

Researchers in the Mechanical Engineering Department at UW-Madison collected data to learn how the ignition delay in a diesel engine is affected by four experimental variables:

1. speed of engine (rpm);
2. load on engine (pounds force);
3. percent alcohol in fuel;
4. injection timing (normal or retard).

They want to find an equation that will adequately express ignition delay as a function of the four experimental variables.

Your assignment is to produce a “key graph” (or a few of such, no more than four) that provide a graphical summary of main patterns/features in the data; you may add brief explanations if legend and/or caption fall short. No formal analysis is needed.

Also prepare three to five questions you would like to ask the client, which may or may not be related to your key graph(s).

The original data are arranged in an ASCII file `diesel.data` with 47 rows and 8 columns; column one is run number, columns 2-6 are the four experimental variables followed by ignition delay, and columns 7-8 are to be ignored for the current project. An R data frame, to be sourced from `diesel.R`, was created using

```
diesel=read.table("diesel.data",header=FALSE)
names(diesel)=c("run","speed","load","alcohol","timing","delay",
               "temperature","pressure")
```

Submit your graph(s) and questions in a single pdf file to Brightspace by 12:20pm on January 22. We will discuss your findings and questions in class.