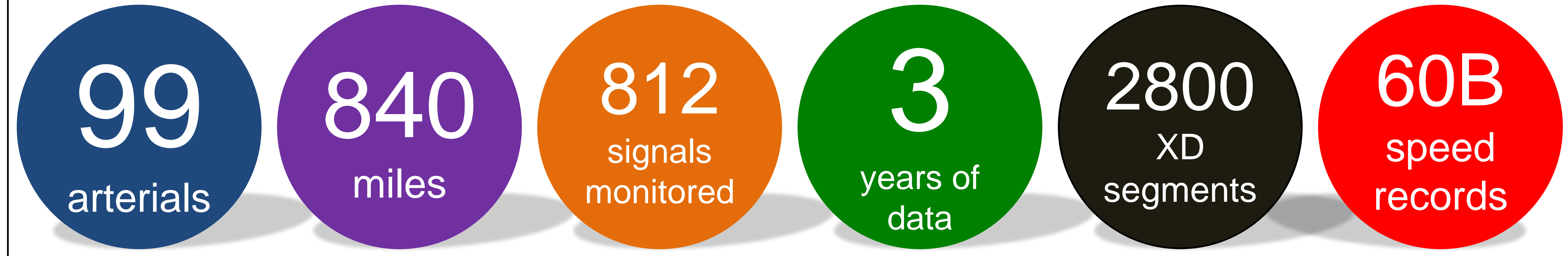
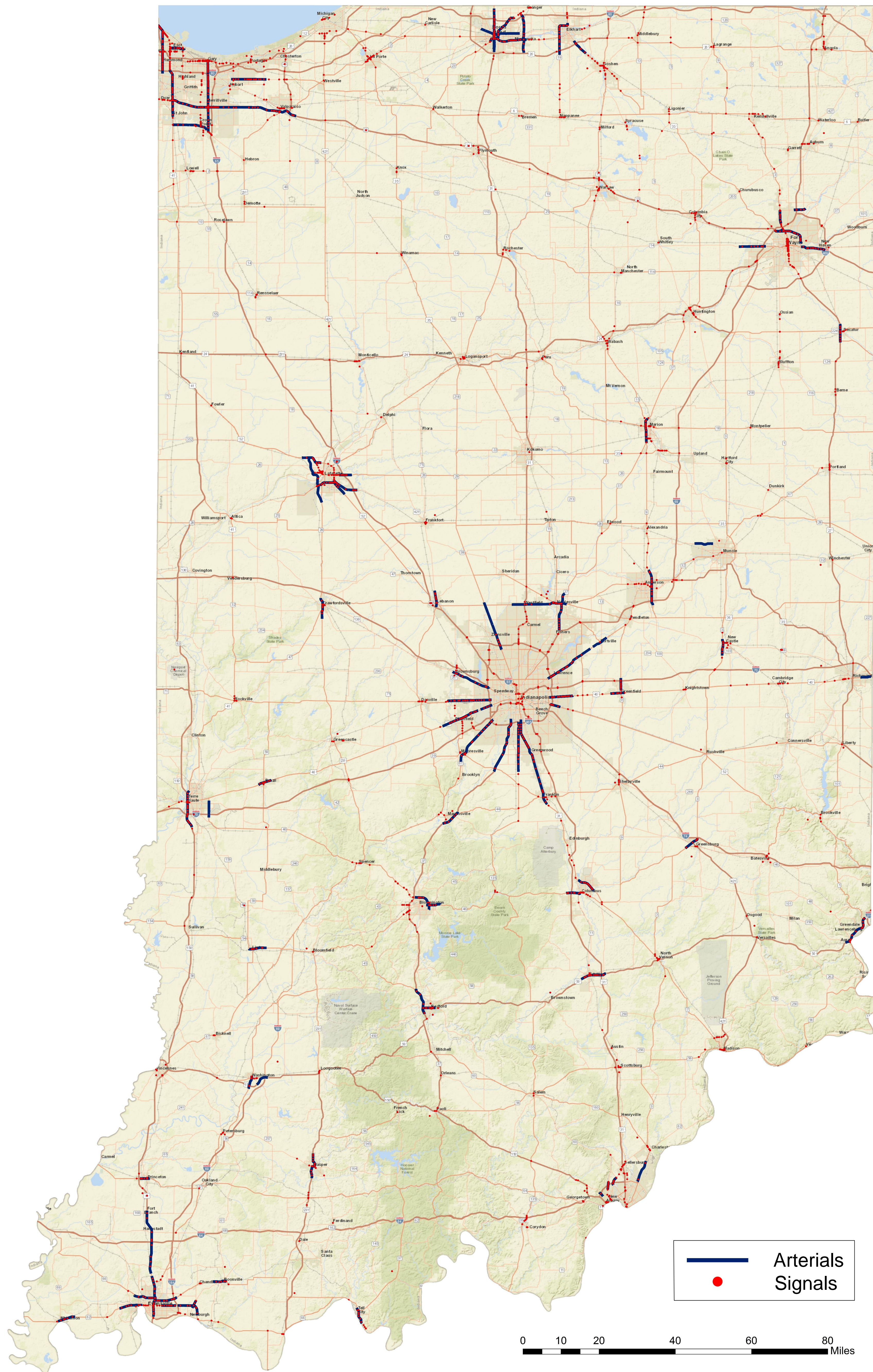




Connected Vehicle Data for Traffic Signal Performance Measures



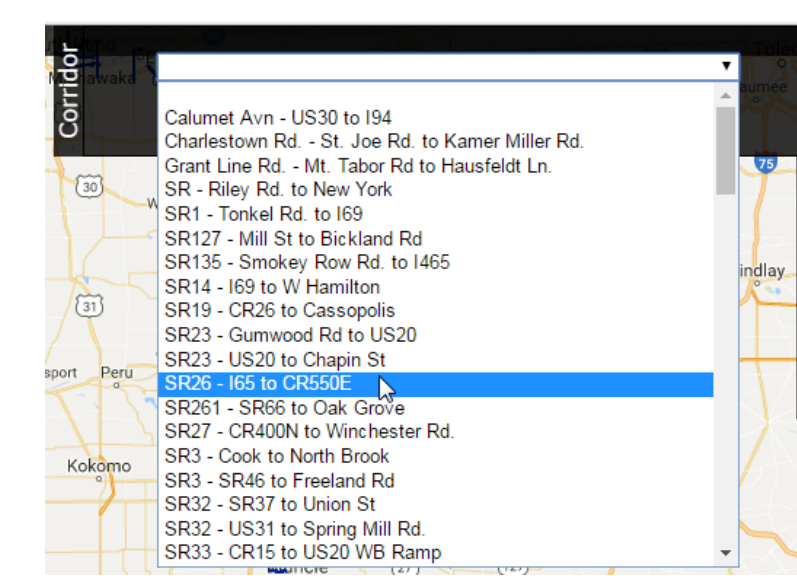
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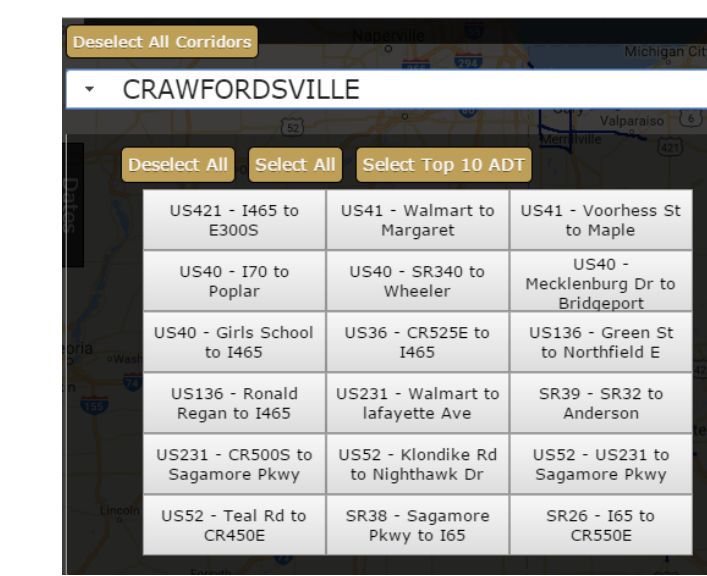
Web Application Suite

1 Corridor Selection

Corridors are listed alphabetically (a) for *Travel Time* and *Travel Delay Monitor*. A district selection (b) is used for *Arterial Ranking*



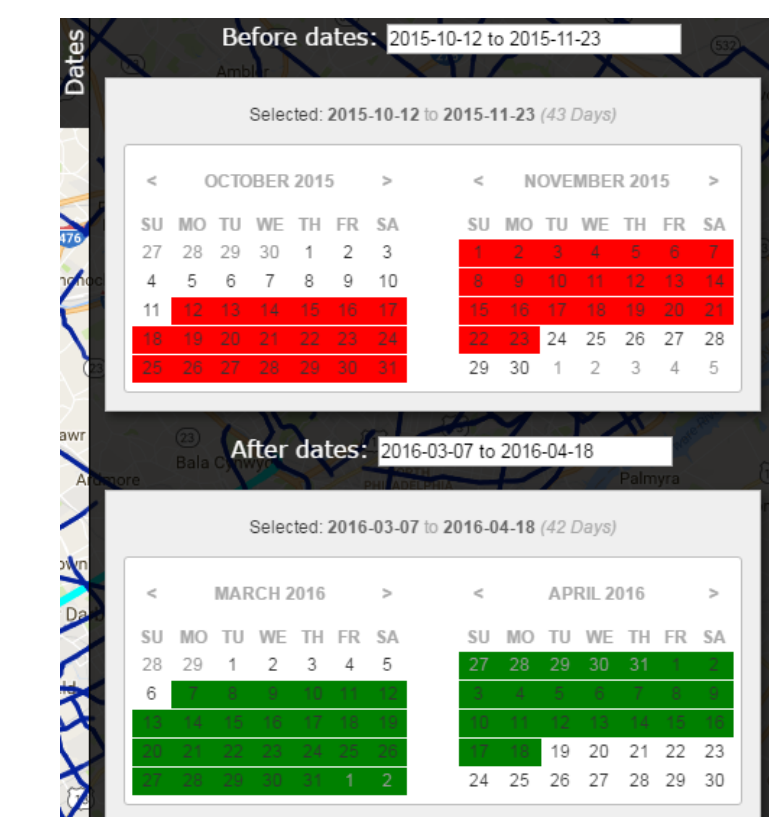
a) Alphabetical selection



b) District selection

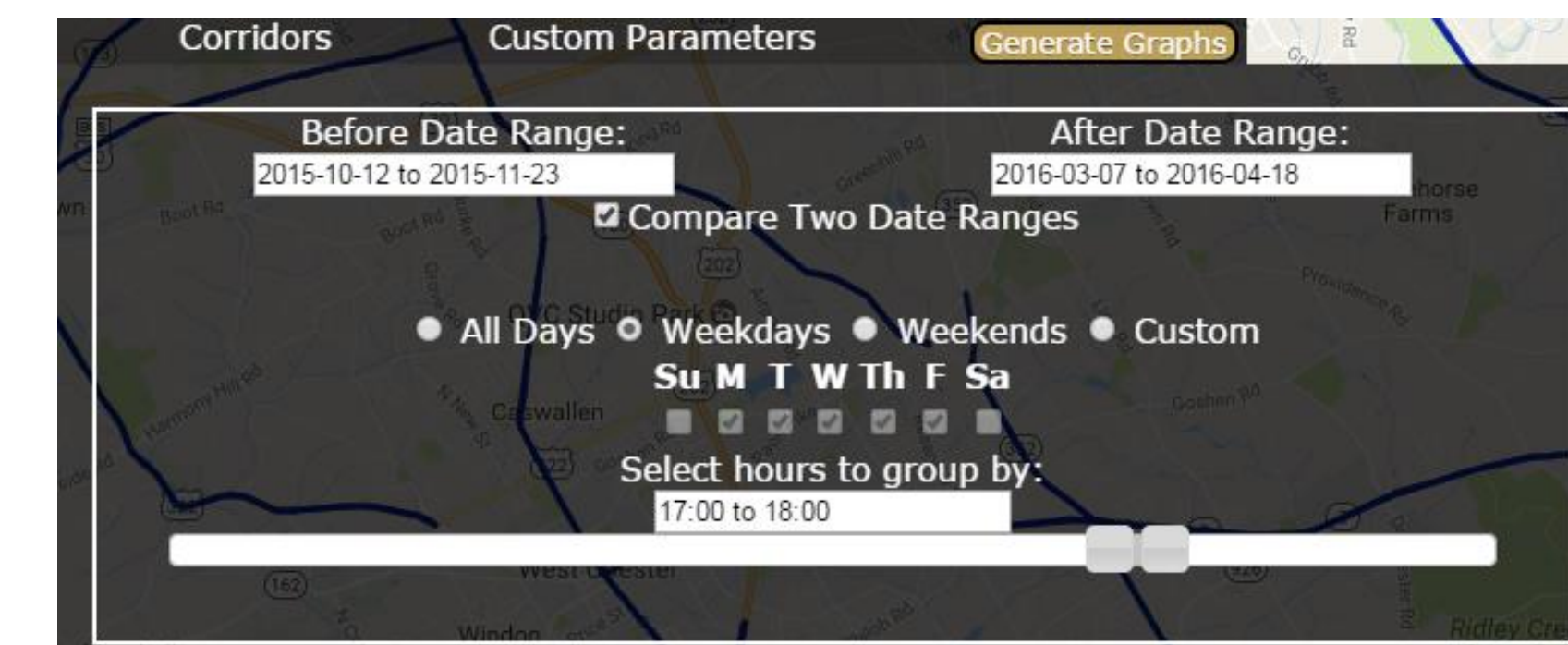
2 Analysis Date Selection

Before (red) and after (green) dates displayed on a calendar.

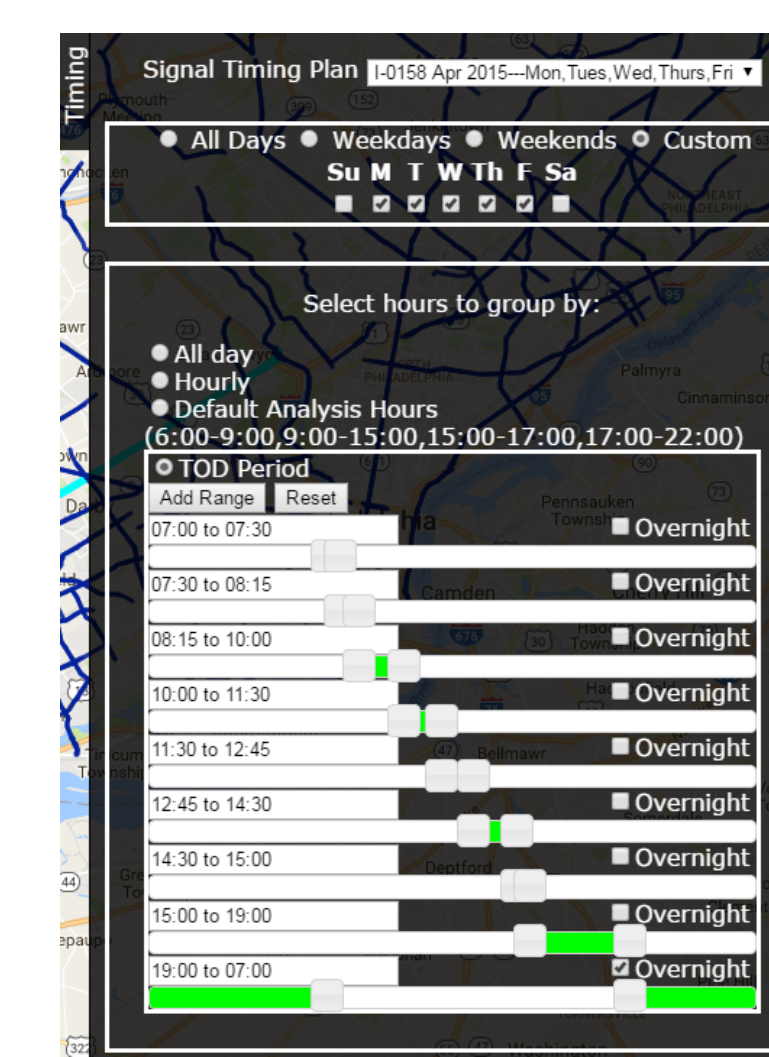


3 Time Selection

Arterial Ranking allows selection of specific hour ranges (a) while *Travel Time* defaults for the integration of timing plan data (b). *Travel Delay Monitor* displays the hours within the date selection in the output figures.

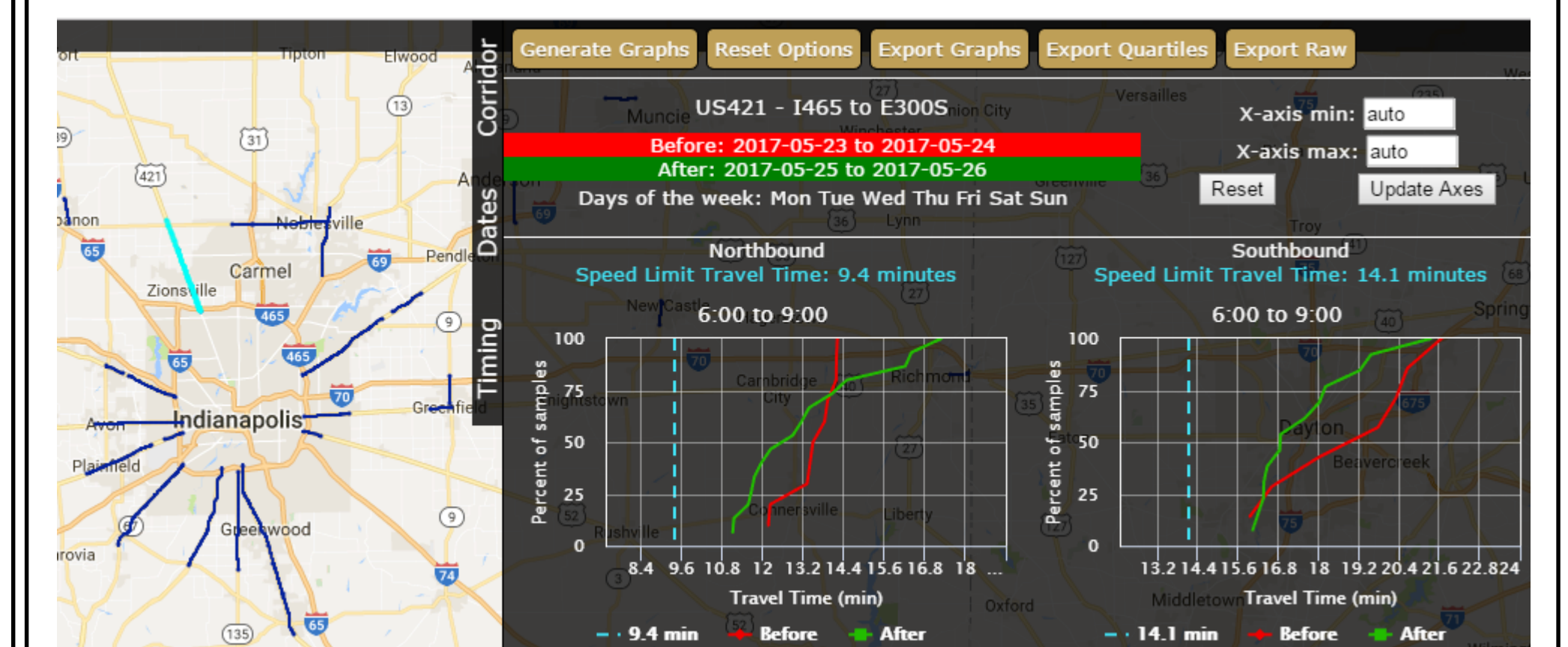


a) Hourly selection



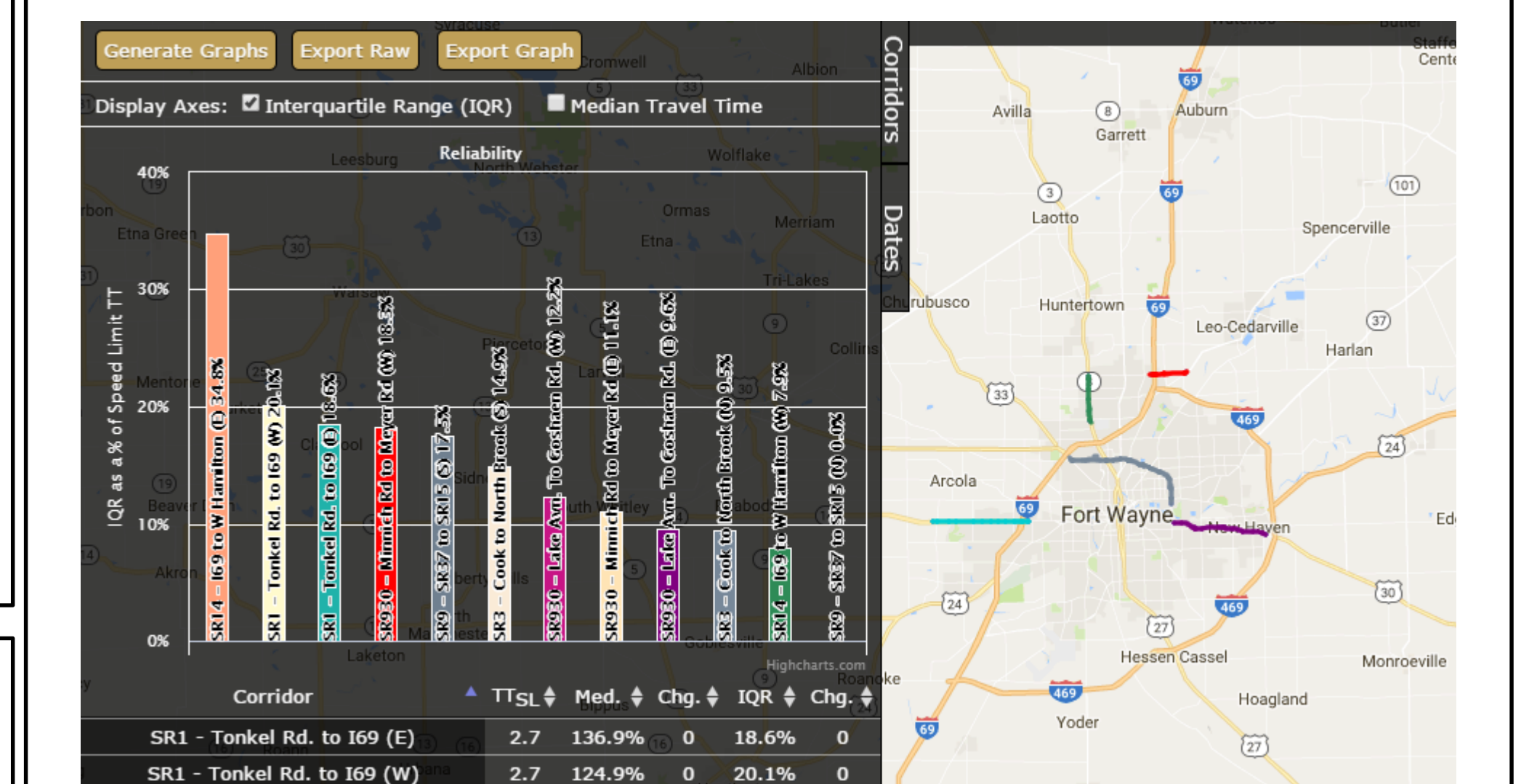
b) Timing Plan selection

Travel Time Comparison Tool



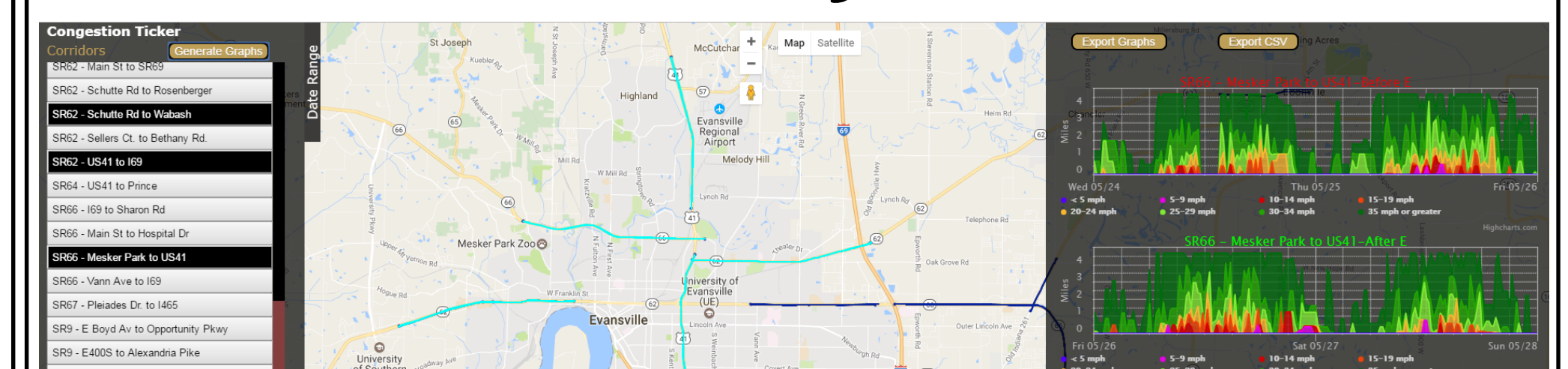
The travel time comparison tool compares samples of travel times on any of the corridors during a user-specified before-and-after time range. The performance metric used in this dashboard is the cumulative frequency diagram (CFD) of all estimated travel times within the selected periods, typically shown as two before-and-after curves on a single chart

Arterial Ranking Tool



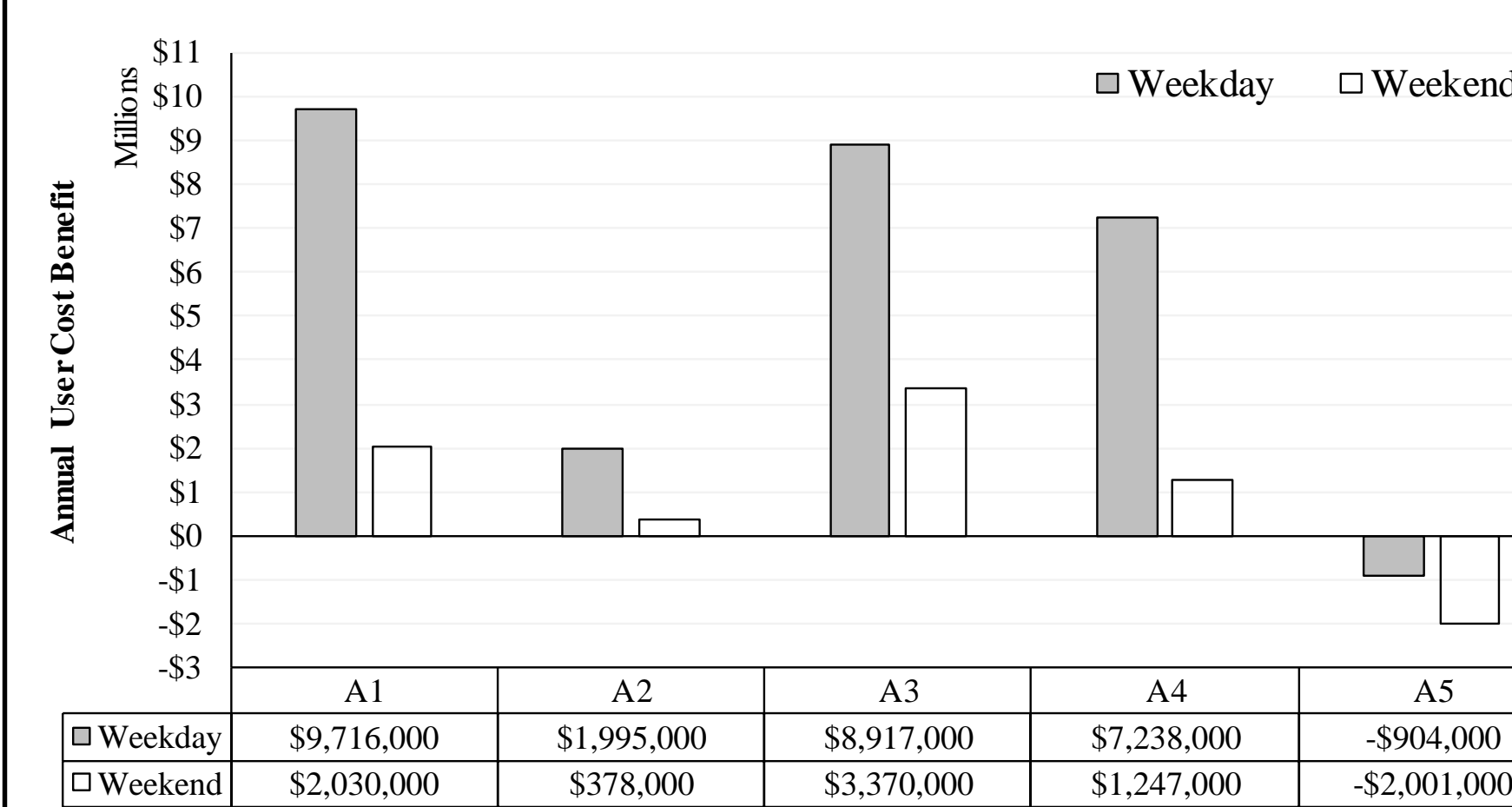
The Arterial Ranking tool ranks the corridors based on based on the normalized median and interquartile range travel times. Provisions for before/after comparisons are available as well. This application is oriented towards a network level assessment of multiple corridors to identify those with excessive travel times (relative to travel time at the speed limit) and high degrees of travel time unreliability.

Travel Delay Monitor



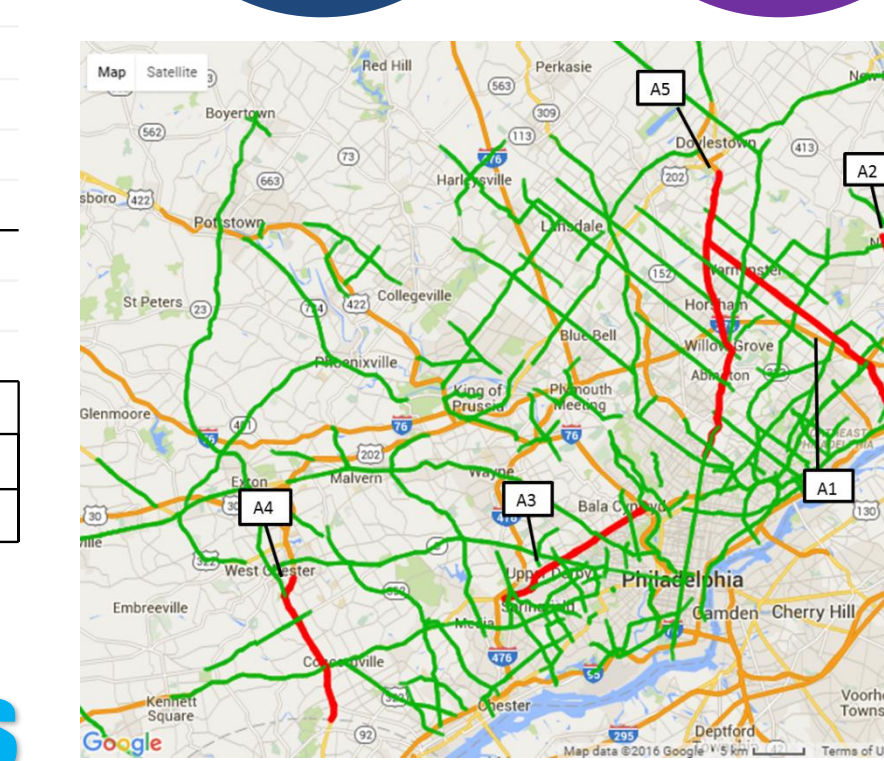
The Travel Delay Monitor displays tis a time-series plot that shows the cumulative miles of a corridor operating under a particular speed, and uses a color gradient to represent the profile of speeds of the corridor at each time instance

Case Study with PennDOT



\$32 Million total benefits
\$275,000 CO₂ savings
10,000 tons CO₂ reduced

138 corridors
766 miles



5 counties
2184 signals