Stat 582/515 **Assignment #1** Due 1/17

The following is a "real-world" consulting project taken from an old M.S. exam at the University of Wisconsin-Madison.

Researchers in the Mechanical Engineering Department ran a study to assess the relationship between the ignition delay in a diesel engine and four experimental variables:

1. the speed of the engine
2. the load on the engine
3. the percent alcohol in the fuel
4. the injection timing

They would like to develop a prediction model for ignition delay based on these four variables. They're seeking your assistance in forming this model. To be of help, the researchers provided you with their data set (available on Brightspace). In addition to the ignition delay, they also measured the temperature and pressure at the time of ignition. These are the last two columns in the data set.

Your assignment is to prepare for the initial face-to-face meeting with the researchers. Based on this description and the data set, you should:

1. Create up to four "key graphs" that you will use during this initial meeting. For each graph, provide a short paragraph explanation of how and why you plan to use it.
2. List five key questions you need answered at this meeting. These questions can be related to your key graphs or completely separate. Make sure to order them in the order you plan to ask them.

We will discuss the key graphs and questions in class on Wednesday **Jan 17th**. Because of this, **turn in your homework on Brightspace prior to class but bring a copy to class for reference.**