

RESEARCH QUESTION

How does weather affect the capacity of a selected segment of OR-217?

BACKGROUND

The schema *loop* in the class database contains data obtained from inductive loop sensors on OR-217 SB at 5-minute aggregations for calendar year 2009. The loop sensors collect volume, speed, occupancy and metrics on vehicle-miles-traveled, vehicle-hours-traveled, delay and information about bad detector readings in table *loop.loopdata_5min_217sb_2009*. The loop schema also contains tables *highways*, *detectors*, *ramps*, and *stations*. Detectors are related to ramps and stations.

Begin by processing some simple data quality metrics to identify a segment that you wish to consider in more detail. Ideally, this segment would have high-quality data. Contour plots of data quality would be an excellent tool to explore this quickly. Next, the table *weather.metar_2009* contains hourly precipitation data. You will need to define “capacity” in a repeatable manner for a selected time period, then process the data to generate these measures. R’s ability to process large amounts of data can be a limiting if you don’t plan properly. One suggestion would be to write SQL code that produces average hourly volumes and speeds that you could join to the weather data. Assign weather information to these observations, then graphically explore the differences in speed-flow or other curves for each weather category. Statistically quantify these results. Consider t-test of the means or ANOVA analysis (See Dalgaard for reference).

REFERENCES