Documentation: Process for creating County level VMT imputations:

Initial Files:

* County VMT 2000-2008: Provides total estimates, not broken out by highway type. Seems to have significantly reduced numbers from 2011-2015 estimates.
* County VMT 2011-2015: Provides total estimates, not broken out by highway type. 2011 state totals almost double 2008 state totals (ie. Sum of all FIPS code for a given state)
* County VMT 2016-2020: VMT broken out by type of highway.

Upon review and SME judgement from Matt, it seems that prior to 2011, data is broken out to show VMT for only federal use roads, while 2011 and after including federal and non-federal roads. Upon review, it seems that the 2000-2008 data represents only Rural Interstate, Rural Other Principal Arterial, Urban Interstate, Urban Principal Arterial, and Urban Freeway/Expressway Road types.

The following steps document how the data was compiled, paired down, and imputed to create a dataset for 2000-2020 for all counties.

1. Data for each set of initial files (2000-2008, 2011-2015, and 2016-2020) were concatenated in Excel to create one file for each year range. In cases where only Daily VMT was provided, that number was multiplied by 365 (or 366 for leap years) to create the true VMT number.
2. Data for 2016-2020 was summed in two ways: a) the total VMT over all road categories and b) total VMT over the 2000-2008 represented roads. A calculation is then made to create the percent federal VMT is of the total VMT across each FIPS code for each year from 2016-2020. These 5 years of percentages are then averaged and multiplied by each matching FIPS code each year of the 2011-2015 data. This produces a consistent VMT calculation across all years.
3. The data is then pivoted to create a table with columns: FIPS Code, each year from 2000-2020.
4. Finally, VMT for the 2009 and 2010 datapoints is imputed using linear regression analysis. (This is chosen because VMT seems to be generally linear for state and national graphics.) Each FIPS code has it’s own linear regression.