

1. Introduction: Something to set the scene. What is it about regression that makes it so important?
2. Objectives (bullet points)
  - Fitting regression models
  - Interpreting the estimates
  - Use regression models to make predictions
3. The Data
  - Describing scatter plots
  - Assessing the strength of linear relationships: The correlation
4. Simple Linear Regression
  - (a) Fitting of the linear model

Contrasts are not needed here as we are only dealing with single lines, which means that it doesn't matter which contrast we use, we will always get the same regression coefficient estimates.
  - (b) Diagnostics
    - Non-constant variance
    - Non-linear nature
    - What to do about them - transformations such as  $\ln()$
  - (c) Interpreting the output
    - All the pieces produced
    - Intercept
    - Slope
      - Basic interpretation
      - Interpretation under  $\ln$ - $\ln$  transformation
      - Interpretation under single  $\ln$  transformation of an X-variable
  - (d) Making Inferences
    - Inferences for the intercept and slope
    - Confidence intervals for mean response
    - Prediction intervals for a new observation
5. Summary
6. Exercises All the exercise for this chapter
7. References
8. Appendix: Software instructions (to be included at a later stage).