Business Understanding of Freight Analysis Framework

Baseline Scenario

The Freight Analysis Framework (FAF) integrates data from a variety of sources to create a comprehensive national picture of freight movements among states and major metropolitan areas by all modes of transportation. It provides a national picture of current freight flows to, from, and within the United States, assigns the flows to the transportation network, and projects freight flow patterns into the future.

The FAF flow matrix described in this report is used to forecast future freight activities, projecting shipment weights and values from year 2020 to 2040 in five-year intervals.

The FAF Forecasts must to be driven by the most up to date macroeconomic assumptions on the short- and long-term trends of the United States

Domestic Freight Forecast Methodology

The first step in creating the forecast of the FAF4 database is to extract the county-level employment and the U.S. dollar value of output information , from the BMI database. The BMI database covers each of the forecast years from 2012 to 2040.

The total domestic shipment volumes are then projected out through the forecast horizon using the forecast information from the BMI, converted to annual growth rates. The result is a table that shows, for each of the forecast years, the shipment tonnage for each region-to-region commodity flow.

At this point, a national-level freight forecast, based on the most recent U.S. economic data , is employed to establish aggregate-level benchmark freight volumes for each commodity class. The total 2013-2018 year FAF4 freight flows, by commodity, are then initially forecasted using the national-level forecasts of output and consumption.

Lastly, annual growth rates are reviewed against industrial production and transportation flow benchmarks to validate the forecasts.

The following section is the IHS database and service that is needed to use in constructing the Freight Analysis Framework (FAF) Fourth Generation (FAF4) Forecast database. This includes the Business Market Insights (BMI) as U.S. national and regional economic forecasts.

Forecasted U.S. Economy Database

The BMI database, formerly known as the Business Demographics Model, contains a consistent set of historical statistical estimates and forecasts by industry sector, by geographic region. The statistics include the number of business establishments, employees, and sales by industry

The business demographic concepts included in the BMI include:

Number of Employees

- Total
- By Industry
- By Occupation Group
- By Geographic Area

Number of Business Locations

- By Industry
- By Geographic Area

Geographic Segments

- Geographic Segments

Challenge addressed by the use case

It's unavailable to get forecasted economic dataSet by industry sector and by geographic region to forecast growth rate for long term (from 2020 to 2040) .

To solve this I assumed to start from the end which it mean to get the final results from the available dataSets (in our case the goods in tons frome 2012 to 2018) to calculate the expected growth rate in goods tons between each year and the base year (2012) .

To calculate the growth rate for the next years in short term (from 2019 to 2025) from the available dataSets , I assumed to calculate the growth rate for each year and the previous year for it and get the avarage for all of these growth rates (2012 - 2018) and added it to next year such as 2019 and calculate the growth rate for 2019 based on 2012.

This process will repeat to 2025 .