| 9/12/08 | GEOGRAPHIC MEASURES OF SHELTER AFFORDABILITY AND INCOME LEVELS |

Geographic Measures of Shelter Affordability and Income Levels

The Spreadsheet

This spreadsheet is comprised of the following tabs:

- Home
- Condo
- Rental
- Recap House
- Recap Condo
- Recap Rental
- MLS
- Rents
- Median Income
- HUD Income Limits

The Home, Condo and Rental tabs are the information spreadsheets for Shelter Affordability. The three recap tabs summarize Home, Condo and Rental respectively (occupation information comes from the Bureau of Labor Statistics). MLS and Rents tabs contain reference information for Home, Condo and Rental prices (local price information can come from many sources and each market must be researched individually). Median Income is the information spreadsheet for Income Level Analysis. HUD Income Limits contain reference information for Median Income. The entire analysis can be based on all Metropolitan Statistical Areas (MSA), all states and some non-Metropolitan Statistical Area depending on available information. The analysis can also be tailored to compare submarket sales and rental data within a BLS area. For example, using the BLS regional Seattle area and then comparing sales and rental submarkets including Seattle City, Pierce County, King County and Snohomish County or Hawaii State BLS information compared to sales and rental submarkets of Honolulu County, Maui County, Kauai County and Hawaii County.

Who is This Analysis For?

This analysis is a valuable tool for land planners, economist, business and industry, housing advocates, government officials or anyone else who wants to learn about housing affordability and income levels by occupation by geographic area anywhere in the country.

Shelter (Home) Affordability

This analysis focuses on the job categories identified by the Bureau of Labor's Occupational Codes within a certain Metropolitan Statistical Area (MSA). Data available from the Department of Labor provides industrial pay figures by occupation (jobs) by geographic area. Each occupation is broken into five income strata by percentile, i.e. lower 10th, lower 25th, median, upper 75th and upper 90th. Intuitively, those compensated at the lower strata (lower 10th and 25th) are typically the younger, less skilled workers likely new to their respective industry. The well compensated (upper 75th and 90th percentile) are the older, highly skilled and more experienced workers.

The measure of home and condo affordability is estimated by the number of salaries (jobs) of each of the occupations that are required to buy a median priced single-family residence for each of the five income strata. This analysis follows home and condo affordability for 2000, 2003, 2006 and 2009 both numerically and by a percentage of the occupations.
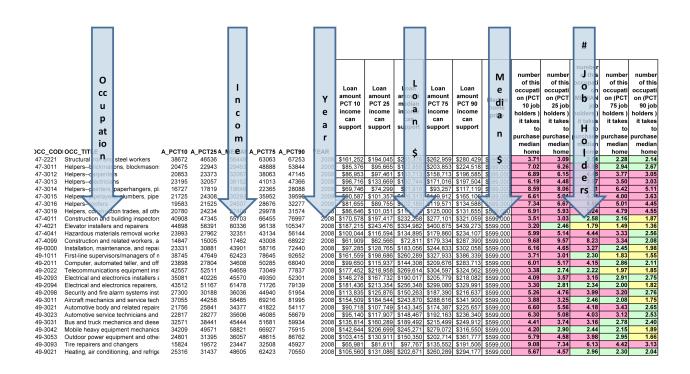
Calculating affordability by occupation puts a sense of realism to this analysis. The reader has friends, neighbors, and associates, likely knows how long they have been working and also knows the spouse's occupation. One of the theories behind using how many job holders required to own the median home or condo is for comparison purposes to other markets by the same occupation (i.e. Seattle versus Austin).

Many households in today's society contain two or more wage earners; it is not uncommon in cases of dual income families for one of the incomes to be higher than the other. A simple example: A Civil Engineer has a spouse who most likely does not have the same occupation, but perhaps is a Bank Teller. The combined income, in reality, is much lower than what has been shown.

The first of the baby boomers are now eligible for Social Security and beginning to retire. Exasperating home affordability or lack thereof is the replacement of many of these older, well paid workers. Their replacements will be by lower skilled workers that likely will be compensated at lower strata levels. The real challenge is as homes become available for purchase, mostly from the baby boomer generation (older workers downsizing), the younger worker (less skilled) will not be able to compete in a market with better paid white collar workers. Many of these white collar workers are actually making more or similar wages as older workers due to high sector labor demands mixed with smaller variances in skill level. In some markets (i.e. Honolulu), very few of the highest paid workers can afford the median home price.

This analysis can also examine different occupation sub-categories including Business and Financial, Computer and Mathematical, Architecture and Engineering, Education, Healthcare, etc. to determine shelter affordability within a certain occupation sub-category and can be further examined by white collar, blue collar, etc.

Following is a sample of the actual spreadsheet. The first section contains the BLS Labor Codes and Names. The second section, also from the BLS, contains the income levels broken out by the 5 stratas (10%, 25%, Median, 75% and 90%). The third section contains the year. The fourth section contains the loan amount using the median home or condo price broken out by the 5 stratas. The fifth section is the median home price and the final section represents how many job holders by occupation it takes to afford the median house, condo or rental.

OCC_CODE	OCC_TITLE	A_PCT10	A_PCT25	A_MEDIAN	A_PCT75	A_PCT90	YEAR	Loan amount PCT 10 income can support	Loan amount PCT 25 income can support	Loan amount median income can support	Loan amount PCT 75 income can support	Loan amount PCT 90 income can support	Median home price $	number of this occupation (PCT 10 job holders) it takes to purchase median home	number of this occupation (PCT 25 job holders) it takes to purchase median home	number of this occupation (MEDIAN job holders) it takes to purchase median home	number of this occupation (PCT 75 job holders) it takes to purchase median home	number of this occupation (PCT 90 job holders) it takes to purchase median home
47-2221	Structural iron and steel workers	38672	46536	56448	63063	67253	2008	$161,252	$194,045	$2xx,xxx	$262,959	$280,429	$599,000	3.71	3.09	2.5x	2.28	2.14
47-3011	Helpers--brickmasons, blockmason	20475	22943	29463	48888	53844	2008	$85,376	$95,665	$1x2,855	$203,853	$224,518	$599,000	7.02	6.26	4.x8	2.94	2.67
47-3012	Helpers--carpenters	20853	23373	32067	38063	47145	2008	$86,953	$97,461	$1x3,713	$158,713	$196,585	$599,000	6.89	6.15	4.x8	3.77	3.05
47-3013	Helpers--electricians	23195	32057	36152	41013	47366	2008	$96,716	$133,669	$15x,744	$171,016	$197,504	$599,000	6.19	4.48	3.5x	3.50	3.03
47-3014	Helpers--painters, paperhangers, pla	16727	17819	19646	22365	28088	2008	$69,746	$74,299	$81,918	$93,257	$117,119	$599,000	8.59	8.06	6.4x	6.42	5.11
47-3015	Helpers--pipelayers, plumbers, pipe	21725	24308	30293	35952	39596	2008	$90,587	$101,357	$126,313	$149,912	$165,106	$599,000	6.61	5.9x	4.x4	4.00	3.63
47-3016	Helpers--roofers	19583	21525	24507	28676	32277	2008	$81,655	$89,755	$102,180	$119,571	$134,588	$599,000	7.34	6.67	5.x	5.01	4.45
47-3019	Helpers, construction trades, all othe	20780	24234		29978	31574	2008	$86,646	$101,051	$1xx	$125,000	$131,655	$599,000	6.91	5.93	x.24	4.79	4.55
47-4011	Construction and building inspectors	40908	47345	55703	66455	76997	2008	$170,578	$197,417	$232,268	$277,101	$321,059	$599,000	3.51	3.03	2.58	2.16	1.87
47-4021	Elevator installers and repairers	44898	58391	80336	96138	105347	2008	$187,215	$243,476	$334,982	$400,875	$439,273	$599,000	3.20	2.46	1.79	1.49	1.36
47-4041	Hazardous materials removal worke	23993	27962	32351	43134	56144	2008	$100,044	$116,594	$134,895	$179,860	$234,107	$599,000	5.99	5.14	4.44	3.33	2.56
47-4099	Construction and related workers, a	14847	15005	17462	43008	68922	2008	$61,909	$62,566	$72,811	$179,334	$287,390	$599,000	9.68	9.57	8.23	3.34	2.08
49-0000	Installation, maintenance, and repai	23331	30881	43901	58716	72440	2008	$97,285	$128,765	$183,056	$244,833	$302,058	$599,000	6.16	4.65	3.27	2.45	1.98
49-1011	First-line supervisors/managers of	38745	47649	62423	78645	92652	2008	$161,559	$198,686	$260,289	$327,933	$386,339	$599,000	3.71	3.01	2.30	1.83	1.55
49-2011	Computer, automated teller, and off	23898	27804	34608	50285	68040	2008	$99,650	$115,937	$144,308	$209,676	$283,713	$599,000	6.01	5.17	4.15	2.86	2.11
49-2022	Telecommunications equipment inst	42557	52511	64659	73049	77837	2008	$177,452	$218,958	$269,614	$304,597	$324,562	$599,000	3.38	2.74	2.22	1.97	1.85
49-2093	Electrical and electronics installers a	35081	40226	45570	49350	52301	2008	$146,278	$167,732	$190,017	$205,779	$218,082	$599,000	4.09	3.57	3.15	2.91	2.75
49-2094	Electrical and electronics repairers,	43512	51167	61478	71726	79139	2008	$181,436	$213,354	$256,348	$299,080	$329,991	$599,000	3.30	2.81	2.34	2.00	1.82
49-2098	Security and fire alarm systems inst	27300	30188	36036	44940	51954	2008	$113,835	$125,876	$150,263	$187,390	$216,637	$599,000	5.26	4.76	3.99	3.20	2.76
49-3011	Aircraft mechanics and service tech	37055	44258	58485	69216	81995	2008	$154,509	$184,544	$243,870	$288,616	$341,900	$599,000	3.88	3.25	2.46	2.08	1.75
49-3021	Automotive body and related repair	21756	25841	34377	41822	54117	2008	$90,718	$107,749	$143,345	$174,387	$225,657	$599,000	6.60	5.56	4.18	3.43	2.65
49-3023	Automotive service technicians and	22817	28277	35606	46085	56679	2008	$95,140	$117,907	$148,467	$192,163	$236,340	$599,000	6.30	5.08	4.03	3.12	2.53
49-3031	Bus and truck mechanics and diese	32571	38441	45444	51681	59934	2008	$135,814	$160,289	$189,492	$215,499	$249,912	$599,000	4.41	3.74	3.16	2.78	2.40
49-3042	Mobile heavy equipment mechanics	34209	49571	58821	66927	75915	2008	$142,644	$206,699	$245,271	$279,072	$316,550	$599,000	4.20	2.90	2.44	2.15	1.89
49-3053	Outdoor power equipment and other	24801	31395	36057	48615	86762	2008	$103,415	$130,911	$150,350	$202,714	$361,777	$599,000	5.79	4.58	3.98	2.95	1.66
49-3093	Tire repairers and changers	15824	19572	23447	32508	45927	2008	$65,981	$81,611	$97,767	$135,552	$191,506	$599,000	9.08	7.34	6.13	4.42	3.13
49-9021	Heating, air conditioning, and refrige	25316	31437	48605	62423	70550	2008	$105,560	$131,086	$202,671	$260,289	$294,177	$599,000	5.67	4.57	2.96	2.30	2.04

The following section can be found at the far right of the spreadsheet and is used to calculate the actual number of jobs that can't/can afford the median home/condo/rental by the 5 stratas. The Affordability Factor (user input) determines what threshold to use from the "Number of this occupation (PCT XX job holders) it takes". The numbers just to the right of the Affordability Factor (also user input) represent the percentages of each of the 5 stratas within each occupation type. The first column of this section is the number of jobs as reported from the BLS. The next section represents whether each of the 5 stratas within a certain occupation type can afford the median home/condo/rental based on the user input criteria. The next section represents the actual number of jobs that can't afford the median home/condo/rental by occupation type and strata. The last section represents the actual number of jobs that can afford the median home/condo/rental by occupation type and strata.

| | | | | | | | | 1.75 Affordability Factor | | 0.1 | 0.15 | 0.25 | 0.25 | 0.25 | | | | | | |
| | Who Can Afford the Median Home | | | | | | Number of Jobs that **Can't** Afford the Median Home | | | | | | Number of Jobs that **Can** Afford the Median Home | | | | | | |
Total Jobs	10 PCT	25 PCT	Median	75 PCT	90 PCT		10 PCT	25 PCT	Median	75 PCT	90 PCT		10 PCT	25 PCT	Median	75 PCT	90 PCT
1010	Yes	Yes	Yes	Yes	Yes								101	152	253	253	253
5560	No	No	Yes	Yes	Yes		556	834							1,390	1,390	1,390
390	No	No	No	Yes	Yes		39	59	98							98	98
420	No	No	Yes	Yes	Yes		42	63							105	105	105
1060	No	No	Yes	Yes	Yes		106	159							265	265	265
200	No	No	No	Yes	Yes		20	30	50							50	50
1010	No	No	No	Yes	Yes		101	152	253							253	253
760	No	No	Yes	Yes	Yes		76	114							190	190	190
1850	No	No	Yes	Yes	Yes		185	278							463	463	463
490	No	No	Yes	Yes	Yes		49	74							123	123	123
190	No	No	No	Yes	Yes		19	29	48							48	48
290	No	No	Yes	Yes	Yes		29	44							73	73	73
360	No	No	Yes	Yes	Yes		36	54							90	90	90
710	No	Yes	Yes	Yes	Yes		71							107	178	178	178

Shelter (Condo and Rental) Affordability

Some have settled for condominium or apartment living which are still affordable to many dual income working families. Though multi-family living may appear affordable to many working, in real world terms, many families are still choosing long commutes for home purchases as single family living is more conducive to family living. Multi-family living for families with at least two kids, pets, toys, bicycles and noise is a difficult proposition. Multi-family living is really only appropriate for small families, like couples with one or no children. Though multi-family living may not be a conducive choice for many working families, it is worthy of some discussion.

Excluding high-end product, condominiums tend to range from as small as 500 square feet up to about 900 square feet, with some approaching 1,000 to 1,200 square feet. Similarly, the bulk of condominium product tends to be in the one to two-bedroom size ranges with random studio and three-bedroom units. The urban markets tend to have smaller units including studios while the suburban markets tend to have larger units. Overall, condominiums, though relatively affordable, have followed the same trend for measures of affordability as single family housing but on a delayed basis. Condominium analysis can also be very specific to a suburban market, urban market or even a sub-market within an urban market which may need to be addressed in this study.

In terms of apartment housing, for the most part, apartment rents have remained relatively affordable over the past eight years or so. This pricing disparity has created a strong demand for rental units especially in markets with high median priced homes and condos. Other demographic factors are also contributing to the rental market including marrying later, smaller families and high divorce rate. However, notwithstanding these economic factors, the pricing disparity between purchase and rental will most likely equalize by increased rental prices, decreased home and condo prices or a combination of the two.

Income Level Analysis

This analysis examines the United States Bureau of Labor Occupation Codes within a certain Metropolitan Statistical Area and shows how a family's income within a certain occupation code compares to the Area Median Income established by the U.S. Department of Housing and Urban Development (HUD) and subsequently, eligibility in State and Federal Housing Programs. The analysis is broken into several sections:

The first section is the user input area. This allows the user to define the family size, how many wage earners are in the family, and the percentage of income of the additional wage earners beyond the primary (if applicable). Family size is necessary because Area Median Income is determined by the number of occupants in the family; the larger the family, the more space required and consequently higher income. The reason for the Additional Wage Earner Salary % calculation is that the norm in a family with multiple wage earners is the primary makes the highest income and the secondary wage earners make a percentage less than the primary.

The second section is broken into five income strata by percentile, i.e. lower 10th, lower 25th, median, upper 75th and upper 90th. Intuitively, those compensated at the lower strata (lower 10th and 25th) are typically the younger, less skilled workers likely new to their respective industry. The well compensated (upper 75th and 90th percentile) are the older, highly skilled and more experienced workers.

The third section (color coded) compares the family income (based on user input for size and wage earners) to the HUD Area Median Income by percentages. Therefore, if the % is less than 100%, the family would be making less than the HUD Area Median Income. If the % is greater than 100%, the family would be making more than the HUD Area Median Income. The specific color-coded data represents the HUD income levels.

The last section sums all occupancy codes both in a chart and graph format.

What Does This All Mean?

This analysis is going to have a different meaning for every audience. It can represent opportunity or need for the development of affordable or workforce housing. It can represent what types of occupations can afford to live in a certain area or on the other hand, what types of occupations can't afford to live in a certain area. It can represent what has been occurring in affordability over a certain period of time. It is also possible to add additional information such as local employment projections to increase the scope of the analysis for land use planning. These are just a set of basic examples, but with the breadth of information contained herein, the possibilities are endless.

Due to the endless amount of possible information contained in this spreadsheet we welcome all feedback, criticism and thoughts. Our ultimate goal is to provide this information in an easy to use format so that any audiences will gain insightful, relevant and usable information.

This original analysis was created and developed by Charles Wathen and Robert Lubeck for Housing Hawaii, a non-profit housing advocacy group based in Honolulu Hawaii. Please direct all comments and questions to:

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