

Population and Housing Demand Projections for Metro Boston

Regional Projections and Provisional Municipal Forecasts

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Metropolitan Area Planning Council

Appendix G:

Reports and Methodologies Reviewed

In preparation for the development of new population and housing demand projections, MAPC reviewed a variety of technical documents, reports, and data from researchers and other regions. This appendix provides a summary of the major documents reviewed.

Updated 2010 – 2020 Household and New Home Projections; George Masnick, Daniel McCue, and Eric Belsky; Joint Center for Housing Studies, Harvard University; Report W10-9; September 2010
(http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/w10-9_masnick_mccue_belsky.pdf)

This paper presents new sets of national-level household growth projections based on alternative assumptions about headship rates, immigration. The baseline headship rates are based on 2005 – 2007 and are assumed to be maintained over the projection period (2005 – 2025.) The headship rates are applied to two sets of population projections: the US Census population projections by age and race, and an alternative low-immigration scenario. An alternative “low headship” scenario is based on the lowest 3-year average for each age group since 1980. After examining a vacancies, recent production, household size, and evidence for ‘doubling up’ of households, the report suggests it is possible that “a surge in pent-up demand at some point in the coming years will absorb much of what today is showing up as excess vacancies.” The report also underscores the importance of using age-specific headship rates; using a population wide headship rate generates much lower household growth projections since “the aging U.S. population gives increasing weight to age groups with higher headship rates.” The projections also anticipate a decline in households headed by 40- to 54-year olds over the coming decade, with nearly all of the increase in household demand attributable to the over-55 population. With regard to household type, most growth after 2015 will be in single person households; family households without children are likely to decline as a share of projected household growth.

Projecting the Underlying Demand for New Housing Units: Inferences from the Past, Assumptions about the Future; Eric Belsky, Rachel Bogardus Drew, and Daniel McCue; Joint Center for Housing Studies, Harvard University; Report W07-07, November 2007

(<http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/w07-7.pdf>)

This paper examines the challenges of projecting the long-run sustainable demand for new housing and explores assumptions regarding three key components of demand & supply: household growth; replacement of units lost to demolition; and vacant /seasonal units. The paper identifies recommended datasets to be used for creating assumptions about headship rates, vacancies, and losses and provides important caveats and caution about the use of those datasets. Regarding vacancy rates, the researchers recommend a conservative natural vacancy rate based on 1994/1995 (nationwide) rates of 7.4 percent for rental units and 1.5 percent for for-sale units. These natural vacancy rates can be applied to the current stock of vacant units to estimate the number of vacancies ‘needed’ (as was the case in 2007 when the paper was written) or excess vacancies that may be occupied to satisfy demand. The report also seeks to estimate the loss of units based on age of housing stock or a completions to household growth; however, both methods are applied at the national level and are not applicable to Metro Boston’s unusually old and well-protected housing stock.

MISER Population Projections for Massachusetts, 2000 – 2020; Stefan Rayer; Massachusetts Institute for Social and Economic Research; July 2003

This report documents the methodology for MISER’s municipal-level population projections for Massachusetts. The projections use a cohort component methodology in which fertility, mortality, and migration are projected independently for each of the 351 cities and towns in the state, with no regional or state control total. “Special populations” (i.e. group quarters) are isolated from the population in households and then added back in at the end of the forecast period. The mortality component uses age-

specific survival rates for 5-year age groups based on three-year state average mortality rates for the period 1991 – 2001. A average of nationwide projected trends in survival rates are applied to the age-specific survival rates. Migration estimates use the forward survival rate method, which applies ten year survival rates to the launch year population to estimate the expected population at the end of a time period, and migration is calculated as the difference between the expected and actual population. Age-specific birth rates were developed based on multi-year average of recorded births from 1995 – 2001. The fertility components were held constant over the 20-year forecast period. High and low projection series were created by increasing migration rates by 10%, fertility rates by 12%, and accelerated increase in survival rates. A low projection was developed by applying the inverse of these adjustments. The difference between the high and low series amounts to about 400,000 – 450,000 persons per decade.

Foundation for Growth: Housing and Employment in 2020, Technical Report; Lindsay Koshgarian, Alan Clayton Matthews, Michael Goodman, and Michael Johnson; UMass Donahue Institute

This report projects housing supply and demand for two alternative employment growth scenarios over the period 2010 – 2020. Forecasts of population by age (from U.S. Census) and employment by industry and occupation (from BLS/MA DUA) are used to reweight the 2006 – 2008 ACS data for MA. The natural vacancy rates defined in the 2007 Joint Housing Center study described above are applied to future years, and the share of seasonal, unoccupied, and other unavailable units is held constant for future years.

Metro Vancouver Regional Growth Strategy Projections: Population, Housing, and Employment, 2006 – 2041, Assumptions and Methods; Metro Vancouver Regional Development; December 2011

These regional forecasts use population growth projections prepared by the Province of British Columbia BC Stats PEOPLE model. Age-specific headship rates from the 2005 Census of Canada are applied to the population by age to project future households and average household size by housing type (single family, attached, row housing, multifamily.) Municipal housing unit projections are prepared using an iterative methodology that combines a regional share approach with a municipal absorption rate based on local development capacity and land use plans. The municipal absorption rate is determined in the near term by trends in regional growth share and recent building permits, and in the longer term by regional share of land development capacity and designated growth areas. Future year municipal population is based on housing projections and average household size per dwelling unit/type. It is assumed that divergent household sizes will gravitate toward the regional average.

Flashforward: Projecting Population and Employment to 2031 in a Mature Urban Area; Toronto City Planning; 2002; and Flashforward Addendum: Projecting Housing Demand by Tenure to 2031; Toronto City Planning; 2006

The Flashforward projections uses cohort survival rates for one-year age cohorts, including cohort specific life expectancy rates (based on age of birth.) International immigration and interprovincial migration are estimated based on Census of Canada data. International outmigration is inferred using the “residual migration” method which is essentially the same as the forward survival method. Net migration rates are adjusted so that the total population matches the control totals for the GTAC region. Age specific headship rates are applied to the future year population to estimate households by six different housing types. Housing demand is allocated to sub-areas based on planned and proposed development.

Metropolitan Council Forecast Methodology; Metropolitan Council [Minneapolis/St. Paul]; 2006

The 2030 projections use a cohort component model, using age-specific fertility, mortality, and net migration rates. A range of alternative assumptions regarding births, deaths, and migration were tested in the model. Populations forecasts by age are converted to households based on age-specific household formation rates. Demand by housing type (single family/multifamily) is based on estimated housing type preferences by age of householder, with the share of under-65 households in single family housing projected to decline over the coming decades. Municipal allocation of households uses a historical share approach with greater weight given to recent trends, and adjusted to reflect developable land and planned/anticipated development. Household forecasts are converted to population using household size trends and adjusted so they meet the regional control totals. Allocation to TAZs is conducted by municipalities. The Met Council is now preparing a new set of 2040 population and household projections using the demographic software ProFamy.

Socioeconomic Inventory Validation and Forecasting Method; Chicago Metropolitan Area Planning Council; January 2011 (<http://www.cmap.illinois.gov/population-forecast>)

This document describes the methodology for the Metro Chicago population and employment projections adopted in 2010 (before the Census 2010 data was available.) the base year population was based on Census population estimates by MCD and “Household components (adults, workers, children, income) were estimated using a base year population synthesis technique that iteratively applies household components to match observed Census distributions at the PUMA.” Allocation of future growth was based on an attractiveness measures based on land value, accessibility, and regulatory constraints. Projections of future households and jobs were based on a linear extrapolation from 2010 to 2040 through the forecasts adopted in 2006 as part of the 2030 RTP.