MAYOR MARTIN J. WALSH

HOUSING A CHANGING CITY

BOSTON 2030

APPENDIX A

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Appendix A: Demographic Methodology

The City of Boston is grateful for the work done by the Metropolitan Area Planning Council (MAPC) in providing detailed demographic data for this housing plan. MAPC's methodology is explained in the following statement.

MAPC Population and Household Projections

The population, household, and housing demand projections used for this plan were prepared by the Metropolitan Area Planning Council, the regional planning agency for 101 cities and towns in Metro Boston. MAPC is responsible for preparing socioeconomic and land use projections for the region to support a variety of planning activities, and in January 2014 the agency released population and housing demand projections for the region and its municipalities to the year 2040. A full report, technical documentation, data visualizations, and data downloads are available at www.mapc.org/projections. This release represents the most detailed and robust effort ever conducted to forecast the region's future demographic change and housing need.

The projections were developed in consultation with an advisory team that included academic experts, state agencies, neighboring regional planning agencies (RPAs), and staff from the City of Boston. MAPC reviewed reports from other regions nationwide to assess the current state of practice and also reviewed prior projections for our region to assess their accuracy and identify opportunities for improvement. Data sources for the projections include Decennial Census data from 1990, 2000, and 2010; American Community Survey (ACS) data from 2005 to 2011; fertility and mortality information from the Massachusetts Community Health Information Profile (MassCHIP); housing production information from the Census Building Permit Survey database; and MAPC's Development Database.

Since the future cannot be predicted with certainty, identifying a range of possible futures may prove more useful than a single forecast. Our projections include two scenarios for regional growth. Each scenario reflects different assumptions about key trends. The "Status Quo" scenario is based on the continuation of existing rates of births, deaths, migration, and housing occupancy. Alternatively, the "Stronger Region" scenario explores how changing trends could result in higher population growth, greater housing demand, and a substantially larger workforce. Specifically, the Stronger Region scenario assumes that in the coming years:

- the region will attract and retain more people, especially young adults, than it does today;

- younger householders (born after 1980) will be more inclined toward urban living than were their predecessors, and less likely to seek out single family homes; and

- an increasing share of senior-headed households will choose to downsize from single family homes to apartments or condominiums.

Of the two scenarios, Stronger Region is more consistent with the housing, land use, and workforce development goals of MetroFuture, MAPC's regional plan for sustainable and equitable growth and development in the region. As a result, MAPC recommends that municipalities, state agencies, and other users adopt this scenario as the basis for future planning. To that end, Executive Office of Housing and Economic Development has adopted Stronger Region as the basis for the Commonwealth's multifamily housing production goal, and MassDOT is using this scenario for transportation planning purposes.

Consistent with MAPC's recommendations, this plan utilizes the Stronger Region scenario as the basis for planning. Boston's adoption of the Stronger Region scenario for housing planning purposes is an important step toward collective municipal efforts to promote greater housing opportunity and a growing workforce.

Methodology

Boston's population and household projections reflect a variety of inputs and independently-developed estimates. MAPC developed both regional projections and unconstrained municipal projections, and then adjusted those municipal projections for consistency with regional totals. To support the development of this housing plan, MAPC then conducted additional analysis and adjustment to address issues of particular importance to Boston. As a result, the projections in this plan may not be identical to those previously published.

MAPC first developed regional projections of population by age, gender, and race, utilizing a standard cohort survival methodology with age- and race-specific fertility and mortality rates based on information from the Massachusetts Department of Public Health (DPH). We use disaggregated and adjustable age- and race-specific migration rates to and from the region, based on migration data available from the U.S. Census Bureau's American Community Survey (ACS) and Public Use Microdata Sample (PUMS). The group quarters population (residents of dorms, nursing homes, prisons, etc.) is estimated as a percent of the population or, for the college-age population, as a fixed number. Household estimates are produced using regionwide age-specific headship rates derived from the decennial census, and are disaggregated into households by type (family/non-family) and size.

Municipal population projections were initially developed using age- and municipal-specific fertility and mortality rates from DPH. Net migration by age for each municipality was calculated using the vital statistics method, which compares the actual population in 2010 to the "expected" population derived from Census 2000 counts and recorded deaths during the subsequent ten year period. Any difference between the observed and expected population is assumed to be the result of migration in or out. The independently-projected population for each of the 164 cities and towns were summed and compared to the regional control total to produce an adjustment factor applied universally to each age cohort so that the municipal sum matches the regional total.

To estimate change in households, regional headship rates (by household type) are applied to the population in households for 2010 and forecast years, and the difference is calculated. This change in households is added to the actual household counts by age from Census 2010 to produce future year household estimates by householder age. MAPC also used housing type preferences specific to householders of a given age and type in each municipality. Consistent with the assumptions behind the Stronger Region scenario, the housing type preferences assume a slight decrease in single family housing preference among younger (under 40) and older (over 65) householders in the coming years. For purposes of this plan, MAPC used Boston-specific income data to forecast households by income. (See below for more detail.)

The projections also incorporate assumptions about changes in the vacancy rate. Existing vacancy by tenure (owner/rental units) was compared to 'natural' vacancy rates which enable turnover in the market without an excess of vacant units. In consultation with Professor Barry Bluestone of Northeastern University, MAPC adopted a 'natural' vacancy rate of 1.5% for ownership units, and 7% for rental stock. The housing unit demand estimates assume that if there is currently an excess of vacant units (as is the case in the ownership market), it will satisfy some increment of future demand and less new production is needed; and if there is a shortage of vacant units (true for the rental market), then additional units—over and above household growth—are needed to achieve a natural vacancy rate.

Income Categories

MAPC's household projections utilize income categories based on those defined by the US Department of Housing and Urban Development (HUD), which characterize households both by their size and their income relative to the Area Median Income (AMI.) While not as immediately intuitive as income categories based on absolute income, the advantage of this approach is its sensitivity to household size, such that a large and small household with comparable incomes may be in different categories reflecting the difference in the cost of living. Since the median income in the City of Boston ($53,000) is approximately 60% of the regional median income that HUD uses ($91,800), a relevant definition for "low income" in the city would include those households earning no more than 60% of AMI ($55,100 for a family of four.) The income breaks by household size are presented in the table below.

To project future year households by income, MAPC assumed that the distribution across income levels would remain consistent for each combination of householder age and household type.

Income Category	Household Size					
	1	2	3	4	5	6
<30% AMI	$19,300	$22,050	$24,800	$27,550	$29,800	$32,000
30% - 60% AMI	$38,556	$44,064	$49,572	$55,080	$59,486	$63,893
60% - 80% AMI	$45,100	$51,550	$58,000	$64,400	$69,600	$74,750
80% - 100% AMI	$64,260	$73,440	$82,620	$91,800	$99,144	$106,488
80% - 120% AMI	$77,112	$88,128	$99,144	$110,160	$118,973	$127,786
120% - 150% AMI	$96,390	$110,160	$123,930	$137,700	$148,716	$159,732