

Long Range Transportation Plan – Assistance *Employment Projections*

Methodology

Data Acquisition

- New York State Department of Labor Annual Employment Statistics (1975-2000) for the Genesee-Finger Lakes Region (Genesee, Livingston, Monroe, Ontario, Orleans, Seneca, Wayne, Wyoming and Yates)
 - Categories: Total Employment, Manufacturing, Retail, Services & Other

Manufacturing: The manufacturing Standard Industrial Classification (SIC) division includes establishments engaged in the mechanical or chemical transformation of materials or substances into new products. These establishments are usually described as plants, factories, or mills and characteristically use power driven machines and materials-handling equipment. Establishments engaged in assembling component parts of manufactured products are also considered manufacturing if the new product is neither a structure nor other fixed improvement. Also included is the blending of materials, such as lubricating oils, plastic resins, or liquors.

Retail: This SIC division includes establishments engaged in selling merchandise for personal or household consumption and rendering services incidental to the sale of the goods. In general, retail establishments are classified by kind of business according to the principal lines of commodities sold (groceries, hardware, etc.), or the usual trade designation (drug store, cigar store, etc.). Some of the important characteristics of retail trade establishments are: the establishment is usually a place of business and is engaged in activities to attract the general public to buy; the establishment buys or receives merchandise as well as sells; the establishment may process its products, but such processing is incidental or subordinate to selling; the establishment is considered as retail in the trade; and the establishment sells to customers for personal or household use. Not all of these characteristics need be present and some are modified by trade practice.

Services: This SIC division includes establishments primarily engaged in providing a wide variety of services for individuals, business and government establishments, and other organizations. Hotels and other lodging places; establishments providing personal, business, repair, and amusement services; health, legal, engineering, and other professional services; educational institutions; membership organizations, and other miscellaneous services, are included.

Other: This includes all employment excluding the categories listed above.

- Census of Transportation Planning Package (CTPP), US Census Bureau (1990, 2000)
 - Category: Journey to Work by Place of Work

Journey to Work: This includes data compiled from the Census 2000 long-form regarding where people work. The data is presented at the county and minor civil division (MCD) level and by Place of Residence as well as Place of Work. For these projections, Journey to Work Data by Place of Work at the MCD level was utilized.

Data Analysis

The CTPP provides information on the number of workers commuting to/from each Minor Civil Division (MCD) otherwise known as Towns. By summing the number of workers commuting in each county's MCD (including those that commuted within a given MCD, commonly referred to as 'non-commuters'), the total number of workers within each county was calculated.

Step 1:

The CTPP derived employment numbers do not match the numbers from the NYSDOL data, which is to be expected since the two data sets utilized different methodologies. The purpose for using CTPP data was to find a ratio of workers in a county to workers in each of that county's MCD's. By repeating this procedure for each MCD in all counties for both 1990 and 2000, "percent-share" predictions for 2005, 2010, 2020, and 2025 (the years relevant to the employment predictions) were derived. This step is necessary because, as the 1990 and 2000 CTPP data shows, the "percent-share" of employment in a MCD is not constant over time.

Step 2:

A mathematical process is used to project the "percent-shares." The percent shares of 1990 and 2000 (as derived in Step 1) are used and the best-fit line is computed via linear regression analysis. This gives the percent shares of employment from the county to the MCD at each of the four future time markers (2005, 2010, 2020, 2025). The formula for the line is as follows:

$$A = Y - bX$$

Where:

A is a forecasted Y value for a given X value b

X and Y are the known sets of x and y values

$$b = (n\SIGMAxy - \Sigma X\SIGMAy) / (n\SIGMAxx - \Sigma X\SIGMAx)$$

Step 3:

Projecting employment followed a similar protocol as in Step 2 with the exception of using 25 data points (1975-2000 NYSDOL) for each regression instead of only two points (as in Step 2). The best-fit line for each county's total, manufacturing, retail, and services employment was found and projected employment for 2005, 2010, 2020, and 2025 was derived from these regressions.

Step 4:

Employment projections for the MCD level directly combine the efforts put forth in Steps 2 and 3. Multiplying each MCD's projected "percent-share" of the county employment at each projection point by the projected county employment at that same projection point resulted in a projected total employment figure for each MCD.

[Steps 5 & 6 are specific to the Transportation Management Area (TMA) level projections]

Step 5:

To divide each MCD's projected employment into each Transportation Analysis Zone (TAZ), GIS was utilized to overlay real property land use codes and TAZ's to determine what share each TAZ has of its MCD's employment. By applying this final ratio found for all municipalities in the TMA to the future employment of each MCD, we may derive the future employment within each TAZ in the Transportation Management Area.

Step 6:

The final step in this process was to project employment by sector within each TAZ. To accomplish this, a percent share was calculated from the 2000 CTPP employment by Industry data for the selected sectors. This percent share represents the percent each sector is of the total employment within a given TAZ. Once these percentages were calculated they were applied to the total employment numbers for each TAZ for 2005, 2010, 2015, 2020 and 2025 resulting in employment by sector for each TAZ for each of the projected years.