter household income \$44,844

Above Moderate Income greater than 120% of SMFI

National median Above Mod. Inc. renter household income \$76,439

A Summary of the Findings

The primary finding of this research is that the ACS appears set to provide frequent and useful assessments of the gap between what people can afford and what is available in the nation's rental markets. A number of issues, however, from survey design to the current inability in the ACS, using the Public Use Micro Sample (PUMS) data, to associate households and units with HUD-defined, program-relevant income thresholds, mean that the results in this research note are not directly comparable to other recent gap studies. Still, the pattern they reveal is consistent with findings from the 2000 census in four important ways:

- Nationwide, the shortage of affordable units is greatest for extremely low income (ELI) renters.
- There is significant variation across states, with the relative shortage being most severe in California and least severe in South Dakota.
- All but a few states show decreases in the shortage above the ELI threshold indicating significantly greater access to affordable units for middle and lower middle income households.

- No state shows a statewide shortage of units for households earning above the Low Income threshold.

While it is impossible to conclude based on comparisons to past estimates that the gap for low income renters has *worsened* in recent years, the results from the 2005 ACS do suggest the problem is worse than previous reports have indicated. Again in comparison to 2000 (Nelson, Treskon, Pelletiere, 2004):

- If ELI renters occupied every unit of housing in the ELI category, there would still be an absolute deficit of 2.8 million units nationwide; according to the CHAS, the deficit was 1.6 million units in 2000.
- When only affordable units that are currently occupied by ELI households or vacant are considered both “affordable and available,” the deficit is 5.6 million units, leaving only 38 units for every 100 ELI renter households, compared to 4.6 million and 43 units respectively from the 2000 data.
- Even at the VLI cutoff, the affordable and available shortage in 2005 is appreciably higher (5.3 million) than the Census 2000 count (3.6 million), indicating a tighter rental market overall.
- For individual states the conclusion is largely the same, with the ACS indicating a larger gap for lower income households than the CHAS data in the vast majority of states.

The National Picture from the 2005 ACS

Table 1 contains the results from the national analysis and a detailed accounting of the origins of the more limited selection of statistics provided in the next section. Looking at the last column in the table, in 2005 there were 40.5 million units of rental housing either vacant or for rent and 36.8 million renter households. This translates into roughly 110 units of rental housing for every 100 renters, i.e. a vacancy rate of over 9% and a net surplus of rental housing nationwide.

Table 1 Detailed National Gap Analysis

Counts in thousands	Income Category					Total
	ELI	VLI	Low Income	Moderate Income	Above Moderate Income	
1. Units Affordable within Income Category	6,187	9,570	16,711	6,269	1,768	40,506
1a Vacant Units within Income Category	559	1,310	1,307	364	189	3,729
2. All Units Affordable at Least at Top Threshold Income	6,187	15,758	32,468	38,737	40,506	40,506
2a. All Vacant Units Affordable at Least at Top Threshold Income	559	1,869	3,176	3,540	3,729	3,729
3. Households within Income Category	9,022	6,384	7,612	6,666	7,092	36,776
4. All Households at or below Top Threshold Income	9,022	15,406	23,018	29,684	36,776	36,776
5. Surplus (Deficit) of Affordable Units within Income Category	(2,835)	3,186	9,099	(397)	(5,324)	3,729
6. Absolute Surplus (Deficit) of Units Affordable at Least at Top Threshold Income	(2,835)	351	9,450	9,053	3,729	3,729
7. Affordable units per 100 tenants at or below Top Threshold Income	69	102	141	130	110	110
8. Units Affordable and Available at or below Top Threshold Income	3,413	10,082	23,328	32,546	40,506	40,506
9. Affordable and Available units per 100 tenants at or below Top Income Threshold	38	65	101	110	110	110
10. Surplus (Deficit) of Affordable and Available Units	(5,609)	(5,324)	310	2,862	3,729	3,729

Notes:
 Lines 1-4 Aggregated from NLIHC Tabulations of ACS
 Line 5 = Line 1 - Line 3
 Line 6 is the cumulative sum of Line 5
 Line 7 = 100 x Line 2/Line 4
 Line 8 NLIHC tabulations of all units affordable at least at the top income threshold that are either vacant or occupied by a household with income at or below that threshold.
 Line 9 100 x Line 14/ Line 4
 Line 10 = Line 9-Line 4

Is There a Surplus of “Low Income” Rental Units?

Does this marketwide surplus translate into a slack market for low income households? HUD traditionally refers to “low income families” as those earning 80% of their area’s median family income or less. Looking at the data from this perspective, the majority of renters in 2005 were classified as low income (23.0 of 36.8 million, line 4) and an even larger number of units (32.5 million, line 2) were considered affordable to households at or below their state’s low income threshold. Moreover, nationwide, 3.2 million of the nation’s 3.7 million vacant units (86%) were being offered at rents at or below the low income threshold (line 2a). As a result, in 2005 there were 141 affordable rental units for every 100 renter households with incomes that did not exceed their state’s low income threshold (line 7).

Looking below the low income threshold, however, there appears a national deficit of units specifically affordable to those in the ELI category (line 5)⁵ and, as shown in line 6, ELI renters face an “absolute shortage” of roughly 2.8 million affordable units. This means that even if every household in this category were in an apartment affordable at or below their state’s ELI threshold, there would still be a shortage of 2.8 million units. Such a shortfall translates into only 69 affordable units for every 100 ELI renter households nationwide (line 7). While there may be a measured surplus of low income units nationwide, there is a severe absolute deficit of housing affordable to the lowest income renters.

And the absolute deficit of affordable units does not capture the magnitude of the problem facing the lowest income households. Many units are currently occupied by households for whom the costs represent less than 30% of their income.⁶ Nominally, these households could pay more for their housing, but they have chosen to pay less. While paying less is likely a wise choice, in the context of this analysis these units cannot be considered available to lower income households. Therefore, a unit is only “affordable and available” to households within a specific category if its costs are affordable and it either currently houses a family with income at or below that category’s top threshold or it is vacant and for rent.

When the availability of a unit is taken into account along with its affordability, the gap grows significantly: There were only 38 affordable and available rental units for every 100 ELI renter households nationwide (line 9), due to a shortage of over 5.6 million units (line 10).⁷ As Table 1 also shows, as incomes rise the gap diminishes and becomes a surplus above the VLI threshold. Thus, this analysis indicates that despite a nationwide surplus of rental units, households at or below the VLI threshold face a significant gap between what they can afford and what is available for them to rent.

⁵ There is a similar deficit for households above the low income threshold as well, but since higher income households can afford lower cost units this does not constitute a limitation for these households.

⁶ Or in this analysis less than 30% of their household income category’s bottom threshold.

⁷ It is important to note that the ACS reports 228,000 vacant rental units do not have complete plumbing or kitchen facilities. Of these 71,000 of these are affordable to ELI households and 27,000 (8,000 affordable to ELI households) are considered rented but not occupied.

A State Level Analysis

Shortages of affordable housing are often thought to be restricted to a few tight markets, but state level data suggest the national picture is a reflection of a situation that exists in all 50 states and the District of Columbia.⁸

Forty-one of the 50 states and the District of Columbia show absolute deficits of affordable housing for ELI households (Table 2). Only nine smaller states show nominal (given the statistical margin of error) absolute surpluses, ranging from under 1,000 units in Hawaii to just over 9,000 in North Dakota. No state shows a surplus of affordable and available units for ELI households, with the smallest deficit being 7,000 units in Wyoming.

When presented as a ratio of supply (units) to demand (households) it becomes fairly easy to evaluate the housing stock's contribution to affordability problems across states (Table 3). With 65 units of affordable and available housing for every 100 ELI households, South Dakota stands out as having the smallest "mismatch," though this still indicates that 35 out of every 100 of its ELI renter households do not have access to a unit categorized as affordable to them. At the other end of the spectrum, 16 states have ratios of affordable and available housing to ELI renters worse than the US average (Map 1). While these states are primarily western states such as California, Oregon, Nevada, and Arizona, known to have growing populations, rising housing costs and a historically small stock of rental housing, Florida, the District of Columbia, New York, and New Jersey in the East and Wisconsin and Michigan in the Midwest also face an above average gap between supply and demand.

When the income threshold is raised to include VLI households, all states except North Dakota continue to show a deficit of affordable and available units. The deficit only worsens in 12 states, however, though the list⁹ includes the nation's most populous (and renter populated) states. In California, the District of Columbia, Hawaii, Massachusetts, Nevada, and New York, the shortage persists even when the income threshold is raised to include Low Income households and units.

In summary, while a handful of states and the District of Columbia show a shortage of affordable units that extends further up the income distribution, indicating particularly tight markets, in general the state level results support the conclusion from the national data that the problem of insufficient affordable housing nationwide is largely limited to the poorest households.

⁸ Table 2 on the next page provides state level data on the incremental count of units affordable within each category, as well as the margins of error and upper and lower bound estimates as an indication of the statistical precision of the estimates. Table 3 (following Table 2) provides the absolute surplus (or deficit) of affordable units, the surplus (or deficit) of affordable and available units, and the ratio of affordable and available units per 100 renter households at or below each income threshold. Both Tables 2 and 3 include the corresponding national figures for comparison. Map 1 shows affordable and available units per 100 ELI renter households by state.

⁹ Arizona, California, the District of Columbia, Florida, Hawaii, Nevada, New Hampshire, New Jersey, New York, Oregon, and Texas.

Table 2

State Name	Incremental Affordable Units by AMI Category (thousands)											
	ELI	MOE	Upper Bound	Lower Bound	VLI	MOE	Upper Bound	Lower Bound	Low Income	MOE	Upper Bound	Lower Bound
Alabama	143	11	155	132	186	13	198	173	212	14	226	198
Alaska*	19	3	23	16	20	3	24	17	44	5	49	40
Arizona	81	8	89	73	126	10	136	116	407	17	424	389
Arkansas	84	9	93	75	109	10	119	99	168	12	180	156
California	475	21	496	454	631	24	655	607	2,095	41	2,137	2,054
Colorado	81	9	89	72	199	13	212	186	286	15	301	270
Connecticut	87	9	96	78	136	11	147	126	168	12	180	156
Delaware*	15	3	18	12	22	4	26	18	53	6	59	47
District of Columbia*	17	4	21	14	16	4	20	12	45	6	51	39
Florida	222	14	236	207	268	16	284	252	1,023	30	1,053	993
Georgia	211	14	225	197	298	16	315	282	572	22	594	551
Hawaii	32	5	36	27	26	4	30	21	64	6	70	57
Idaho	25	4	29	21	49	6	54	43	73	7	80	66
Illinois	266	16	282	251	410	19	429	391	668	24	691	644
Indiana	124	11	135	113	286	16	301	270	323	17	340	307
Iowa*	73	8	81	65	144	11	155	133	119	10	129	109
Kansas	77	8	85	69	143	11	154	132	128	11	138	117
Kentucky	131	11	142	120	160	12	172	148	205	13	219	192
Louisiana	126	11	137	116	153	12	165	142	246	14	261	232
Maine*	35	5	40	30	47	5	52	41	63	6	69	57
Maryland	118	10	129	108	198	13	211	185	303	16	319	287
Massachusetts	206	14	220	192	199	13	213	186	329	17	346	312
Michigan	181	12	193	169	380	16	396	364	457	18	475	439
Minnesota	114	9	122	105	156	10	166	146	227	12	239	215
Mississippi	84	9	93	75	90	9	99	81	137	11	148	126
Missouri	143	11	155	132	249	15	264	234	302	16	318	286
Montana*	28	4	32	24	39	5	44	34	47	5	52	42
Nebraska	58	6	64	52	90	7	98	83	80	7	87	73
Nevada*	30	5	35	25	46	7	52	39	217	13	229	204
New Hampshire*	20	4	24	16	31	5	36	27	73	7	81	66
New Jersey	156	12	168	144	232	15	247	218	549	21	570	528
New Mexico*	41	6	47	36	56	7	62	49	103	9	112	94
New York	498	21	520	477	662	24	686	638	1,091	30	1,121	1,061
North Carolina	209	14	223	195	318	17	335	301	547	21	568	525
North Dakota*	29	4	33	25	41	4	46	37	23	3	26	20
Ohio	251	15	267	236	567	22	589	545	621	23	644	598
Oklahoma	87	9	96	78	154	12	166	142	221	14	234	207
Oregon*	59	7	66	52	120	10	130	110	296	15	311	280
Pennsylvania	293	16	310	277	481	21	501	460	565	22	587	542
Rhode Island*	34	5	39	29	41	5	46	35	71	7	77	64
South Carolina	110	10	120	100	148	12	159	136	237	14	251	222
South Dakota*	33	5	39	28	38	5	43	32	30	5	35	25
Tennessee	159	11	170	147	221	13	235	208	344	16	360	328
Texas	387	19	406	368	610	24	633	586	1,587	36	1,622	1,551
Utah*	33	5	38	28	74	7	81	66	127	9	136	118
Vermont*	14	3	17	11	21	4	25	18	33	5	38	29
Virginia	191	13	204	177	263	15	278	247	316	17	332	299
Washington	118	10	128	107	243	15	258	228	445	19	464	426
West Virginia	56	6	62	50	63	6	69	57	67	7	73	60
Wisconsin	104	9	113	95	283	15	298	268	292	15	307	277
Wyoming*	16	3	19	12	29	4	33	25	14	3	17	11
US	6,187	88	6,275	6,100	9,570	107	9,678	9,463	16,711	137	16,848	16,573

Source: NLIHC Tabulations of 2005 American Community Survey

* Margin of Error for one or more categories of affordable low income units represents over 10% of estimate (max 22% in D.C.).

In general, results for states with small (renter) populations should be treated with caution.

Table 3

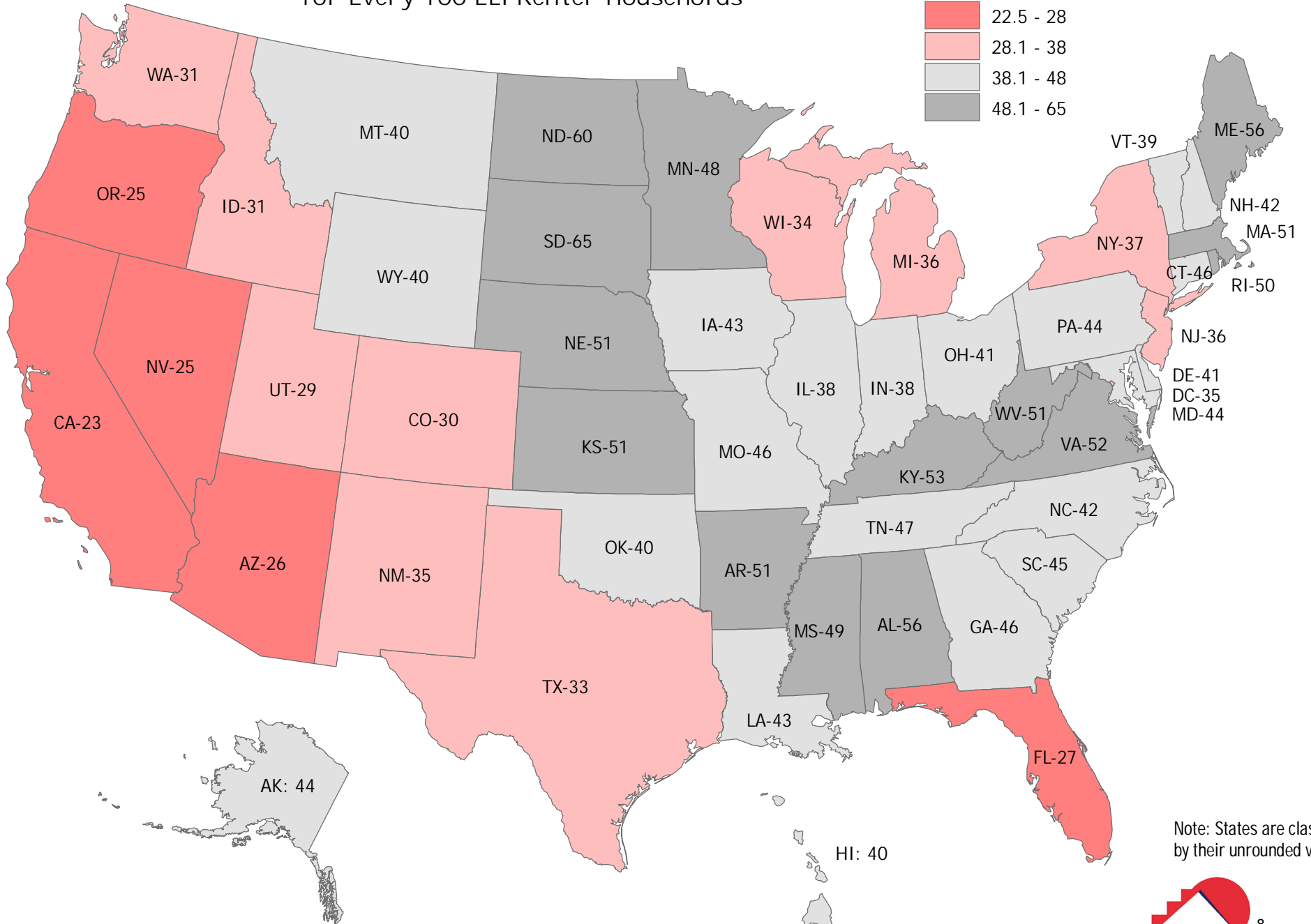
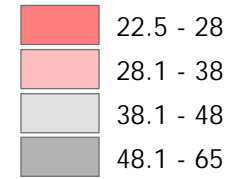
State Name	Absolute Surplus (Deficit) of Units at or below Income Threshold (thousands)			Surplus (Deficit) of Affordable and Available Units (thousands)			Aff. and Avail. units per 100 tenants at or below Income Threshold		
	ELI	VLI	Low Income	ELI	VLI	Low Income	ELI	VLI	Low Income
Alabama	(6)	83	191	(66)	(31)	45	56	87	113
Alaska*	3	9	33	(9)	(8)	4	44	74	107
Arizona	(57)	(49)	204	(102)	(127)	11	26	51	103
Arkansas	6	47	138	(38)	(28)	28	51	81	113
California	(595)	(843)	285	(829)	(1,218)	(588)	23	37	80
Colorado	(66)	27	182	(102)	(71)	31	30	72	108
Connecticut	(33)	31	119	(64)	(47)	17	46	76	106
Delaware*	(5)	4	35	(12)	(12)	6	41	65	111
District of Columbia*	(18)	(18)	3	(23)	(27)	(16)	35	48	78
Florida	(185)	(247)	315	(295)	(434)	(147)	27	41	88
Georgia	(58)	49	400	(146)	(121)	86	46	74	113
Hawaii	0	1	23	(19)	(26)	(16)	40	53	83
Idaho	(8)	15	50	(23)	(17)	3	31	71	103
Illinois	(140)	18	403	(251)	(210)	56	38	68	106
Indiana	(57)	108	278	(111)	(41)	73	38	86	116
Iowa*	(5)	73	117	(44)	(20)	23	43	86	110
Kansas	(1)	78	131	(38)	(9)	34	51	94	116
Kentucky	(1)	72	184	(61)	(37)	36	53	83	112
Louisiana	(31)	27	173	(90)	(73)	24	43	71	107
Maine*	(1)	15	47	(16)	(14)	5	56	79	105
Maryland	(46)	28	186	(92)	(80)	18	44	72	104
Massachusetts	(71)	(8)	157	(136)	(130)	(36)	51	68	94
Michigan	(110)	80	328	(186)	(110)	76	36	77	111
Minnesota	(19)	44	154	(68)	(51)	27	48	77	108
Mississippi	(5)	30	109	(45)	(34)	17	49	76	109
Missouri	(33)	93	245	(94)	(57)	49	46	81	111
Montana*	5	24	46	(14)	(9)	3	40	79	105
Nebraska	3	54	78	(27)	(8)	15	51	91	110
Nevada*	(28)	(41)	93	(44)	(70)	(5)	25	40	98
New Hampshire*	(10)	1	41	(17)	(19)	4	42	62	105
New Jersey	(125)	(67)	258	(180)	(192)	11	36	58	102
New Mexico*	(8)	10	67	(32)	(29)	3	35	66	103
New York	(336)	(163)	374	(528)	(568)	(259)	37	57	86
North Carolina	(58)	72	389	(155)	(118)	73	42	74	111
North Dakota*	9	38	37	(8)	1	7	60	103	112
Ohio	(125)	183	523	(224)	(98)	133	41	85	114
Oklahoma	(19)	57	182	(64)	(39)	39	40	79	114
Oregon*	(57)	(35)	149	(88)	(102)	3	25	52	101
Pennsylvania	(65)	170	436	(201)	(124)	67	44	80	107
Rhode Island*	(11)	4	40	(22)	(20)	5	50	71	104
South Carolina	(11)	51	189	(67)	(45)	40	45	78	113
South Dakota*	8	26	33	(9)	(4)	6	65	91	108
Tennessee	(23)	65	256	(97)	(71)	46	47	77	110
Texas	(261)	(129)	869	(437)	(455)	154	33	60	109
Utah*	(13)	17	83	(33)	(30)	12	29	67	108
Vermont*	(4)	3	22	(11)	(10)	(0)	39	68	100
Virginia	(15)	101	229	(100)	(68)	19	52	81	104
Washington	(97)	(11)	253	(149)	(136)	16	31	63	103
West Virginia	4	29	63	(26)	(15)	11	51	84	109
Wisconsin	(62)	102	230	(109)	(62)	39	34	78	109
Wyoming*	4	23	22	(7)	(1)	2	40	94	107
US	(2,835)	351	9,450	(5,609)	(5,324)	310	38	65	101

Source: NLIHC Tabulations of 2005 American Community Survey

* Results for states with small (renter) populations should be treated with caution.

Map 1
Units Affordable and Available
for Every 100 ELI Renter Households

National average is
38 units for every 100
ELI renter households.



Note: States are classified
by their unrounded values.

Comparability of Estimates with Previous Gap Studies

ACS data and the methods used here produce a picture of the nation's rental market affordability largely consistent with the findings of other recent gap analyses (Table 4). In summary, ELI households fare worst, facing the largest gaps, and the shortage of units recedes as the income threshold is raised.

Table 4. Summary Statistics from Recent Gap Reports

	Recent Gap Analyses				
	Current Estimate	HUD, 2007	Hardiman et al, 2005	Pelletiere, 2006	Nelson, Treskon, and Pelletiere, 2004
Data Source	2005 ACS	2005 AHS	2003 AHS	2003 AHS	2000 CHAS
Absolute ELI Deficit (million)	2.8	4.0	2.0	1.7	1.6
Deficit of Units Aff and Avail for ELI households (million)	5.6	6.4	5.1	4.5	4.6
Aff and Avail Units per 100 ELI renter households	38	40	44	42	43
Aff and Avail Units per 100 VLI renter households	65	77	81	72	75
Aff and Avail Units per 100 Low Income renter households	101	107	109	106	103

The analysis also indicates the problem is of a scale similar to past analyses, but the national estimates of the gap in affordable housing and most of the state estimates show a larger shortage of units below the Low Income threshold. At the state level, for example, the estimated ratios of affordable and available units to households are lower in all but seven states when compared to an analysis from 2000 CHAS data (Table 5). Along with generally higher gap estimates, there is also some variation in where states rank. For example, Wisconsin and Michigan rank near the top in these estimates, while in the 2000 analysis they ranked firmly in the middle of the pack, with affordable and available ratios below those for the entire US. There are a number of issues that affect the interpretation of these comparisons as indicators of a trend.

For this analysis, the 2005 ACS PUMS data were prepared to approximate the data used in the Worst Case Needs and CHAS gap analyses in that they were adjusted for household size, or number of bedrooms in the case of units. (See *the Data* in the appendix for more detail.) However, the results of this analysis should not be considered directly comparable to those in previous reports.

The questions and survey methods underlying the ACS are intended to generate data that will be comparable to data from past decennial censuses as part of the 2010 census, not the AHS on which the Worst Case Needs reports are based. The AHS asks different and a broader range of questions about the housing stock than do the historic census and current ACS

STATE	Affordable and Available Units per 100 Renter		
	0-30% AMI	0-50% AMI	0-80% AMI
Connecticut	46	83	104
Maine	53	87	109
Massachusetts	51	76	97
New Hampshire	43	76	102
New Jersey	37	64	98
New York	35	60	94
Pennsylvania	49	87	107
Rhode Island	55	91	104
Vermont	43	75	103
Illinois	46	85	106
Indiana	50	94	112
Iowa	57	98	109
Kansas	58	99	112
Michigan	48	91	108
Minnesota	51	85	103
Missouri	57	99	113
Nebraska	58	99	111
North Dakota	69	106	112
Ohio	53	96	111
South Dakota	71	101	110
Wisconsin	46	92	107
Alabama	67	101	116
Arkansas	57	93	113
Delaware	49	83	110
District of Columbia	55	91	102
Florida	32	55	98
Georgia	52	81	109
Kentucky	59	98	112
Louisiana	50	84	110
Maryland	47	83	105
Mississippi	57	89	111
North Carolina	53	86	111
Oklahoma	53	95	115
South Carolina	60	94	115
Tennessee	56	89	111
Texas	38	75	109
Virginia	46	77	103
West Virginia	57	93	112
Alaska	39	78	110
Arizona	30	58	105
California	22	41	86
Colorado	35	69	102
Hawaii	38	61	100
Idaho	45	82	108
Montana	53	89	109
Nevada	26	49	106
New Mexico	43	80	113
Oregon	30	63	105
Utah	34	73	106
Washington	32	67	103
Wyoming	63	109	115
U.S. total	43	75	103

Source: Tabulations of Census 2000 Data (Nelson, Treskon, & Pelletiere, 2004: Table 4)

questionnaires, and it targets a national panel sample of housing units that differs historically and functionally from that drawn for the census.

Since the ACS is a part of the 2010 census, it makes more sense to compare the results to those from the 2000 CHAS data, but still caution must be exercised. In general the methods of the ACS do differ from those employed in conducting Census 2000. These differences extend from the sampling methodology, to the wording of questions, to how enumerators identify vacant and other units that are not occupied year round, and can affect comparability. For example, while assessments have shown general agreement between the ACS and Census 2000, Census 2000 indicated incomes that were somewhat higher and gross rents that were lower than the 2000 ACS (Nelson, Welniak & Posey, 2004; Diffendal, Petroni, & Williams, 2004). As a result ACS estimates of rent burden are higher than the Census 2000 estimates.

Differences also result from how the data are prepared for gap analysis. An example is that the income limits in this note are based on state median family income (SMFI).¹⁰ Though the ACS SMFIs have been adjusted according to HUD's published methodology,¹¹ they do not include other adjustments HUD makes to HAMFI for statutory and other reasons.¹² There is no way of determining how the specific income thresholds used in this analysis compare to the HUD adjusted area median family income (HAMFI) estimates used in HUD's data. This is largely because there is currently no way to identify location precisely enough in the public data to link housing units in the survey to specific local HAMFI income thresholds. Leaving any other differences in the data and the calculation of the thresholds aside, state medians will necessarily generate different income limits than will the more local metro area and rural county median incomes on which HAMFI is based.¹³

Thus, while it is clear that the ACS data show an affordable housing gap for low income renters that is worse than previous estimates nationwide and in most states, comparisons can not distinguish between differences due to methodology and those due to actual changes in the housing market, and therefore are not sufficient to indicate a worsening trend.

¹⁰ The lowest level of standard geography for which median incomes can be directly linked to observations in the current ACS PUMS is the state. The 2005 ACS PUMS also includes indicators for smaller areas known as Public Use Microdata Areas (PUMAs), which can be useful for some more local analyses but which do not necessarily correspond directly to administrative or political jurisdictions, though they can be used to approximate these more standard geographic definitions. For a description of the usefulness of these data see "Ten Things to Know about the American Community Survey (2005 Edition)" from the Missouri Data Center, Retrieved January 18, 2007 from mdc2.missouri.edu/pub/data/acs2005/Ten_things_to_know.shtml.

¹¹ See for example Hardiman et al (2005) pp. 85-87.

¹² For a brief discussion of the most recent proposed income limits and the nature of the adjustments HUD makes see transmittal notices and Frequently Asked Questions at www.huduser.org/datasets/il/il06/index.html. NLIHC has recently criticized many of the adjustments, see for example www.nlihc.org/doc/021606comments.pdf

¹³ A comparison of the results using more localized MFI based income limits using Public Use Microdata Areas (PUMAs) and those based on SMFI suggests that, in general, gap estimates in the ACS increase for ELI households as MFI based income thresholds for more local geographies are used. At the local level the distribution of incomes (particularly renter households) and unit costs within rental markets appears to vary considerably. The direction of the impact depends significantly on the shape of the distributions, where the various thresholds fall on the distributions, and the relationship of the local MFI to the SMFI, i.e. the direction of the threshold change.

Confirmation of the trend indicated in these results will have to wait on the forthcoming Worst Case Needs report and continued analysis and testing of the ACS.

Conclusion

The results of this gap analysis using the ACS have considerable validity, showing a national problem of a pattern and scale that matches the findings of previous analyses. Similarly, in broad strokes the state level results of this analysis look like those from a recent state-by-state analysis using HUD tabulations of Census 2000 data (Nelson, Treskon, & Pelletiere, 2004).

Going forward, though the comparability of these estimates to those developed from other data sources remains uncertain, ACS data should be fairly comparable across future years. Thus, the conclusion from this assessment must be that the ACS appears set to provide housing advocates with annual data appropriate for the calculation of the gap between what people can afford and what is available in the nation's rental markets.

While it is not currently possible to draw any firm conclusions on what these data say about the trend of affordability in the rental market, these results from the 2005 ACS do indicate a situation that is worse for the lowest income renters than past estimates. Not only are the absolute deficits and deficits of affordable and available units greater, but the ACS also appears to indicate a tighter housing market further up the income distribution than in the past. Fundamentally, however, all recent gap analyses show quite clearly that the gap between what the lowest income renters can afford and what is affordable and available to them exists nationwide and the indications are that it is growing. Nationally, and in nearly every state, fewer than half of all ELI renters have access to an affordable unit.

Appendix 1 Data and Methods

The Data

The data in this report are from the 2005 ACS Public Use Microdata Sample. These data were augmented by state median family income (SMFI) data for households from the ACS published tables. In keeping with HUD practice, to develop income thresholds this analysis adjusts the SMFI by household size to account for the expenses of additional dependents in larger households, which limit the income available for housing. Based on the process described by HUD,¹⁴ the SMFI is assigned to four-person households and the threshold is adjusted downward for smaller households and upward for larger ones. This is meant to assure that a single person must earn considerably less than a five-person household to qualify as Extremely Low Income (ELI).

Similarly, SMFI is adjusted in assigning each rental unit to one of five corresponding income categories based on housing costs. For example, if a unit's costs were equal to or less than 30% of the top threshold for ELI households in the state where it is located, it was categorized as affordable to all ELI households. Again keeping with HUD practice, to adjust for the fact that a household likely to live in a larger unit will be a larger household with more income (and expenses) than a single person, who is also more likely looking for a lower cost studio or one-bedroom, the income thresholds at which units are deemed affordable are adjusted for the number of bedrooms.¹⁵

Units recorded as having no cash rent and no utility costs are classified as being affordable to ELI households and thus increase the apparent supply of ELI units, even though it is unclear whether these units would be available on the open market. Conversely, however, households recorded as having zero or negative income are placed in the ELI category, increasing the apparent demand for ELI units. Finally, about 600,000 units in the ACS are coded as rented but not occupied. For the purposes of this analysis these units are counted as vacant since there is no information on who will move into them or from where.

Related to this, the PUMS data do not report a gross rent where a unit is vacant, even if it has a recorded asking rent. Similarly, no gross rent is recorded in cases where a household pays utility costs but "no cash rent." In order to utilize all the available information in the survey and to approximate other gap analyses, rental and utility cost data for occupied and vacant units alike provided in the PUMS were recombined into a new gross rent variable that differs in these cases from that provided by the Census Bureau.

It should be noted that for a variety of reasons, comparisons to past ACS data using similar methods prove to be not entirely straightforward. First, in the past the sample size was only about 500,000, greatly increasing the margins of error for smaller areas and populations. Moreover, one variable used in this analysis was reported differently in the public data in past years, when the tenure of rented or sold vacant units was not specified. There are ways

¹⁴ For a more complete discussion of HUD's concepts and methodology see Hardiman et al (2005) pp. 85-87.

¹⁵ Note the number of bedrooms is top coded at 5 bedrooms in the ACS PUMS.

to work around these problems to increase comparability; some problems may be related to the way the data in the PUMS are presented rather than the underlying data, and could be addressed by working with the Census Bureau and HUD. Going forward these issues should not be significant as the larger sample size and the survey methodology become more consistent in the run-up to 2010 and comparability across years and local geographies should be greatly improved.

On a final data note, the 2005 data reflect to some degree the impact of the devastating 2005 hurricane season on the nation's stock. According to the Census Bureau, however, the impact on the full-year 2005 ACS is limited for two reasons. ACS estimates of population counts (e.g., population, household, and housing unit totals) are not based on survey responses but rely on annual estimates developed by the Bureau that reflect July 1, 2005, totals. Where estimates of population characteristics are concerned (e.g., race, age, housing costs, etc.), two-thirds of the responses from 2005 were collected before the storm and therefore exert significantly more weight on the annual values than do the one-third gathered after Hurricane Katrina¹⁶.

Therefore the impact of Hurricane Katrina will only be fully recognized in the 2006 ACS data. For example, the recently released population estimates for July 1, 2006 indicate a 12-month decrease in Louisiana's population of roughly 220,000. The Census Bureau intends to adjust estimates of housing to reflect the damage wrought by the storms, though the specifics of these adjustments have yet to be made public.

Methodological Considerations

The housing cost to income ratios (HCIRs) of individual households are the most common measures of housing affordability. On their own, such ratios indicate whether households are living in housing that is considered affordable, but not the market context in which households make their decisions.

While implicitly based on the notion of an HCIR, the advantage of the gap approach is that it explicitly looks at the demand for housing separately from its supply, providing insight into whether affordable options may exist for households in unaffordable housing. Thus gap analysis complements analyses based on the HCIRs of individual households.

Along with providing an indication of the market context, another advantage of gap analysis is that it is less sensitive to two concerns often raised with HCIR analysis. The first is the problem that households in surveys such as the ACS and AHS often report incomes that on the surface appear too low to reconcile with their maintenance of basic shelter and health. Since it is a broad categorical analysis, which works implicitly under the assumption that to afford all housing in the category every household within a category earns the category's top income,¹⁷ results from a gap analysis are not as sensitive to households reporting such low

¹⁶ www.census.gov/acs/www/Products/Profiles/gulf_coast/pdf/q_and_a.pdf

¹⁷ For example, the median threshold for ELI households in this research is \$16,771. The rent affordable at that threshold is \$419. Implicitly this analysis assumes ELI household earn that amount, on average, and can pay

incomes. The second is that the definition of affordability as an HCIR of 30% of income must be considered a “rule of thumb.” Clearly some households can afford to spend more than 30% of income on housing just as 30% may be unaffordable to others. The use of broad categories implies a range of HCIRs focused around the 30% standard rather than a strict HCIR threshold.

Conversely, the use of broad categories can also be viewed as a limitation. For example, if housing is primarily affordable to households near the top threshold of an income category but most households in that category have incomes near the bottom, the analysis will show a much better “match” of units to households than truly exists.

A similar problem has to do with the geographic unit of analysis used in this and most gap analyses. Most households base housing choices on employment and other place specific criteria within or between metropolitan areas. But data on housing costs and household incomes are often only available or reliable at the national or regional level, levels of geography few households even consider when making a choice about housing. As a result, if there are plenty of vacant or low cost units in places where there is no demand for housing, this may not be apparent in the analysis, resulting in an overestimate of the extent to which affordable housing is truly available where it is needed. The broader the income categories and geographic definitions used, the more likely it is for these kinds of errors to occur.

Thus, there are trade-offs to be made. Using smaller income categories and geographic areas can increase the apparent precision of the analysis, but sample survey data estimates for smaller populations are statistically less certain. More fundamentally, there is a trade-off that the analyst must recognize between providing a precise picture of what households experience and the summary value of statistics inherent to any categorical analysis. On the other hand, broad, categorical gap analyses such as this one must be seen as providing a useful summary *indication*, not a precise measure, of the underlying supply and demand for housing.

On a final note, for reasons largely unrelated to location, some apparently affordable and available units in the data may be highly undesirable or even uninhabitable. Using ACS and census data makes identifying these units particularly problematic because these surveys only inquire about the presence of bathroom and kitchen facilities, though interviewers are trained not to code units that are open to the elements as housing units. The ACS identifies 228,000 vacant for rent or rented but unoccupied units that lack complete facilities. While not immune to error, the AHS asks a much more thorough set of housing quality questions. A recent HUD analysis using the AHS (Hardiman et al. 2005) looked at what it called “affordable, available and adequate” units, which restricted estimates of the supply of affordable housing further: For ELI renter households there were just 34 affordable, available and adequate units per 100 households compared to 44 affordable and available units. Finally, neither survey can capture whether nor under what terms the units are actually being offered for rent nor what preferences the landlord may be applying in choosing a tenant.

that rent. As shown by the category median incomes in the text box, the reality according to the data is quite different.

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