

## Chap11\_2

Anjali Krishnan and Richard Troise

```
library(xtable)
library(gmodels)
```

First, set working directory. 'data' is a table with two columns and same number of rows, and should be numeric. Columns have headers indicating the names of the variables. **User will also input desired variable names in double quotes**

```
data <- read.csv("chap11_2.csv", header = FALSE, skip = 1)
colnames(data) <- c("sub_1", "sub_2", "sub_3", "sub_4", "sub_5", "sub_6")
```

We now combine the observations into one long column (score)

```
colnames(data) <- c("V1", "V2", "V3", "V4", "V5", "V6")
score=c(data$V1,data$V2,data$V3,data$V4,data$V5,data$V6)
```

We now prepare the labels for the 4x5 scores according to the factor levels: Drug\_A Placebo Drug\_B, Drug\_A Placebo Drug\_B.....etc for Factor A

```
Drug=gl(3,1,6*3*1, labels=c("Drug_A","Placebo","Drug_B"))
```

sub\_1 sub\_1....., sub\_2 sub\_2.....,sub\_3 sub\_3 ....,sub\_4 sub\_4 ....., sub\_5 sub\_5....., sub\_6 sub\_6 etc for Factor B.

```
Subject=gl(6,3*1,6*3*1, labels=c("sub_1", "sub_2", "sub_3","sub_4", "sub_5", "sub_6"))
```

We now form a data frame with the dependent variable and the factors, then we print the results

```
data = data.frame(score = score, Drug = factor(Drug), Subject =
  factor(Subject))
knitr::kable(xtable(data))
```

score	Drug	Subject
124	Drug_A	sub_1
108	Placebo	sub_1
104	Drug_B	sub_1
105	Drug_A	sub_2
107	Placebo	sub_2
100	Drug_B	sub_2
107	Drug_A	sub_3
90	Placebo	sub_3
100	Drug_B	sub_3
109	Drug_A	sub_4
89	Placebo	sub_4
93	Drug_B	sub_4
94	Drug_A	sub_5
105	Placebo	sub_5
89	Drug_B	sub_5

score	Drug	Subject
121	Drug_A	sub_6
71	Placebo	sub_6
84	Drug_B	sub_6

Anova when “Subject” is considered as a random factor, then we print the results

```
aov1=aov(score~Drug+Error(Subject),data=data)
summary(aov1)

##
## Error: Subject
##           Df Sum Sq Mean Sq F value Pr(>F)
## Residuals  5     750      150
##
## Error: Within
##           Df Sum Sq Mean Sq F value Pr(>F)
## Drug        2     900      450   3.75 0.0609 .
## Residuals 10    1200      120
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

print(model.tables(aov(score~Drug+Subject),"means"),digits=3)

## Tables of means
## Grand mean
##
## 100
##
## Drug
## Drug
## Drug_A Placebo Drug_B
##   110      95      95
##
## Subject
## Subject
## sub_1 sub_2 sub_3 sub_4 sub_5 sub_6
##   112   104    99    97    96    92
```