



B Summary Population Adjustment and Projection Methodology

City of Boston Planning Department Research Division

INTRODUCTION

Covid-19 pandemic disruptions caused the Census Bureau to undercount Boston's 2020 population by approximately 25,000 people, and perennial difficulties in counting Boston's highly mobile young adult population has exacerbated Boston's undercounted population by an additional ~25,000 people in the 2022 American Community Survey. Unless these problems are resolved, Boston's population will continue to be undercounted by the Census Bureau until the 2030 Census, and any Boston planning efforts will be inadequate to address their intended purpose because of this estimated 50,000 missing people. A detailed explanation of the evidence from other data sources that point to the significant undercount of Boston's population can be found in [Rationale for Creating Alternate Population Estimates for Boston](#). The aforementioned document explains why alternate population estimates are necessary. This document explains how the Research Division created the alternate population estimates for 2020 and 2024 as well as projections for 2030 and 2035.

2020 REVISED CITYWIDE POPULATION ESTIMATE

Upon initial review of Boston's surprising 2020 Decennial count of 675,647, the Research Division investigated age cohorts in which the Planning Department's population projection, Boston's American Community Survey data, and Suffolk County's Annual Estimate of the Resident Population provided evidence of an undercount of Boston's population.



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To address this undercount, we produced an alternative estimate that examined the 2010 Census, the 2020 Census, and the 2019 American Community Survey. This analysis suggested that the birth-to-14 age cohorts and the 60-plus age cohorts were accurately counted in the 2020 Census because these populations have lower levels of mobility and migration. However, the young adult and middle-aged cohorts required adjustment to account for a group quarter and household population undercounted by the 2020 Census.

For the 5-year age cohorts between 25 and 59, we took the pooled average of the 2019 ACS estimates and the 2020 Census counts. Based on this pooled average, we increased the 2020 Census counts for each of these age cohorts by 3.5 percent.

Because Boston's Post Census Group Quarter Review was accepted but no population adjustment was reported, we used the 2010 Census counts for the 18-to-21 population. College students are replaced yearly, and Boston's college enrollment has remained steady over the last decade. We therefore increased the 2020 Census 18-to-19 population by 30.0% and the 20-to-21 population by 7.1%. The 22-to-24 population was increased by 4.5%.

These adjustments resulted in a **revised 2020 population for Boston of 699,893 with an age structure that accounts for Boston's substantial young adult population.**

2020 REVISED POPULATION ESTIMATES BY TRACT AND NEIGHBORHOOD

The Research Division accepts the 2020 Decennial Census count of Boston population aged 0-14 and 60+, both at the citywide level, and at the neighborhood and Census tract levels. In the case of 5-14-year-olds, school enrollment data provide corroboration of the Census counts, and the 60+ population's low rates of migration make the Census counts feasible.

The task then is to allocate the additional 15-59-year-old population estimated at the citywide level to neighborhoods and tracts. (The neighborhoods used in these estimates are aggregations of Census tracts.)

The group quarters population is readily assigned through data for college dorms provided by college under the University Accountability Ordinance and for correctional facilities provided by the Suffolk County Sheriff's Department. Analysis of the data found an additional 6,422 group quarters population, 2,629 of whom lived in Allston, 1,077 in Dorchester, and 916 in Fenway. An age distribution was assigned to these group quarters populations based on that in the 2018-2022 American Community Survey.



After accounting for the group quarters population, there remains 17,824 additional household population between the ages of 15 and 59 to allocate to tracts and neighborhoods. First, we assume the undercounted household population comes from the census tracts having a lower response rate in 2020 compared to their 2010 response rate. Then, we make a second assumption that the missing household population is more likely to come from non-family households with the householder not living alone (roommate households). We make the third assumption that the missing household population is more likely to be distributed in the tracts in which the Census counted a high share of the missing population cohorts (e.g., 15-19, 20-24, etc.). Jointly, these assumptions are used to assign the additional household population to tracts which are aggregated to neighborhoods.

2024 CITYWIDE POPULATION ESTIMATE

The Research Division has built a 5-year citywide population projection model that starts with the 2020 revised population estimates by age group and projects 2025, 2030, and 2035. The 2025 projection is then adapted to create a 2024 population estimate.

The 2025 citywide projection uses historical birth rates, death rates, and migration rates to adjust Boston's population from 2020 to 2025. This projection is pulled back one year to get a draft 2024 population estimate.

School Adjustment: The draft 2024 population estimate is adjusted with data on school-enrolled children in the 2023-2024 school year from Boston Public Schools (including charter and private schools). The child population 5-9 and 10-14 is adjusted to match the school data. Lower numbers of school-aged children signal an increase in out-migration rates for these age groups. Since children do not migrate alone, we also adjust the parent-age population accordingly.

Housing Adjustment: The draft 2024 population estimate is further adjusted with data provided by the Mayor's Office of Housing on housing units (by number of bedrooms) built since April 1, 2020. The baseline draft projection assumes a certain level of housing production. Housing production above that level will increase migration to Boston above historic rates and prompt additional population growth.

After these adjustments, the Research Division estimated a **January 1, 2024 Boston population of 711,625.**



2024 REVISED POPULATION ESTIMATES BY NEIGHBORHOOD

The group quarters population (dorms and prisons) by location and age is assumed to be the same as in 2020. The task is to allocate the household population by age to the occupied housing units by neighborhood.

Historical headship rates (share of household population of each age group that are head of household) are used to calculate the estimated number of households by the age of the householder. Historical demographic data is used to assign these households to neighborhoods and housing unit size.

Development data on actual construction of housing units by neighborhood and bedrooms 2020-2024 is used to revise the projected numbers of households. A portion of the additional housing (beyond projected) allows for new household formation by existing Boston residents while some of the additional housing attracts or retains additional population (beyond projected). These additional households are allocated to neighborhoods based on housing supply.

Once the households/occupied housing units are estimated by neighborhood, number of bedrooms, and age of householder, a ratio based on historical data is used to assign additional household members to these households.

The Research Division plans on producing annual population estimates by city, neighborhood, and tract and further breaking down these estimates by demographic characteristics.

2024 REVISED POPULATION ESTIMATES BY TRACT

In contrast to the 2020 population estimates which are built at the tract level and aggregated to the neighborhood level, the 2024 population estimate model is run at the neighborhood level as described above. The 2024 neighborhood population estimates are then broken into tracts. Projected neighborhood household population change from 2020 to 2024 in ages birth to 19 and 35+ is assumed to be distributed to the neighborhood's component tracts proportional to each tract's share of the neighborhood's age cohort population. Declining neighborhood populations for age cohorts 20-34 were also assumed to be proportional to the tract's share of the neighborhood age cohort population. Growing neighborhood populations aged 20-34 were assumed to be responsive to increased housing supply, based on ample historical data that most



movers are in this age group. The growth in the 20-34 population in a given neighborhood is distributed proportionally to the housing growth by tract from April 1, 2020 to January 1, 2024.

DEMOGRAPHIC BREAKDOWNS OF 2020 & 2024 POPULATION ESTIMATES

The Research Division uses age-specific 2018-2022 American Community Survey tract-level estimates to create percentage shares of each age group for a given demographic characteristic. These shares are applied to the age cohorts in the 2020 and 2024 revised population estimates citywide and by neighborhood and tract. The underlying assumption is that, per age group and tract, the undercounted population shares the characteristics of the counted population.

2030 AND 2035 CITYWIDE AND NEIGHBORHOOD PROJECTIONS

The 2030 and 2035 citywide projections will be updated annually with new data to inform projected fertility, mortality, and migration. Future projections are of necessity less accurate than the current population estimates, and we rely on the assumption that historic trends in migration and housing production will continue. **Current projections are for a Boston population of ~728,00 in 2030 and ~734,000 in 2035.**

Future neighborhood-level projections are created based on planned housing development and estimates of housing demand. These will also be updated annually as new housing data become available.

