



NEW YORK METROPOLITAN TRANSPORTATION COUNCIL
ADJUSTED 2055 SOCIOECONOMIC & DEMOGRAPHIC FORECASTS
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TECHNICAL MEMORANDUM
ADJUSTED 2055
SOCIOECONOMIC
& DEMOGRAPHIC
FORECASTS

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Introduction

The New York Metropolitan Transportation Council (NYMTC) possesses valid, adopted Socioeconomic and Demographic (SED) forecasts to 2055. These forecasts serve as crucial inputs to NYMTC's Best Practice Model (BPM) and the Regional Transportation Plan (RTP) and are used by the member agencies for their transportation studies and project development. Following the adoption of the SED forecasts in October 2020, a robust economic recovery followed the COVID-19 pandemic, and 2020 Decennial Census data was released which revealed significant increases in population and changes to the population distribution when compared to the 2017 baseline.

In response to the economic conditions and data releases, NYMTC commissioned WSP and Urbanomics to assess the strengths, weaknesses, threats, and opportunities of different base-year SED forecasts to evaluate the range of forecast options to inform the 2055 RTP. The resulting study compared the SED forecasts with historic trends from 2019 to 2021 and determined that the existing forecasts were viable through the horizon year of 2055. Detailed findings from this study were shared with the Forecast Working Group (FWG), leading to consensus among FWG members to conduct a review of the finalized 2020 Census population counts and 2022 employment counts in the Spring of 2023 to determine appropriate next steps for rebenchmarking of the adopted 2055 SED Forecasts.

The results of the aforementioned task established that while the existing adopted 2055 SED forecasts are valid, the significant shifts in settlement and employment patterns identified in preliminary 2020 Census and 2021 employment data make it appropriate to adjust the 2055 SED forecasts by rebenchmarking to updated population and employment data.

This memo addresses the rebenchmarking process agreed upon by the FWG in 2022, which Urbanomics and the New York City Department of City Planning (DCP) has since undertaken. As per NYMTC's agreement, the scope of this work includes:

- ☐ Finalization of population and employment estimates for use in the SED forecasts,
- ☐ Solicitation of feedback from the FWG to determine whether a rebenchmarking of the SED forecasts is deemed necessary [it was determined to be necessary],
- ☐ Preparation of preliminary adjustments using both incremental and rate of change rebenchmarking methods for approval by the FWG,
- ☐ Rebenchmarking of all county-level forecasts,
- ☐ Distribution of the new County level forecasts to the Traffic Analysis Zone (TAZ) using the TAZ Distribution Model, and,
- ☐ Presentation of the adjusted Population and Employment Forecasts to PFAC for adoption and available for use by October 2024.

Coordination with the Forecast Working Group

The team has coordinated with the FWG throughout the process including formal sessions as well as a continuous process of sharing draft adjustments and responding to comments. What follows is a summary of each of the formal calendar meetings.

November 2, 2022 FWG Meeting

- Discussed findings from the 2022 Supplemental Study, which compared the SED forecasts with historic trends from 2019 to 2021.
- Solicited feedback regarding rebenchmarking the 2055 SED forecasts to 2020 and 2022 population and employment data.
- Agreed to pursue an adjustment to the adopted SED 2055 forecasts with a 2022 baseline.

December 6, 2023 FWG Meeting

- Reviewed 2022 baseline adjusted forecasts derived using incremental (arithmetic change) and rate of change (relative change) methods over the adopted forecast's interpolated 2022-2055 growth period.
- Discussed new legislative guidelines in the Infrastructure Investment and Jobs Act which includes requirements to consider the availability of housing during forecasting activities. To support this consideration, Urbanomics shared population forecasts accompanied by housing units needed to meet population demand as estimated based on population in household projections divided by current average household sizes for each county.
- Based on results of the alternative scenarios analysis, FWG agreed to move forward with rebenchmarking both population and employment forecasts using the incremental forecast scenario method.

February 14, 2024 FWG Meeting

- Reviewed detailed draft forecasts and methodologies using the incremental change scenario including projections for population in households, group quarters, total households, average household size, and total labor force populations for each county.
- Considered available housing development information as related to the county level adjustments.

March 20, 2024 FWG Meeting

- Discussed final comments and questions regarding the adjusted forecasts from all members.
- Concluded with agreement that the adjusted numbers and technical methodology were acceptable by all FWG members and could now be shared with PFAC and formally recommended for adoption.
- Identified the target adopted date for the adjusted forecasts of June 20, 2024.

Preliminary Forecast Adjustments

Total Employment and Total Population Projections

Two alternative total employment and total population forecast projections were developed to revise the adopted SED Forecast using updated 2020 and 2022 baseline data. These projections were created through two distinct approaches: incremental (arithmetic change) and rate of change (relative change) methods, applied over the adopted forecast's interpolated growth period from 2022 to 2055.

DCP's Population Division formulated its own population projections for the years 2025-2055, utilizing data on housing, permits, construction, and future projections. Detailed insights into DCP's population forecasting methodology can be found in the 2050 SED Forecast Modeling Methodology Technical Memorandum, Task 3.1, dated March 12, 2015.¹ Adjustments for each projection year were made based on DCP's internal analysis of housing activity and socio-economic conditions. Projections for 2050 and 2055 were maintained at adopted forecast levels, deemed reasonable by DCP, and projections for Staten Island remained consistent throughout the forecast period for the same reasons. New York City's employment projections were generated by Urbanomics using the same methodology as for the suburban county sub-regions.

Adjustment Methods

As noted above, these methods were tested for all county employment and all non-NYC counties for population.

Incremental Scenario

For this forecast scenario, adjusted projections for subsequent years (e.g., 2025, 2030,... 2055) were calculated by determining the difference between the projected values for each interval of the adopted series (e.g., 2022-2025, 2025-2030) and applying these differences to the respective baseline years.

Specifically, the 2025 adjusted population and employment projections were obtained by computing the difference between the 2022 and 2025 adopted projections for a given county and then adding this difference to the new 2022 baseline. This same process was repeated for subsequent projection years up to 2055.

Rate of Change Scenario

In this forecast scenario, adjusted projections were calculated by applying rates of percent change (i.e., $1.0 + \text{rate of change value}$) from the adopted forecast for each county over each projection interval (e.g., 2022-2025, 2025-2030...2050-2055). The process began by multiplying the rate of change from 2022 to 2025 against the new baseline year of 2022 to establish an adjusted projection for 2025. This projection was then used as the basis for subsequent years using the same method. In this scenario, to determine the new adjusted projection for 2030, the sum of $(1.0 + \text{the rate of change for 2025-2030})$ was multiplied by the previously prepared adjusted year 2025 projection. This process was continued for later projection years through 2055.

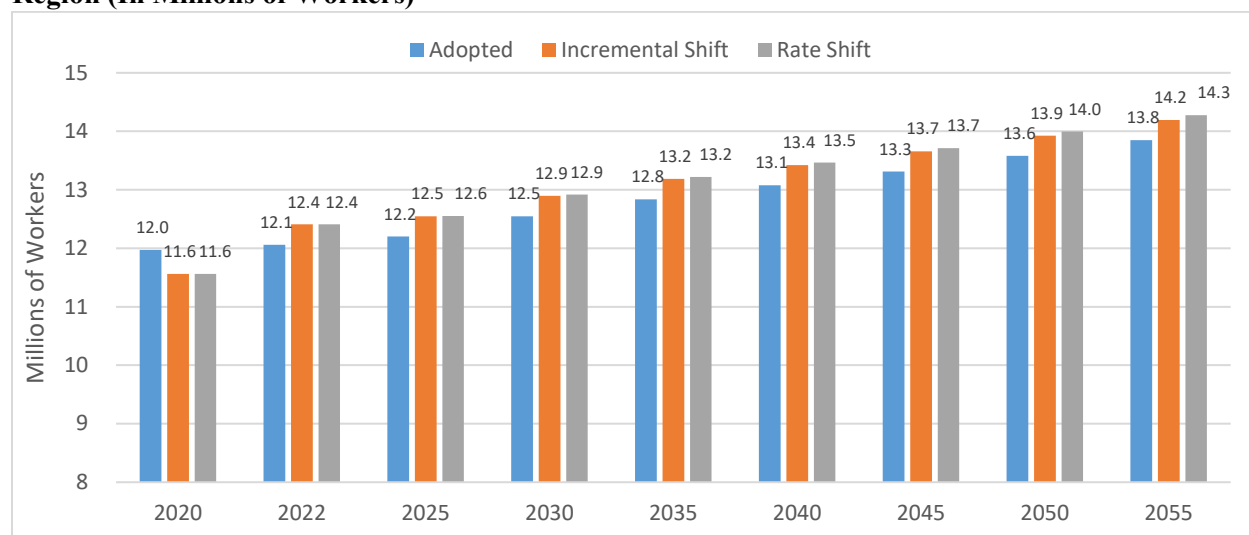
¹ Available at: <https://www.nymtc.org/Portals/0/Pdf/SED/2050%20SED/150312-T3-1-ModelMethod-Rev3.pdf>.

Total Employment and Total Population Projections

Adjusted Employment Forecasts

An analysis of the adopted vs adjusted employment forecast scenarios showed that the adopted forecast had underestimated both the depth of employment losses during the pandemic as well as the rate of recovery. The adjusted forecast scenarios predicted a gain of several hundred thousand jobs region-wide by 2055 compared with the adopted forecast including a gain of 345,608 jobs under the incremental shift forecast and an additional 424,744 jobs under the rate shift scenario. A shift of employment away from New York City, and Manhattan in particular, was also observed under these modeled scenarios.

Figure 1. Comparison of Forecast Options: Adjusted Employment Forecasts for the 31-County Region (In Millions of Workers)

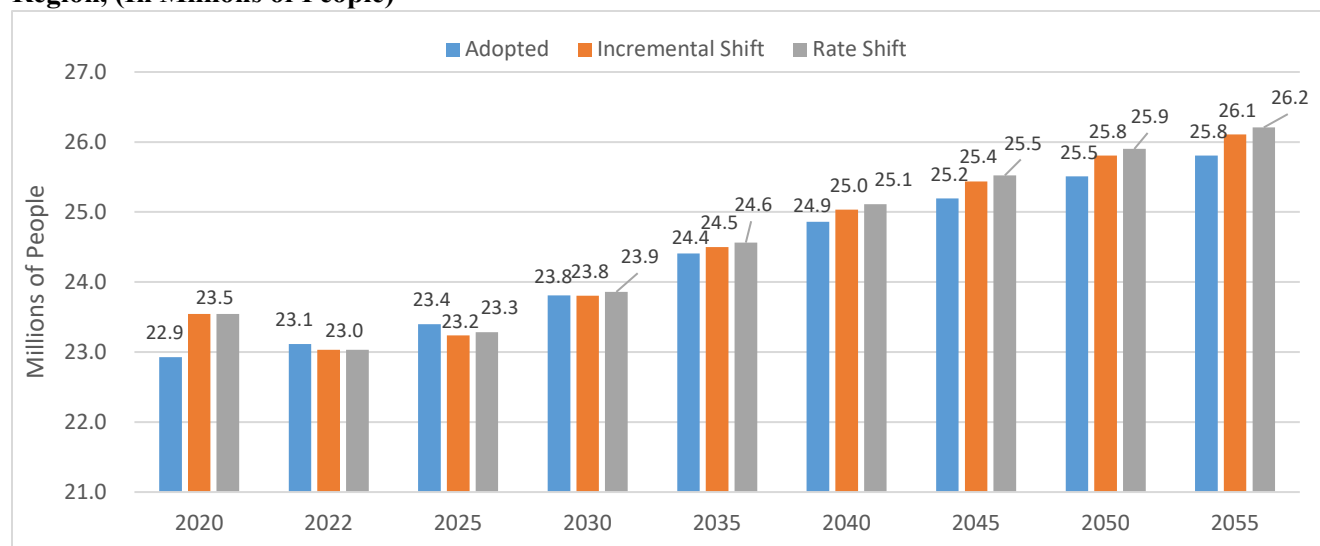


Source: BLS QCEW, BLS CES, BEA Proprietors, US Census Bureau ACS, Urbanomics, NYMTC 2055 SED Forecasts

Adjusted Population Forecasts

The adjusted forecast scenarios projected a significant increase in population due primarily to the 2020 Decennial Census count which counted an additional 616,957 residents in 2020 over the adopted SED forecast. The 2022 population estimates assumed a sharp decrease in residents (-511,066 over 2020). Compared with the adopted SED, the 2022 estimate was 81,514 residents lower in the adjusted forecasted scenarios. Looking at the year 2055 forecast, the adjusted forecast scenarios predicted an increase of 298,986 residents over the adopted forecast in the incremental shift scenario and a gain of 400,749 residents in the rate shift scenario.

Figure 2. Comparison of Forecast Options: Adjusted Population Forecasts for the 31-County Region, (In Millions of People)



Source: US Census Bureau, 2020 Decennial Census, 2022 Population Estimates, NYMTC 2055 SED Forecasts, Urbanomics

Finalization of Population & Employment Baseline Estimates and Forecasts

The sections that follow details the data collection and forecasting process for each of the County-level variable categories.

Employment Variables

Total Employment

As described in the 2022 Supplemental Report (Task Assignment PSA4-04-17: Attachment 2, Amendment 1), historic employment data for the years 2019 to 2021 were collected and modeled to generate an equivalent of the historic benchmark employment data used in the SED 2055 Forecast model. The employment modeling process followed a blended averaging approach, utilizing four primary sources of employment statistics at various geographic levels (county, metropolitan, and micropolitan). These sources included the US Census Bureau's American Community Survey (ACS) five-year estimate series², the Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW) program, the Current Employment Statistics (CES) program, and the Bureau of Economic Analysis' (BEA) annual proprietors employment data³.

While ACS and QCEW data are available at the county level, CES data is only released at state and metro/micropolitan levels. To model CES employment at the county level, distributions of QCEW county employment to metro/micropolitan geographies were used, multiplied against CES metro/micropolitan employment numbers. In the 2022 supplemental report, Urbanomics backtested this methodology to compare these employment estimates against the SED Forecast model's 2015 and 2017 benchmark employment. At the 31-county region level, these employment estimates were 99.6 percent accurate in

² Table name B08604 "Workplace Population for Workplace Geography

³ From the Regional Data program's Economic Profile (CAINC30) series

2015 and 98.7 percent accurate in 2017. Similarly, accuracy levels of 97.5 percent and 96.1 percent accuracy were generated for years 2015 and 2017 in the New York City subregion.

New data inputs were collected in 2023 to finalize the historic total employment data used in the SED forecasts including the incorporation of employment data for year 2022. Using the above-mentioned methodology, county-level employment estimates were generated for the baseline years of 2020 and 2022.⁴

The Incremental Scenario, as described in the Adjustment Methods section, was selected as the methodology for the development of the employment projections for the 31-county region from 2025 to 2055.

Self Employment

The share of self employment to Total Employment from the adopted forecast was applied to each of the historic and forecast years.

Payroll Employment

Payroll employment was derived by subtracting self employment from total employment.

Population Variables

For the counties outside of New York City, new data inputs were collected in 2023 to finalize the historic population data used in the SED forecasts including the incorporation of 2020 Decennial Census data to replace the previously released 2020 Census Redistricting Data (P.L. 94-171) Summary File as well as the addition of 2022 US Census Bureau population estimates and 2022 ACS 1-year sample data.

Total Population

The 2020 Decennial Census was selected as the source for the 2020 baseline total population while the 2022 baseline relied on the Census Bureau's 2022 Population Estimates program data.

The Incremental Scenario, as described in the Adjustment Methods section, was selected as the methodology for the development of the population projections for the 31-county region from 2025 to 2055.

Population in Households

In the New York City sub-region, DCP prepared the projections for population in households based on the difference between the total population projections minus the group quarters population, which was held at 2020 levels throughout the forecast period as in prior forecasting activities.

The 2020 baseline for population in households relied on 2020 Decennial Census data for all counties. In the New York and New Jersey suburban counties (outside of NYC), the 2022 baseline utilized the 2022 ACS 1-Year estimate data. Because the Census Bureau stopped releasing county-level ACS data in Connecticut as of 2022 and switched to planning region geography as county-equivalent geography, as requested by the State Legislature,⁵ the Connecticut suburban counties were modeled using a slightly different approach. The ratio of population in households to total population from the 2020 Decennial Census was applied to the 2022 total population for each county in that sub-region.

⁴ Earlier 2022 employment estimates relied on the 2021 ACS 5-Year Estimate and 2021 BEA proprietors data. The current 2022 estimates were updated with 2022 ACS 5 Year sample and 2022 BEA proprietors data released in December 2023.

⁵ Retrieved from: <https://portal.ct.gov/Office-of-the-Governor/News/Press-Releases/2022/06-2022/Governor-Lamont-Announces-Census-Bureau-Approves-Proposal-for-Planning-Regions>

For later forecast years, the household population projections in the suburban county sub-regions were calculated by multiplying the ratio of population in households to total population from the adopted forecast by the total population in the revised forecast for each projection year and county.

Group Quarters Population

Due to the complicated nature of forecasting the group quarters population where growth is driven less by mortality, fertility, and migration patterns than by policy decisions, in the New York City sub-region, DCP's group quarters projections were maintained at 2020 levels, as reported by the 2020 Decennial Census, through the duration of the forecast from 2022 to 2055.

In the Non-NYC sub-regions, projections for the group quarters population were derived by subtracting the population in households from the total population for each county and projection year. This results from this method were essentially no different from projecting the group quarters population based on the ratio of group quarters to total population from the Adopted forecast, multiplied by the adjusted forecast total population projections.

Projections for All Other SED Forecast Variables

Total Households

In NYC, total households were projected from 2025 to 2055 by multiplying total household population by average household size by county.

For the rest of the Region's counties, the household forecast was adjusted in the same manner as total population—the 2022 ACS data was used as the new baseline to which the incremental change was applied for the interpolation of 2022 and 2025 and then between each of the projection years that follow.

Average Household Size

Due to the relative stability of household sizes over the past several decades, DCP's average household size projections for the New York City sub-regions were held constant at 2022 baseline years through 2055, following the same methodology used in prior forecasting activities.

In the subregions outside of NYC, average household sizes were derived from the population in households divided by total households from 2022 to 2055.

Total Labor Force

Labor force estimate data was not officially released by the US Census Bureau's ACS program in 2020 due to complications from the COVID-19 pandemic, however, this information was released by the ACS as part of its Public Use Microdata Sample (PUMS) files. The 2020 baseline was modeled from the 2020 ACS 1-Year PUMS data by aggregating Public Use Microdata Areas (PUMAs) to counties and multiplying the ratio of the total labor force to total population against the 2020 total population baseline numbers for each county. The 2022 baseline data was sourced from the 2022 ACS 1-Year file for New York City as well as the suburban New York and New Jersey sub-region counties. Because 2022 ACS data was not available for the Connecticut sub-region counties, the 2022 baseline was modeled from the 2022 PUMS data with the 2022 share of the population within the labor force multiplied against the 2022 total population baseline for each county.

The total labor force was projected from 2025 to 2055 for all counties within the 31-County Region by multiplying the ratio of total labor force to population in households from the adopted forecast against population in households from the revised forecast for each county and projection year.

Employed Labor Force

Like the total labor force, data, employed labor force data was also not released by the Census Bureau's ACS program in 2020. The methodology for the employed labor force baseline data was the same as that for the total labor force.

Housing Consideration

At the time of this adjustment effort, new Federal regulations were being developed to emphasize the importance considering housing development and capacity in the development of MPO's planning products. NYMTC made decisions to align its effort on the SED forecast adjustments with these Federal regulations by reviewing available housing information for reasonableness and validity of the future projections.

Adopted SED Forecasts

The NYC Population forecast methodology already puts significant emphasis on development capacity. The SED forecasts for the counties outside of New York City are unconstrained, yet housing units and residential development in the pipeline are used to distribute county forecasts to the TAZ level.

Forecast Adjustments

In this scope of work, the adjusted NYC Population forecast continues to incorporate development capacity.

To reflect the regulation outside of an entirely new forecasting effort, NYMTC and Urbanomics provided FWG members an estimate of the number of new housing units that would be required to house the total new households forecasted (based on forecasted total population in households and an average household size) as well as data showing the 10-year average annual number of building permits for new residential housing units. These two resources were made available to FWG members to assist with their review and analysis of the adjusted population forecasts. It was noted that the building permit survey data has inherent limitations due to multiple factors including how permit data is defined and collected by the US Census. This resource was available as a reasonableness check for members as they reviewed the forecasted numbers.

Ultimately, the demand generated by net new housing was greater than the average annual number of residential building permits issued in the last 10 years in only four counties: Nassau and Suffolk Counties on Long Island; Rockland County, NY; and Passaic County, NJ. In the case of Rockland and Passaic, with deficits of 371 and 135 annual units, respectively; the subregional permitting data totals far exceed estimated future local demand and any deficit can likely be absorbed within the subregion.

The Long Island subregion shows an overall deficit of more than 1,300 units per year—discussions took place with the Forecasting Working Group and it was determined that future development is still likely keep up with the forecasted growth given current information.

Next Steps

Rebenchmarking All County-Level Forecasts - Completed

Rebenchmarking of county-level total population and total employment forecasts is expected to be determined via consensus among FWG members during the FWG's next scheduled meeting on March 20, 2024. Completed forecasts for other variables were confirmed shortly after the FWG reached consensus on the primary forecasting variables.

Presentation of Adjusted Forecasts to PFAC and public comment period (April-May 2024)

The adjusted county-level forecasts for employment and population will be posted for public comment from April 24th through May 23rd, 2024..

Presentation of Adjusted Forecasts to PFAC for Adoption (June 2024)

Once the public comment period is complete, the new adjusted employment and population forecasts will be presented to PFAC for adoption on June 20th 2024.

Distribution of Approved County Forecasts to TAZs (May-September 2024)

An allocation of county level SED projections down to Transportation Analysis Zones (TAZs) is a required input into NYMTC's New York Best Practices Model (NYBPM), a powerful tool used to perform federally-required Transportation Conformity Determination and Regional Emissions Analysis, and to assess projects in the Regional Transportation Plan (the Plan) and the Transportation Improvement Program (TIP). The allocation is completed for 28 out of 31 counties in the NYMTC region across 16 socioeconomic variables. This process will take place once adjusted population and employment forecasts have been adopted, and will likely be completed during the spring and summer months of 2024.