

Homework 2A

Due FRIDAY 26 September in class.

For both questions, analyze the data in R.

Use cut/paste to put your code and output into a regular document (for example in Word).

Annotate your output as necessary (by hand is fine) to answer the following questions.

The datasets are posted on the class webpage as comma-delimited text files, with filenames *hwq1data* (for question 1) and *hwq2data* (for question 2). Save the files, set the path to the location where you saved the files, and read them into R with `read.csv("filename")`.

Question 1. The dataset *hwq1data* has observations of the number of elk calves per 100 adult female elk (variable name = `recruit2`) in 200 population surveys, together with data on local snow depth and an index of population size for each survey.

- a) Fit an appropriate regression model to test whether population size and/or snow depth had an effect on recruitment.
- b) For each predictor variable, identify the regression coefficient (effect), its standard error, the statistic that tests the 'statistical significance' of the effect, and the p-value.
- c) Make an appropriate inference about factors affecting elk recruitment from your results.

Question 2. The dataset *hwq2data* has observations on the annual survival of 300 individuals (coded so that 0 means the individual died, and 1 means the individual survived), together with an index of home range quality for each individual. All of the individuals were radiocollared and closely monitored, so you do not have to worry about the possibility that some individuals were alive but not detected.

- a) Fit an appropriate regression model to test whether vegetation quality had an effect on annual survival
- b) Identify the regression coefficient (effect), its standard error, the statistic that tests the 'statistical significance' of the effect, and the p-value.
- c) Make an appropriate inference about the effect of home range quality on survival from your results.