

PROJECT 1 SOLUTIONS

Statistics 401: Fall 2006

This quiz is worth a total of 30 points.

- (a) (4 pts) Table 1 displays a list of the variables and variable types from the article “Illegal immigrants expanding footprint.”

Table 1: Variables in Illegal Immigrant Footprint

Variable	Variable Properties
Legal Status of Immigrant	categorical, 5 levels
Origin of Illegal Immigrant	categorical, 5 levels
Occupations of Illegal Immigrant	categorical, 5 levels

- (b) There are not two sets of variables which can be labelled as explanatory and response. The counts and proportions given in the graphics are *statistics*, values computed from data.
- Table 2 displays a list of the variables and variable types from the Jellyfish study.
 - (a) (2 pts)

Table 2: Variables in Jellyfish Study

Variable	Type	Properties
Case	Categorical	46 levels: 1, 2, 3, . . . , 46
Location	Categorical	2 levels: Dangar I., S. Bay
Breadth	Numerical	continuous
Length	Numerical	continuous

- (b) (1 pt) The file jellyfish.txt has 47 rows (46 rows for data and 1 row for the header) and 4 columns.
- (c) (2 pts) The commands to display the data are:

```
D=read.table("jellyfish.txt",header=TRUE)
attach(D)
D
```
- (d) (1 pt) See Appendix A
- (e) (2 pts) The response variable is Location. The explanatory variables are Breadth and Length. The investigator wants to know whether or not the location of the jellyfish can be determined given its dimensions.

- (6 pts) The mean length of a jellyfish from Dangar Island is 12.34mm and the mean length of a jellyfish from Salamander Bay is 18.98mm. The difference between these is large with respect to the standard deviation of each (3mm and 1.94mm respectively), so we may conclude that jellyfish from Salamander Bay are longer on average. We’ll learn later in this course how “t-procedures” can be used to answer this question. The code and output from R:

```
> tapply(Length,Location,mean)
      DI      SB
12.34091 18.97917
> tapply(Length,Location,sd)
      DI      SB
3.005496 1.936375
```

4. (4 pts)

5. (8 pts)

Appendix A: Electronic File jellyfish.txt