

**Joint Center for Housing Studies
Harvard University**

**Addendum to W07-7: Using Long-Term Demand Projections to Estimate
Short-Term Market Imbalances**

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Introduction

As described in detail in *Projecting the Underlying Demand for New Housing Units: Inferences from the Past, Assumptions about the Future* (JCHS Working Paper W07-7), a major shortcoming of an accounting-style demand projection methodology is that it must be viewed across a timeframe long enough for long-run trends to hold and for cyclical aberrations to even out over the course of the projection. Also necessary is the assumption that markets are in balance at both the beginning and end of the projection period. In reality, however, it is rarely the case that markets are ever in balance for any extended period of time. Although guessing how far out of balance markets will be at the end of a 10 year projection period is not worthwhile, this addendum will show how it may be possible to estimate the over- or under-supply entering the projection period by applying our methodology to past time periods.

Although our study period encompasses the housing boom, it appears that total household growth from 1995-2005 as measured by the US Census Bureau's Housing Vacancy Survey (HVS) was more or less in line with long-run trends. Or, put differently but perhaps more accurately, there is little evidence that actual household growth was at unsustainable levels during this period as there were no dramatic fluctuations in population growth and no significant changes to the relationship between population growth and household formations. Headship rates for most age cohorts remained stable, and while some younger age cohorts saw slight increases and some older cohorts saw slight decreases, these trends were insignificant.

Taking the assumption that HVS household growth was at long-run trend levels, we can use it within the methodology presented in Working Paper W07-7 to calculate what construction would have been if it too was in line with long-run levels and then compare this figure to the actual construction that occurred. The result is an estimate of how much excess construction was in the markets entering 2005. Starting the projection in 1995, a time when for-rent and for-sale vacancies were relatively stable, allows us to assume markets were arguably close to being in balance and without significant existing excess or deficiency of units to take into account.

While household growth seems in line with long-run trend levels from 1995-2005, homeownership rates clearly accelerated during the boom, at the expense of renting, to levels that far surpassed those that would have been expected by demographics alone (Figure 1). Therefore, for the two categories of new unit demand that require input of household growth by tenure, namely sustainable rental and for-sale vacancy demand, this paper presents two

alternative estimates, one based on actual household growth by tenure from 1995-2005 and a second based on applying a constant homeownership rate to the total household growth that occurred. For the constant homeownership rate estimates, we choose to apply the average homeownership rate from years 1999-2001, a relatively recent period of stability in the for-sale housing markets prior to the housing boom, as described in W07-7. Holding a constant homeownership rate from this period is a big assumption because not only is it possible that some of the sharp jump in homeownership since 2001 is sustainable, but also that some of the increase prior to 1999 was not. If the former is the case, then our homeownership rate would be too low, making the adjusted-tenure demand estimates too aggressive by overestimating the number of new renter households who sustain higher natural vacancy rates than homeowner households. On the other hand, it is also possible that a large shift from renting to owning may increase the sustainable vacancy rate of owner-intended housing because it would mean more households with the same characteristics that supported the higher natural vacancy rates of rentals in the past would now be included among the ranks of homeowners. To incorporate these possibilities within the projections, this analysis uses both actual and tenure-adjusted HVS household growth to display the most aggressive and most conservative demand projections according to a range of assumptions. High and low estimates are calculated for each type of new unit demand except for that of net replacements, which is a single very rough estimate. This approach forms a meaningful difference over 10 years.

Calculating Excess New Home Construction from 1995-2005

JCHS Working Paper W07-7 details a process of projecting long-run demand for new housing units and the many assumptions that must be made along the way. The main components of new home demand projections are identified: household growth, new sustainable for-rent and for-sale vacancies, second home demand, and net replacements of damaged or obsolete stock. For most components, W07-7 presents both conservative and aggressive assumptions. For example, three options are presented for potentially sustainable rates of for-rent vacancies based on past time periods where rates held stable.¹ Applying the most conservative vacancy rate of 7.4 percent to the projected growth in renter households yielded a projected demand for 145,000

¹ The rates are determined from when rental vacancies held constant from 1991-4 at about 7.4 percent of renter households, then proceeded to increase and stabilize again at about 8 percent from 1998-2000, and then proceeded to increase yet again and stabilize at 9.8 percent in 2005-6.

new units from 2005-2015, while the most aggressive estimate of 9.8 percent yielded a figure of 200,000 new units. As a conservative forward-looking projection, at each point in the projection process W07-7 considered the option that led to the smallest number of new unit demand for the future time period 2005-2015. This paper will show both the most conservative and most aggressive estimates of long-run demand from 1995-2005 and will compare both to the actual supply produced during this period.

Household Growth

Despite surging immigration and homeownership rates during the boom, household growth remained in line with sustainable long-run levels. As in W07-7, this analysis adjusts for the re-benchmarking in the HVS by setting household growth from 2002-2003 equal to the 1.37 million average annual household growth from 2000-2005. The result is total household growth of 12.6 million from 1995-2005 (Table 1). Table 1 also shows the tenure adjustments made to compensate for the amount of homeownership pulled forward during the housing boom. The two columns on the right show estimates of household growth by tenure that would have occurred had the average homeownership rates from 1999-2001 held constant within each householder age category.

New Sustainable For-Rent and For-Sale Vacancies

Household growth creates additional demand for three types of vacancies: for-rent vacancies, for-sale vacancies, and seasonal/second homes. A larger household base means a higher number of for-rent and for-sale vacancies that is sustainable and even necessary for a mobile population to function. By applying the assumptions for sustainable rates of for-sale and for-rent vacancies presented in W07-7 to actual HVS household growth by tenure, the decline in renter households from 1995-2005 created a net negative demand for new rental units ranging from -9,000 to -13,000 (Table 2), while the growth in owner-occupied households created demand for between 191,000 to 305,000 new vacant units (Table 3). The decline in renter units and overwhelming growth in homeowner households for this period within the actual HVS data underline the view that growth in homeownership was out of line with long-run demand levels and therefore skews the estimate of long-run demand for for-rent and for-sale vacancies. Adjusting for this possibility and applying the sustainable vacancy assumptions to the adjusted

household growth by tenure estimates from Table 1, projected long-run demand for new vacant rental housing units for 1995-2005 ranged from 268,000 to 369,000, while expected long-run demand for new vacant owner units ranged from 139,000 to 222,000. Combining these two sets of estimates, the total range of projected long-run demand for new sustainable vacant for-rent units ranges from -9,000 to 369,000, while demand for new vacant for-sale units ranges from 139,000 to 305,000.

Seasonal and Other Second Home Demand

Seasonal and second home ownership is highly associated with age, so growth in demand for new seasonal and second homes increases according to the distribution of householders by age. Using age-based second home ownership rate assumptions from W07-7, household growth and changes to the age distribution of householders from 1995-2005 created demand for between 1.085 and 1.15 million new seasonal and second homes (Table 4).

Net Replacement Demand

W07-7 uses a general assumption that 0.25% of the housing stock is replaced every year. Under this assumption, net replacements of obsolete housing stock based on the 113 million total units in 1995 added approximately 2.825 million units to new unit demand from 1995-2005 (Table 5).

Summary of Projected Long-Run Demand from 1995 to 2005 and Comparison to Actual Home Construction

Combining the long run demand estimates from the various categories above, total demand for new units from 1995-2005 ranges from 16.7 to 16.9 million (Table 6). The adjustments for above-trend growth in homeownership during this period increase the expected demand levels to a range of 16.9 to 17.2 million, due to the fact that renter household growth is adjusted higher and sustainable vacancy rates are significantly higher for the rental stock than the owner stock. Therefore, the overall range between the most conservative and most aggressive estimates for total long-run demand for new housing units from 1995-2005 extends from 16.68 to 17.16 million units.

During the 10 years from 1995-2005, actual completions and mobile home placements were consistently above long-run demand levels. While even the most aggressive long-run demand estimates under the outlined assumptions called for 17.16 million new housing units during this period, actual completions and placements were a much higher 18.14 million units. This amounts to a total excess of new units entering 2005 ranging from approximately 1.0 to 1.5 million (Figure 2).

Estimating Excess New Supply Since 2005

After the boom, the sharp cutback in production in 2007 and 2008 has taken a significant bite out of the accumulated excess new home supply that was on the markets entering 2005. Inventories have not reflected this, however, because household growth has also been well below long-run projections due to a number of factors related to the economy, including a decline in immigration both legal and illegal, an outflow of illegal immigrants already settled, a decrease in household formations, and an increase in the doubling up of households.

Since actual household growth has been out of line with long-run growth levels since 2005, this paper uses the 2006 JCHS 10-year household growth projections as a basis for estimating the supply-side of the equation and the number of new homes remaining on the market entering 2009 in excess of long-run demand levels.

Taking the same approach laid out above for the four years from 2005 through 2008 but applying the 2006 long-run household growth projections (Masnick and Belsky, 2006) and the assumptions for net replacement demand used in W07-7, long-run demand for new housing ranged from 7.88 to 8.03 million units (Table 7). At the same time, the sharp drop off in completions and placements in 2007 and 2008 brought only 6.94 million new units onto the market since 2005, which was approximately 940,000 to 1.08 million units under long-run demand levels. The sharp reduction in excess new home supply since 2005 is a significant fraction of the calculated 978,000 to 1.46 million excess new units on the market entering 2005, and brings supplies much closer to being in balance with long-run demand levels (Figure 3).

References

Belsky, Eric S., Rachel Bogardus Drew, and Daniel McCue. "Projecting the Underlying Demand for New Housing Units: Inferences from the Past, Assumptions about the Future." Joint Center for Housing Studies of Harvard University Working Paper W07-7. November 2007.

Masnick, George S. and Eric S. Belsky. "Addendum to Research Note N06-1: Hispanic Household Projections Including Additional Tenure Projection Detail by Age and Broad Family Type for Non-Hispanic White and Total Minority Households." Joint Center for Housing Studies of Harvard University Working Paper N06-4. December 2006.

**Table 1: HVS Household Growth by Tenure and Age with JCHS Adjustment (1995-2005)
Actual vs. Estimated if 1999-2001 Homeownership Rates by Age Held Constant**

Age of Householder	Household Growth 1995-2005			Average Homeownership Rate 1999-2001(%)	Household Growth 1995-2005 Under Constant 1999-2001 Homeownership Rates by Age		
	HVS Actual (000's)				TOTAL	OWNER	RENTER
	TOTAL	OWNER	RENTER		TOTAL	OWNER	RENTER
Under 25	1,455	984	472	21.4	1,455	311	1,144
25 to 29	453	721	-268	37.8	453	171	281
30 to 34	-1,447	-540	-907	54.4	-1,447	-787	-660
35 to 39	-1,070	-116	-955	65.0	-1,070	-695	-375
40 to 44	1,395	1,439	-44	70.4	1,395	982	412
45 to 49	2,354	1,821	533	74.9	2,354	1,762	592
50 to 54	3,170	2,565	605	78.2	3,170	2,477	692
55 to 59	3,576	2,994	582	80.7	3,576	2,886	690
60 to 64	1,525	1,328	197	81.1	1,525	1,237	288
65 to 69	139	243	-104	82.8	139	115	24
70 to 74	-654	-398	-255	82.6	-654	-540	-113
75+	1,700	1,676	24	77.6	1,700	1,320	380
Total	12,596	12,714	-118	67.3	12,596	9,240	3,355

* uses JCHS adjustment for re-benchmarking in 2002-3. Totals may not sum due to rounding.

**Table 2: Estimated Long-Run Demand for Vacant For-Rent Units from 1995-2005
Using HVS Actual Annual Household Growth**

Vacancy Base Year	HVS published Vacancy Rate	Ratio of vacant for-rent to renter occupied units	Renter household growth 1995-2005 (000's)	Projected change in vacant for-rent demand 1995-2005 (000's)	Alternative renter household growth 1995-2005 under constant 1999-2001 homeownership by age scenario(000's)	Projected change in vacant for-rent demand 1995-2005 under constant 1999-2001 homeownership by age scenario(000's)
1991-4	7.4%	8.0%	-118	-9	3,355	268
1998-00	8.0%	8.9%	-118	-11	3,355	299
2005-6	9.8%	11.0%	-118	-13	3,355	369
Lowest Projection				-13		268
Highest Projection				-9		369

Table 3: Estimated Long-Run Demand for Vacant For-Sale Units from 1995-2005
Using HVS Annual Household Growth

Vacancy Base Year	HVS Published Owner Vacancy Rate	Ratio of vacant for-sale to owner-occupied units	Owner household growth 1995-2005 (000's)	Projected change in vacant for-sale demand 1995-2005 (000's)	Alternative owner household growth 1995-2005 under constant 1999-2001 homeownership by age scenario(000's)	Projected change in vacant for-sale demand 1995-2005 under constant 1999-2001 homeownership by age scenario(000's)
1992-5	1.5%	1.5%	12,714	191	9,240	139
1998-2002	1.7%	1.7%	12,714	216	9,240	157
2006	2.4%	2.4%	12,714	305	9,240	222
Lowest Projection				191		139
Highest Projection				305		222

Table 4: Growth in Demand for Seasonal and Other Second Homes from 1995-2005
Using HVS Annual Household Growth

	HVS Household Growth 1995-2005	SCF Second Homes Per HH (1993)	SCF Second Homes Per HH (2003)	Projected Growth in 2nd Home Demand(using 1993 rates)	Projected Growth in 2nd Home Demand (using 2003 rates)	Lowest of 1993 or 2003 Projections	Highest of 1993 or 2003 Projections
Age of Householder							
Under 30	1,908	1.6%	2.1%	31	40	31	40
30s	-2,517	3.8%	3.5%	-96	-88	-96	-88
40s	3,749	7.0%	6.2%	262	232	232	262
50s	6,745	10.2%	10.4%	688	702	688	702
60s	1,664	8.7%	9.0%	145	150	145	150
70s+	1,047	8.1%	8.1%	85	85	85	85
Total Growth in Seasonal and Other Second Homes 1995-2005						1,085	1,150

Table 5: Estimated Long-Run Demand from Net Removals

	Base Year HVS Housing Stock (000's, Rounded)	Projected 10 Year Loss Rate (%)	Estimated Net Removals in next 10 yrs (000's)
1995	113,000	2.5%	2,825
2000	120,000	2.5%	3,000
2005	124,000	2.5%	3,100
2008	130,000	2.5%	3,250

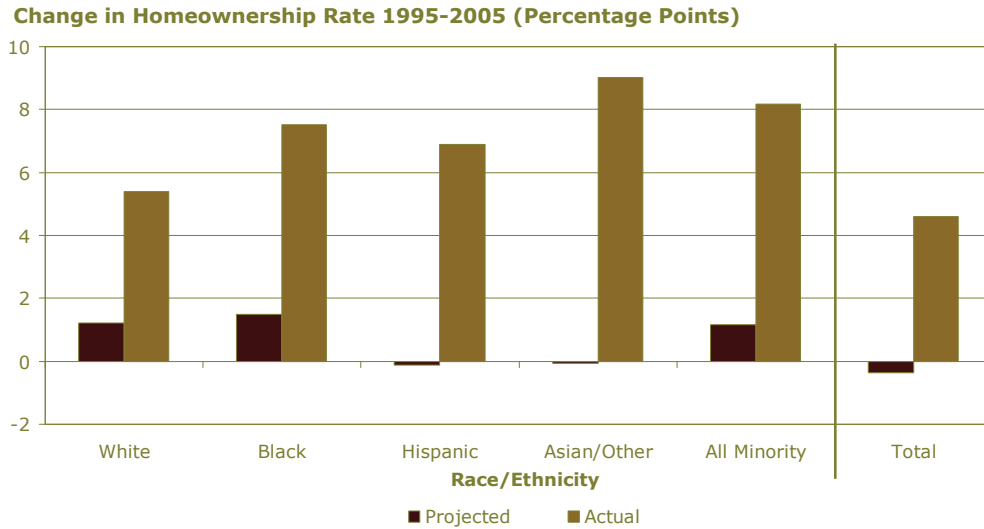
Table 6: Estimated Total Long-Run Demand for New Units from 1995-2005

	Using Actual HVS Households		JCHS Tenure-Adjusted HVS	
	Low Demand Estimate (000's)	High Demand Estimate (000's)	Low Demand Estimate (000's)	High Demand Estimate (000's)
Household Growth	12,596	12,596	12,596	12,596
Vacant For Sale	191	305	139	222
Vacant For Rent	-13	-9	268	369
Second Homes	1,085	1,150	1,085	1,150
Net Replacements	2,825	2,825	2,825	2,825
Total New Unit Demand 1995-2005	16,684	16,867	16,913	17,162
Completions & Placements 1995-2004	18,140	18,140	18,140	18,140
Net Excess New Units Built 1995-2005	1,457	1,273	1,227	978

Table 7: Estimated Total Long-Run Demand for New Units from 2005-9

	Low Demand Estimate (000's)	High Demand Estimate (000's)
Household Growth	5,825	5,825
Vacant For Sale	58	79
Vacant For Rent	77	123
Second Homes	478	560
Net Replacements	1,440	1,440
Total New Unit Demand 2005-9	7,878	8,027
Completions & Placements 2005-8	6,941	6,941
Net Excess New Units Built 2005-9	-937	-1,086

Figure 1: While Household Growth Held Steady, Economic Forces Overwhelmed Demographics In Driving Homeownership Rates During the Boom



Notes: Whites, blacks and Asian/others are non-Hispanic. Hispanics may be of any race. Projected 2005 homeownership rates are calculated by applying actual homeownership rates by age and race/ethnicity held constant at 1995 levels to 2005 household counts, to estimate the expected effect of demographics on the homeownership rate. Sources: JCHS tabulations of the 1995 and 2005 Current Population Surveys.

Figure 2: Accumulated Home Completions & Placements Exceeded Long-Run Demand by 0.98 to 1.46 Million Units Entering 2005

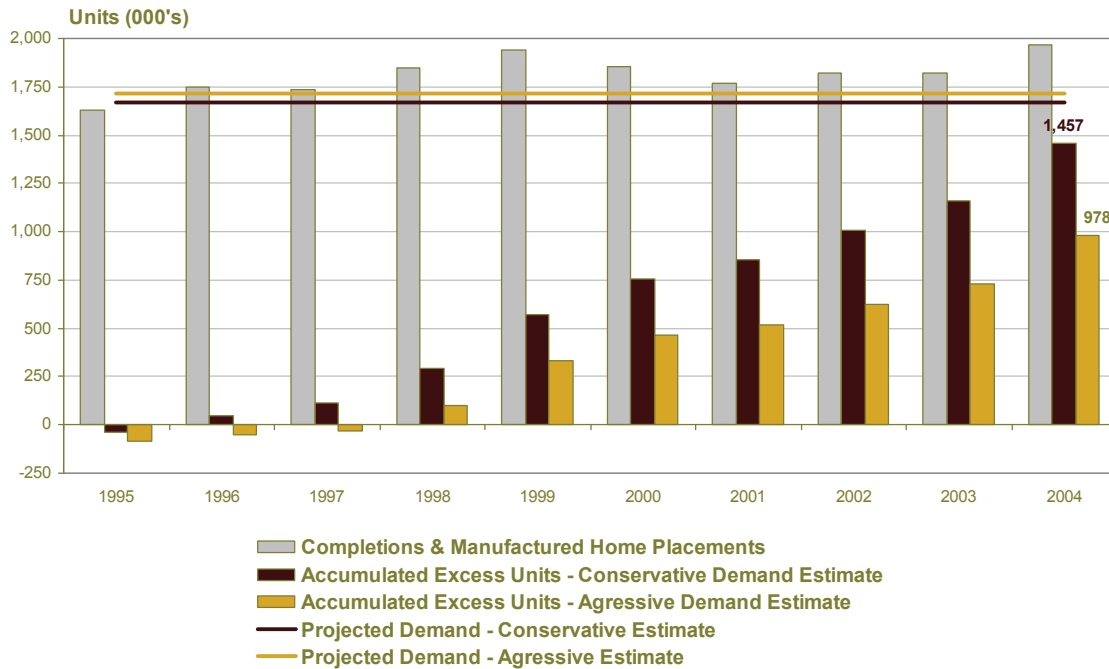


Figure 3: Sharp Reductions in New Home Construction 2007-8 have Brought Supplies Much Closer to Balance with Long-Run Demand Levels

