Growth Rates

Growth rates do not have to be consistent throughout the study area. However, only one forecasting method should be used. The growth rate, methodology and supporting documentation must be submitted and approved by DOTD before advancing.

Forecasting with a Model

1) Coordinate with DOTD to determine specific future year builds (normally Existing plus Committed) for your project. Once determined, utilize the appropriate MPO Travel Demand Models.
2) Decide and justify what ADT you will be using in the model. Will you be using an average along the corridor? Are there some short segments that may not be representative of the growth rate?
3) Determine the growth rate between the two model runs. Clearly show your calculations and which ADTs you used.
4) Perform reasonability check on growth rates.
5) If growth rates are unreasonable, coordinate with MPO and Traffic Engineering to determine next steps. This will be an iterative process and may take some time.

Forecasting without a Model

When traffic volumes are unavailable to produce a growth rate for a particular highway facility, historical data can be used in lieu of current traffic volumes to calculate/estimate this growth rate.

The data used to perform this task can be found through LA DOTD's Traffic Monitoring Unit, which collects annual average daily traffic (AADT) and other traffic data. Routine traffic counts are performed on state maintained roadways, US Highways, and other consistently high-volume roadways every three (3) years per parish. Occasionally, historical traffic data can contain discrepancies, such as sudden spikes or unexpected dips, in traffic trends. In these events, the year(s) that contain discrepancies may be excluded from calculation. Depending on available data and the study area's characteristics, the area can even be broken into sections to identify trends in different areas. In all cases, research should be conducted and a justification for exclusions or trends documented and submitted with the growth rate documentation.

To use historical data as a forecasting method, a quick example has been provided in the following pages to illustrate the steps necessary to arrive at a growth rate.

Using Historical Data as a Forecasting Method Example

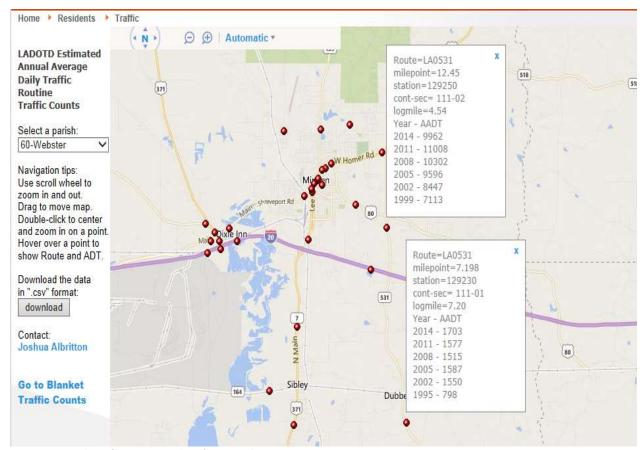Using the historical AADT data in Figure 1, determine the growth rate for target year 2017 and 2037.

Figure 1: Snapshot of AADT count data for Example 1

Step 1: Station 129250 is selected to estimate the growth rate along LA 531 and contains 6 years of AADT data. Notice the spike in years 2008 and 2011. Research determined that the increase in traffic was a result of fracking in North Louisiana during those years. Due to this temporary and atypical increase, the years 2008 and 2011 are subsequently excluded from the calculations to determine growth.

Step 2: The next step is to plot the remaining years' data on a scatterplot to determine the correlation between the two variables.   By using a spreadsheet, the data is compiled into columns and a scatterplot is created using spreadsheet tools. See Figures 2 and 3 respectively for illustrations.
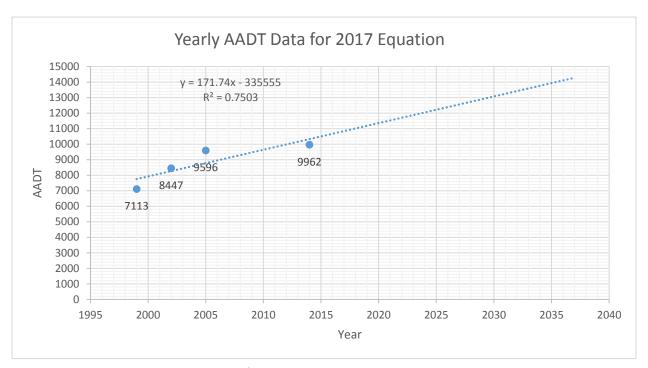
Figure 2: Yearly AADT Data in Spreadsheet

Figure 3: Scatterplot showing Yearly AADT data for the 2017 equation

Step 3: Since there is a strong linear correlation within the data set, an equation is obtained to determine future year numbers. Insert the target year 2017 as **X** into the equation to solve for **Y**. (Y=171.74***2017**-335555). Since we are predicting that traffic trends will continue based on the equation of the line, the AADT for year 2017 will approximately be 10,845 AADT.

Step 4: After target year 2017 has been determined, this value should be entered back into the original columns of yearly AADT data to produce another scatterplot for target year 2037 (Figures 4 and 5).

LA 531 Sta.129250		
Year	**AADT**	**Growth**
2037		
2017	10845	
2014	9962	
2005	9596	
2002	8447	
1999	7113	

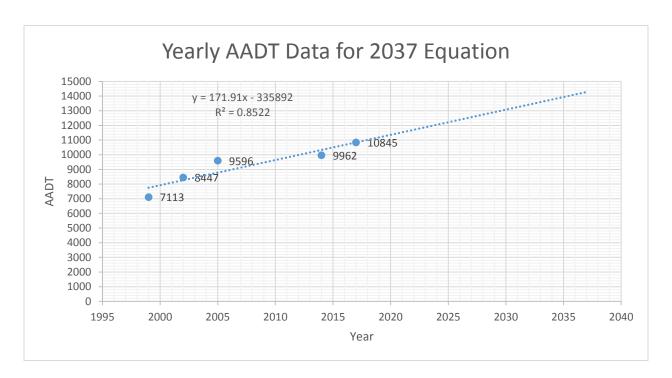*Figure 4: Yearly AADT columns in spreadsheet with 2017 AADT*

Figure 5: Scatterplot with new equation for 2037

Step 5: Once 2037 is put into the new equation (Y=171.91***2037**-335892), a Y value of 14,289 AADT is calculated. Enter this value back into the station's yearly data table.

Step 6: To calculate the growth rate, the equation of $F = P(1+i)^n$ is used. Solving for i, the equation becomes $i = (F/P)^{1/n} - 1$, and the calculated growth rate is rounded to 1.39.

$$i = (F/P)^{1/n} - 1$$

F = target year AADT
P = current year AADT,
i = growth rate
n = number of years between
target and current years

LA 531 Sta.129250		
Year	AADT	Growth
2037	14289	1.38856
2017	10845	
2014	9962	
2005	9596	
2002	8447	
1999	7113	

Figure 6: Yearly AADT and Calculated Growth Rate