

In this assignment you will explore data that consists of measurements made on horse mussels sampled from the Marlborough Sounds. This data was collected as part of a larger ecological study of the mussels. The variables in this data set are:

- M:** mass of the mussel's muscle (g) – the edible part,
- L:** length of mussel's shell in (mm),
- W:** width of mussel's shell in (mm),
- H:** height of mussel's shell in (mm),
- S:** mass of the mussel's shell (g).

A data frame containing this data called `mussels.df` has been created in Splus on the advanced lab server. To access this data simply logon to the advlab computer, start Splus and type

```
> mussels.df
```

If you want to use your own computer, the data set can also be obtained from the “Data Sets” page of the STATS 330 Webpage.

For this assignment you need to create a suitable model that relates the mass of the mussel's muscle to the other variables. Your assignment should consist of two parts. The first part should be a report that someone who is not familiar with statistical ideas and language will be able to understand. It should present the model and explain what it indicates about the relationship between the mass of the mussel's muscle and the other variables (a well chosen plot may be useful).

The second part of your assignment is a statistical appendix that explains to the marker what you did. It should be typeset (annotated computer output is not acceptable) and present a coherent argument for your analysis. Do not include output for all the things you tried. An explanation of what you did with a few key pieces of evidence (plots and/or output) will suffice. Your statistical appendix should contain the following:

1. An explanation of why you chose the model you did.
2. A full set of diagnostics for your model and a discussion of these.
3. A discussion of outliers, high leverage and influential points (if they exist). Discuss the impact of these observations on the fitted model and indicate what measures you feel are appropriate to deal with these observations.

This assignment should be handed in to the appropriate box in the basement of the Maths/Physics building by the SMIS Resource Centre, by 4pm on Friday, 24 August.