

## Appendix: Assumptions for Demand Projections

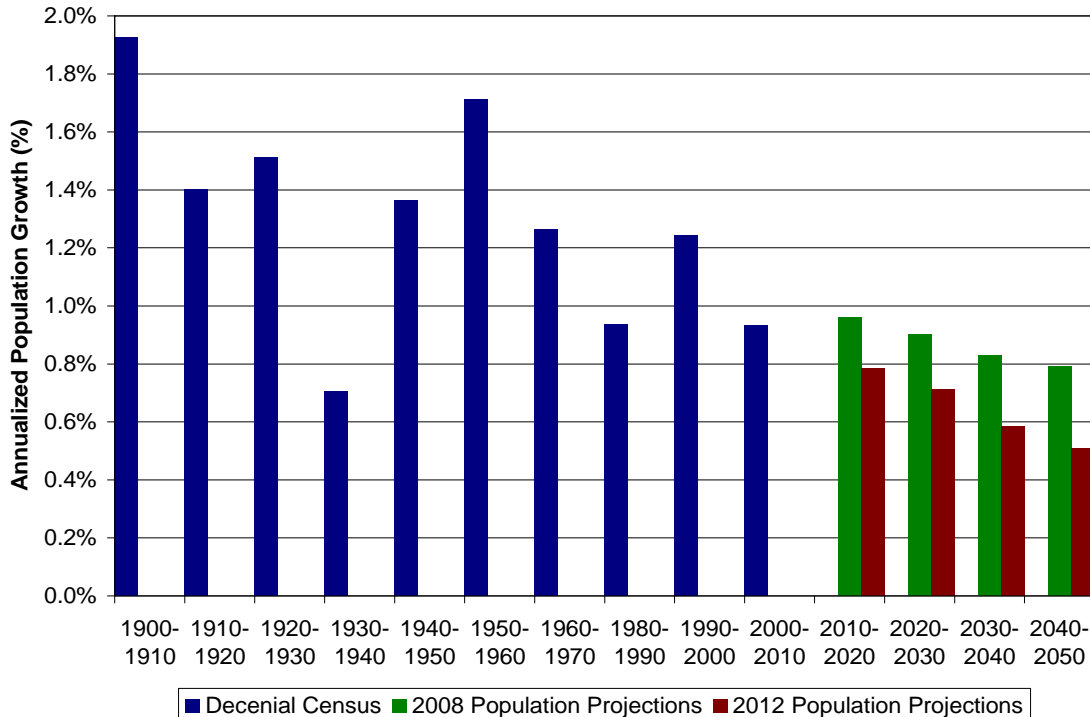
Patrick A. Simmons and Brian Hughes-Cromwick  
Economic and Strategic Research

This document explains the calculations and assumptions underlying the demand side of our forecast of a return to “normal” market conditions.

We estimate that annual household growth will rise from a low of about 0.36 million during the recession and 1.16 million today to a more normal rate of 1.37 million. To project **household growth**, we:

- Estimate future age-specific headship rates (percentage of the population in a given age bracket that heads a household) by averaging the rates from the 2000 and 2010 Censuses. We assume that headship rates will not return to the robust levels of 2000, but will rise from today’s depressed rates.
- Hold our age-specific headship rates constant and apply them to the Census Bureau’s 2012 National Population Projections for 2015 and 2020 to project total households during these years.
- Subtract the 2015 household projection from the 2020 household projection and divide by five to arrive at average annual household growth of 1.37 million.

*The Census Bureau Downgrades its Population Projections*



Population increase is the most important driver of our household growth forecast. With its 2012 National Population Projections, the Census Bureau significantly downgraded its outlook for population growth in coming decades, largely due to a reduction in projected immigration (see the figure above). Had we used the Census Bureau’s more optimistic 2008 population projections and kept all other assumptions constant, our “normal” household growth forecast would have been roughly 1.5 million.

Growth in vacancies is the second component of our new housing demand forecast. Additional vacant housing units are required in a growing housing market to satisfy new demand for vacation and second homes, as well as to accommodate normal housing unit turnover. We expect annual growth in vacant units to reach approximately 160,000 units over the second half of this decade. To estimate the **change in vacancies** we:

- Average the ratio of vacant housing units to households from the 2000 and 2010 Censuses.
- Apply that average ratio to our estimates of households in 2015 and 2020 to estimate the total number of vacant units in those years.
- Subtract the 2015 total from the 2020 total and divide by five to get an average annual change in vacant units of 160,000.

The final component of new housing demand, net removals of housing units from the stock, comprises multiple distinct flows including demolition of obsolescent housing; losses due to natural disasters, fires, and similar events; combinations or subdivisions of existing housing units; and conversions of structures to and from residential use. We expect this component to account for 230,000 units of new housing demand by the second half of this decade. To estimate **net removals** we:

- Subtract the total change in the housing stock between 1980 and 2010 from total housing unit production (housing completions plus manufactured home placements) during the same period.
- Divide the resulting figure by 30 years to develop an average annual net removal estimate of 230,000.

---

Patrick A. Simmons and Brian Hughes-Cromwick  
Economic and Strategic Research  
January 10, 2013

*Opinions, analyses, estimates, forecasts and other views of Fannie Mae's Economic and Strategic Research (ESR) group included in these materials should not be construed as indicating Fannie Mae's business prospects or expected results, are based on a number of assumptions, and are subject to change without notice. How this information affects Fannie Mae will depend on many factors. Although the ESR group bases its opinions, analyses, estimates, forecasts and other views on information it considers reliable, it does not guarantee that the information provided in these materials is accurate, current or suitable for any particular purpose. Changes in the assumptions or the information underlying these views could produce materially different results. The analyses, opinions, estimates, forecasts and other views published by the ESR group represent the views of that group as of the date indicated and do not necessarily represent the views of Fannie Mae or its management.*