

MATH 4044 – Statistics for Data Science

Practical Week 8

Question 1

The data for this practical is stored in a SAS data file called `hsb2.sas7bdat` located in `mydata` library on the SAS OnDemand server.

This data file contains 200 observations from a sample of high school students with demographic information about the students, such as their gender (`female`), socio-economic status (`ses`) and ethnic background (`race`). It also contains a number of scores (out of 100) on standardized tests, including tests of reading (`read`), writing (`write`), mathematics (`math`) and social studies (`socst`).

- (a) Carry out a one-way analysis of variance relating `write` to `prog` (program type). Check the necessary conditions and discuss the results.
- (b) Check the necessary assumptions and carry out an analysis of covariance relating writing scores to program type controlling for reading scores. Discuss your results.

Question 2

The data for this practical is stored in a SAS data file called `charity.sas7bdat` located in `mydata` library on the SAS OnDemand server.

Suppose we have collected the following data:

- (a) Individual's income (`cash`);
- (b) Importance of charity to the individual (`import`);
- (c) Amount given to charity (`given`);
- (d) Gender (`gender`).

Is there a difference in the amount given to charity by men and women?

- (a) Carry out a one-way analysis of variance relating `given` to `gender`. Check the necessary conditions and discuss the results.
- (b) Check the necessary assumptions and carry out an analysis of covariance relating the amount given to gender controlling for importance (`import`). Discuss your results.

Note: You can write your own code (see topic notes) or use Tasks. If you choose to use the Tasks menu, make sure that PROC GLM is used.