In-class exercise: Two factor ANOVA with interaction

Names: (signatures only please, printed names will not be counted)

1.) 4.)

2.) 5.)

3.) 6.)

Overview

In this exercise we suppose we model gas mileage with two factors, one for car vs. truck, and one for city vs. highway, allowing for an interaction.

An interaction means that the difference between cars and trucks is not the same for city driving as highway driving. In addition, it means that the difference between city and highway driving is not the same for cars as it is for trucks.

Instructions

As usual, start by bringing your copy of the `MTH225_Fall2016` archive up to date.

Open a command prompt or terminal window, and use the `cd` command to change to the `MTH225_Fall2016` subdirectory. Then type the command:

```
git pull origin master
```

The pull operation should download the following files:

- The R-knitr code: `MTH225-10_two_way_anova.Rnw`
- The data in Rdata format: `EPA_mileage.Rdata`
- The STAN model file: `two_factor_anova_without_interaction.stan`

In this exercise, the data file is in Rdata format, which you read with a `load` command. The .Rnw file is set up to do this, you should not have to modify it or the .stan files.

Questions

Use the *Compile PDF* button to run the model, and use the output to answer the following questions:

1) What is the point estimate and 95% confidence interval for the difference between cars and trucks on the highway?

2) What is the point estimate and 95% confidence interval for the difference between cars and trucks in the city?

3) Does the data suggest that the difference between cars and trucks is not the same for city and highway driving?

4) Does the data suggest that the difference between city and highway driving is not the same for cars and trucks?