

2035 Long Range Transportation Plan Socioeconomic Projections



TECHNICAL MEMORANDUM

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THE PLANNING COMMISSION

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INTRODUCTION

This document summarizes the methodology utilized to generate socioeconomic data forecasts required as part of the Hillsborough County Metropolitan Planning Organization's (MPO) 2035 Long Range Transportation Plan (LRTP) update.

Purpose

The LRTP serves as a guide for local, multi-modal transportation priorities and investments over the next twenty-plus years. Socioeconomic data are a principal input into the transportation modeling process. The transportation model is used as part of the LRTP process to identify current and future transportation needs.

Various data including population, five types of employment, hotel/motel units, and school enrollment, were needed for the years 2006, 2025, 2035, and 2050. The data were required for Hillsborough County as a whole and at small geographic areas called Traffic Analysis Zones (TAZs). TAZs are delineated by the MPO specifically for the purpose of analyzing transportation. There are 758 TAZs within Hillsborough County.

Methodology

The forecast methodology involved three major steps. The first step generated countywide control totals for each data element and time horizon. The second step allocated the resulting countywide forecast to each TAZ. The last step was a quality control review of the allocation results.

To generate countywide control totals, prior planning studies were reviewed and local and national trends were considered. Adopted local government's comprehensive plans and growth management strategies primarily directed the allocation of the control totals to TAZs.

Upon completion of the allocation process, a quality control review was conducted to ensure reasonableness of the results. Individuals who hadn't participated in the initial allocation process were asked to review the results.

Results

The forecast data by TAZ was tabulated and is presented in the Appendix.

CONTROL TOTALS METHODOLOGY

The first step in generating the required forecasts was creating the countywide control totals for each data element and each time horizon (2006, 2025, 2035, & 2050). A complete list of variables is shown in Table 1. The 2006 population and housing data were compiled by the Hillsborough County Planning Commission as part of their annual population estimates program. The remaining data for 2006 was compiled by the Florida Department of Transportation.

TABLE 1

Data Elements Required for LRTP Update

Population and Housing Data		Employment Data	
Population		Industrial Employment	
Group Quarters Population		Local Service Employment	
Total Population		Regional Service Employment	
Housing Units		Local Commercial Employment	
		Regional Commercial Employment	
		Total Employment	
Hotel/Motel Data		School Data	
Business Class Hotel/Motel Units		K-12 School Enrollment	
Economy Class Hotel/Motel Units		Higher Education Enrollment	
Resort Class Hotel/Motel Units			

Prior Studies

To begin the process, existing planning studies were reviewed. Population and employment projections had been generated for the year 2025 as part of the existing LRTP completed in 2004. In addition, the MPO 2050 Transit Concept Study was recently completed and included population and employment projections for the year 2050. Finally, local and national trends were considered.

Population and Housing Control Totals

The total population control totals for 2025 and 2035 were taken directly from the official State projections generated by the Bureau of Economic and Business Research (BEBR) at the University of Florida. The total population for 2050 was taken from the preferred scenario of the 2050 Transit Concept Study prepared in 2007. In 2008, BEBR published a series of projections for Hillsborough County for the years 2025 and 2035. The medium series was chosen for both time horizons. It is interesting to note BEBR's latest 2025 projection was 1.17 percent higher than the 2025 forecast used in the existing LRTP.

The share of population housed in group quarters from the existing LRTP (1.8 percent) was used to generate the future group quarters population. Non-institutionalized population was derived by subtracting group quarter population from total population.

Forecasts for housing units are a function of population. Population divided by a factor representing persons per household (PPH) resulted in the number of households. Households divided by a factor for occupancy generates housing units. In other words, this calculation results in the number of units needed to house the future population.

Key to the projection of the number of households is the PPH factor. The existing LRTP utilized a PPH of 2.53. However, a review of national and county trends in household sizes indicates that this is too high. According to the U.S. Census, the countywide PPH has been decreasing steadily over time (1990 - 2.55; 2000 - 2.51; 2006 - 2.45).

Among those trends forcing down the PPH over time are: 1) an increase in the State’s elderly population (Baby Boom retirees); 2) a greater share of households with no children; 3) a falling share of non-traditional family households; and 4) an increasing number of single-person households. Therefore the PPH factor used for each time horizon was 2.40.

The occupancy rate utilized in the existing LRTP was 0.91. This indicates that 91 out of every 100 housing units would be occupied. Furthermore, a review of county occupancy rates for the years 1990 and 2000 yielded the conclusion this figure was reasonable and appropriate. Since occupancy rates do not vary much over time in large, robust housing markets like Hillsborough County’s, the figure of 0.91 for the occupancy rate was held constant for each time horizon.

TABLE 2
Population and Housing Countywide Contril Totals

	2000 ¹	2006 ²	2025	2035	2050
Population	981,521	1,150,538	1,521,741	1,697,882	2,082,545
Group Quarters Population	17,427	22,823	28,158	31,418	35,535
Total Population	998,948	1,173,361	1,549,899	1,729,300	2,121,080
Housing Units	425,962	498,892	695,545	775,897	956,151

Source:

1. US Census Bureau
2. Hillborough County Planning Commission

Employment Control Totals

It was determined the existing LRTP provided an appropriate starting point for establishing the employment control total for the year 2025. The new control total was generated by adjusting upward the control total used in the existing 2025 LRTP. This increase reflected the change in the BEBR population projections for Hillsborough County. Since the population projection increased the County’s 2025 total population by 1.17 percent, the total employment figure from the existing 2025 LRTP was adjusted upwards by this percentage.

The 2050 employment control total was taken from the recently completed MPO 2050 Transit Concept Study, Preferred Scenario. The 2035 employment control total was interpolated from the new 2025 and 2050 employment to population ratios. The 2025 employment to population ratio was projected to be 0.690 while the 2050 employment to population ratio was projected to be 0.675. Interpolating between these figures yielded a 2035 employment to population ratio of 0.680. Once multiplied by the 2035 population, the employment control total was derived.

Employment Mix Control Totals

Once the employment control totals were established, these figures had to be allocated into five major employment categories. For the year 2025, the share of employment by category from the existing LRTP was utilized. For the years 2035 and 2050, a review of economic and employment trends in the nation, state, and county indicated a continued decline in industrial employment and increase in commercial and service employment. However, given the difficulty in predicting macroeconomic changes, a somewhat conservative change was used. The assumptions of changes in employment mix in Hillsborough County are presented in Table 3. Multiplying the percentages shown in Table 3 with the employment controls for each time horizon produced the control totals by category. Table 4 displays the result.

TABLE 3

Employment Mix Assumptions

CATEGORIES	2025 ¹	2035	2050
Industrial	16.60%	15.90%	15.00%
Regional Commercial	9.67%	9.80%	10.00%
Local Commercial	12.71%	12.90%	13.00%
Regional Service	48.83%	48.90%	49.00%
Local Service	12.19%	12.50%	13.00%
TOTAL	100.00%	100.00%	100.00%

Source:

1. Figures from the Existing LRTP

TABLE 4

Employment Control Totals

CATEGORIES	2025	2035	2050
Industrial	177,473	186,972	214,625
Regional Commercial	103,444	115,241	143,084
Local Commercial	135,947	151,694	186,009
Regional Service	522,172	575,027	701,111
Local Service	130,394	146,990	186,009
TOTAL	1,069,043	1,175,924	1,140,838

Hotel/Motel Units Control Totals

Hotel and Motel units were needed for three categories: Business; Economy; and Resort. Each of these categories is related to regional service employment. Therefore a ratio or percent of regional service employment was reviewed to determine the hotel/motel unit control totals by type.

According to 2006 data compiled by the Florida Department of Transportation, the business hotel, economy hotel, and resort hotel ratios to 2006 regional service employment is 2.76, 2.23, and 0.52 respectively. This is a decrease when compared to the same data from the year 2000 (2.87; 2.45, and 0.52) despite an increase in regional service employment. Hotels are service industries meaning they are labor intensive. Therefore it seems unlikely as regional service employment

increased between 2000 and 2006, the ratio of hotels would decrease due to efficiency gains in production. Instead it is more likely this is a trend in the industry related to saturation in an area.

Therefore, to generate the hotel control totals by type for each time horizon, the regional service employment for each time horizon was multiplied by the following factors: 2.5 for business hotel; 2.0 for economy hotel; and 0.5 for resort hotel. Table 5 displays the results.

TABLE 5
Hotel/Motel Units Control Totals

CATEGORIES	2025	2035	2050
Business	13,050	14,375	17,525
Economy	10,410	11,945	14,105
Resort	2,525	2,975	3,500

School Enrollment Control Totals

Both public and private school enrollment data for kindergarten (K) through 12th grade and for higher education were needed. School enrollment is a function of population. A review of the 2006 data showed 18.89 percent of the population was enrolled in grades K-12 and 10.33 percent was enrolled in higher education.

Given the trends and assumptions used to project population (i.e. increased number of baby boomers, households with fewer children) and a nationally accepted trend in increased higher education, it was determined to lower the K-12 percentage of population and increase the higher education percentage over the three time horizons. The percentages and school enrollment control totals are shown in Table 6.

TABLE 6
Hotel/Motel Units Control Totals

CATEGORIES	2025	2035	2050
K-12	274,000	289,000	333,000
<i>Percent of Population</i>	18.01%	17.02%	16.00%
Higher Education	159,000	187,000	230,000
<i>Percent of Population</i>	10.45%	11.01%	11.04%

ALLOCATION METHODOLOGY

The next step in generating the required forecasts was allocating the control totals to each traffic analysis zone (TAZ). A traditional approach using historical trends was the basis for allocation in the previous LRTP. However, this approach ignores growth management strategies and local comprehensive plan policies. Dr. Tim Chapin Associate Professor of Urban and Regional Planning and the Center for Demography at Florida State University played an essential role in developing an allocation methodology that incorporated local growth management strategies.

The local comprehensive plans are a twenty-year blueprint for future growth. They are legal documents, adopted by local governments, to guide and manage long-range growth and development. Therefore, fundamental growth strategies identified from the four (Tampa, Temple Terrace, Plant City, and Unincorporated Hillsborough County) local comprehensive plans were used as the basis for allocation. This method reflects the longer-term intent to base infrastructure investment decisions on the growth management strategies of the local comprehensive plans. From those strategies, guiding principles were developed to allocate population and employment.

Historical trends were not completely discarded. In an effort to reflect both existing and somewhat entrenched development patterns, a small percentage of new growth was allocated among the TAZs based on the past. The trend allocation is based upon the existing share of population or employment currently found within a TAZ. Incorporating the “trend” helps to capture the existing development pattern, while perhaps not desirable, reflecting the reality that development patterns can be altered only slowly over time. Finally, a mathematical model was developed to allocate the control totals based upon the guiding principles and historical trends.

Fundamental Growth Strategies

Hillsborough County has developed a broad-based approach to managing growth through its four local comprehensive plans. This approach is aimed at yielding urban development patterns and a built form that will preserve environmentally sensitive lands and protect scenic locations, provide for efficiencies in infrastructure provision, reduce energy use and maintain the quality of life of the county’s residents.

At its core, Hillsborough County’s growth management approach rests upon three policy pillars:

1. **Compact Urban Form:** The urban service area (USA) was established to focus growth to a geographically defined area within which urban services are to be provided. The USA is the primary growth management strategy for directing growth in the county.
2. **Activity Centers and Districts:** Within the USA, most developed areas of the county have pursued an “activity centers” or “districts” urban development strategy. These are areas of concentrated activity that attract people from outside their boundaries to live, work, shop, and recreate. There is an expressed attempt to build upon these districts

and centers by concentrating development activities in these centers and further develop them as prime locations for employment and residential uses.

3. Corridors: Supporting both the USA strategy and a district-based urban pattern form is a transportation system designed to link these activity centers and support urban densities within the USA. Within Tampa, Temple Terrace, and Hillsborough County there are explicit commitments to the development of an urban pattern that is supportive of mass transit systems.

Guiding Principles

Drawing from the fundamental growth management strategies, several guiding principles were derived to help allocate future population and employment.

1. Ninety percent of all incremental population and employment growth was allocated to TAZs located within the Urban Service Area (USA), which includes the TAZs within the Cities of Tampa and Temple Terrace.
 - a. The first priority was TAZs containing existing activity centers, and urban villages identified in the Hillsborough, Tampa, and Temple Terrace comprehensive plans. Listed below are the activity centers in hierarchical order of preference for allocating growth.
 - i. High Intensity Activity Centers: Areas with a high concentration of government centers, high intensity commercial uses and potential high density residential development.
 - ii. Mixed Use Community Activity Centers: These activity centers designate locations for existing and future major shopping centers, major office and employment areas, higher educational facilities and recreation complexes. Higher residential densities can also be considered for these areas as services and facilities become available to provide the necessary infrastructure.
 - iii. Mixed Use Corridor Villages: These roadways are transit emphasis corridors and are suitable for redevelopment and intensification.
 - iv. Tampa's Urban Villages: These are local nodes that provide focal points for surrounding neighborhoods. Not all Urban Villages will be given equal amounts of growth, i.e. growth allocation will be contingent upon any secondary plans.
 - b. The second priority for this allocation was TAZs containing emerging activity centers. Again, this allocation reflected the type of activity center identified in the comprehensive plans. These were identified by: discussions with Planning Commission land use planners representing each jurisdiction, reviews of current and proposed DRI projects, and approved developments.

- c. The third priority for this allocation was TAZs adjacent to existing or emerging activity centers. As Districts take root and grow these “spillover” areas should see some increases in employment and population.
2. The remaining ten percent of all incremental population and employment was allocated to Plant City TAZs and to TAZs adjacent to the USA. The first priority was TAZs containing Plant City. The second priority was TAZs adjacent to the USA, consistent with community plans, and to the East and South of Plant City, in areas identified as emerging areas for development.
3. Given the commitments of Tampa, Temple Terrace and Hillsborough County to the development of a viable and successful mass transit system, the allocation of population and employment considered major existing mass transit and future mass transit consistent with the adopted MPO 2050 Transit Concept Study.
4. In the allocation of regional commercial and services employment, priority was given to existing regional employment centers and emerging employment centers.
5. In the allocation of industrial employment, priority was given to existing industrial centers.

Allocation Model

In an effort to reflect both existing development patterns and the desire for these guiding principles to shape the location and form of growth, allocations for population and employment were made using a two-step process.

A mathematical model was developed using Excel software. This model employs a “Trend vs. Centers” approach to allocate projected growth to TAZs based upon existing development patterns (the trend) and the influence of growth management policies (centers). The trend allocation is based upon the existing share of population or employment currently found within a TAZ.

For example, for the population variable twenty percent of the projected growth was allocated using the existing proportions of population for each TAZ in 2006. If an urban TAZ had two percent of the Inside-USA population in 2006, it was assumed that it would have two percent of the Inside-USA projected population in 2050, but only for that twenty percent of the projected growth that was allocated to the “Trend”.

The model then employs a “Rating and Weighting” approach to capture the influence of various land planning strategies and expected infrastructure investments. Among the policies and strategies modeled were urban villages, activity centers, and existing/planned transit system elements.

For example, for the population variable the remaining eighty percent of the projected growth was allocated using this “weighting and rating” scheme. In allocating population to Inside-USA TAZs, the criteria employed in the model included Urban Village designation, Activity Center designation, and location of TAZs within the transit system. For Outside-USA TAZs, the population allocation was made using a different set of criteria, including location inside of Plant City and location within the transit system.

This two-step approach was employed for all variables except the Group Quarters population variable, which relied solely on a Trend allocation.

In the case of population one other factor was built into the model. In many TAZs in the County there exists substantial approved, un-built, residential development. These entitlements were captured in the model impacting the population variable.

Hotel/Motel units and School enrollment control totals were allocated separately after finalizing the population and employment allocations. Hotel/Motel units were allocated based on the amount of regional service employment in a TAZ and the locations of existing hotel/motel facilities.

School enrollment was allocated based on existing locations of school facilities, discussions with School District of Hillsborough County planners, and areas with large increases in projected population.

QUALITY CONTROL

The final step in generating the required forecasts was reviewing the results for quality control and sensibility. Although the model allocated the control totals based upon the guiding principles and trends, as with any mathematical model, the benefit of human common sense cannot be programmed. Therefore a final review, leading to minor reallocations, was completed.

Several meetings to review the population and employment allocations took place with Planning Commission land use planners representing each jurisdiction. None of these participants were involved in the original allocation gaining a set of “fresh eyes” to review the results. The planners provided feedback based upon their professional opinion and knowledge of the area.

A comparison of the population capacity of each TAZ based upon the generalized adopted Future Land Use map with the projected population was conducted to review for inconsistencies.

Finally the data was reviewed with similar data from surrounding counties. This provided a review of the data from a regional perspective.

It is important to note that the allocation results were generated for the sole purpose of inputs to the transportation model for the LRTP update. For that reason, the accuracy of projecting the data at the TAZ level is less important than the accuracy of projecting the data to an area. The transportation model uses the data to generate future traffic and identify deficiencies on major roadways. Since major roadways generally are accessed from multiple TAZs, data projected in one TAZ but ultimately developed in another should not be viewed as erroneous or bad data.