

Craig Plazony

ECE 505

Deliverable 1

Data Description from Brightspace:

Selected Dataset: Evaluating the Impact of Different Fuels on Performance of a Class 8 Trucking Fleet

Description: Explore data on fuel types and impacts on fuel economy. This dataset could provide insights into biofuels and remote vehicle tracking and diagnostic management systems.

Meta-Data: This dataset includes 2 excel sheets. The first one appears to be the makeup of the exhaust for various trucks between 2 different fuel types. The second one is miles per gallon at various times of the year between the different fuel types. These are in a tabular style with the measurements done numerically. The fuel efficiency is done in Miles per Gallon, and the exhaust makeup is done in Parts Per Million, Percentages of Fuel and Soot, Viscosity normalized at 100 C, base/acid levels, and Oxidations/Nitration I-R.

Explanatory Variables: Fuel Type. You have either B20 or #2ULSD. Maybe Idle % Time though the data looks incomplete and the same between each fuel type. This would mean to me that it wouldn't affect the outcome.

Response Variables:

The following are all for exhaust:

1. Fuel (%).
2. Soot (%).
3. Viscosity (100 °C cS)
4. Acid Number (Total Acid)
5. Base Number (Total Base)
6. Oxidation (Infrared I-R)
7. Nitration (Infrared I-R)
8. Various Element PPM.

You also have Average Miles Per gallon during each month of the year.

Research Questions:

1. Is one fuel better than the other for the purposes of Average Miles Per Gallon?
2. Is one fuel better than the other for the purposes of particulate emissions in their exhaust?
3. Are there relationships between base/acid levels and the particulate in the exhaust?