STATS 201 Lab Class 3

Pizza size

In 2012, an Australian pizza company launched a marketing campaign claiming that their pizzas were larger than their rival's. We can test these claims using data collected by an independent company.

Each row in **pizza.txt** corresponds to a pizza that was purchased and measured. The variables are

- **size**: the diameter of the pizza in cm.
- **store**: a factor indicating the store the pizza was purchased from, with levels **A** and **B** (the store names have been anonymised).
- **crust**: a factor describing the crust of the pizza, with levels **thick**, **thin**, and **mid**.

The claims were made by Store A. We are interested in a few questions. Does Store A actually make bigger pizzas? Is the type of crust related to the size of the pizza? Does the difference in pizza size between stores depend on the crust type? Conduct a full analysis, and include **Methods and Assumption Checks** along with an **Executive Summary**, answering the above questions.

Hints

General comments

- Your assignment should be written using R Markdown in RStudio. It should include the code you used and its output, including plots.
- There are many examples of **Methods and Assumption Checks** and **Executive Summaries** in your course book. It is a good idea to find a case study with a similar analysis, and use this to guide you, but remember to write things in your own words. Additionally, each data set may have its own specific questions of interest, so do not only base your answers on examples from other case studies.
- There are some more specific guidelines for the **Methods and Assumption Checks** and **Executive Summaries** below.

Methods and assumption checks

Unless told otherwise, this should include the following:

- A brief comment on any plots of the data.
- A brief description of how you arrived at your final model. For example, if you fitted multiple models, you may comment on what changes you made, and why.
- A brief description of any concerns with the model assumptions. If you have no concerns then it is enough to say "All model assumptions appear to be satisfied."
- The model equation, making sure to define all model terms.
- Reporting the R-square of the model.

Executive Summary

Unless told otherwise, this should include the following:

- A brief statement summarising what your analysis was investigating, and the model that was used.
- Interpretations of the important findings. For example, was there evidence to suggest that your explanatory variables were related to the response variable? Where appropriate, use confidence intervals to express the magnitude of the relationship.
- Answers to any specify research questions.
- This should be written without too much technical detail. An intelligent person who is *not* a statistician should be able to understand what your findings were. Imagine that you are trying to explain the results of your analysis to a friend who is not taking this course.