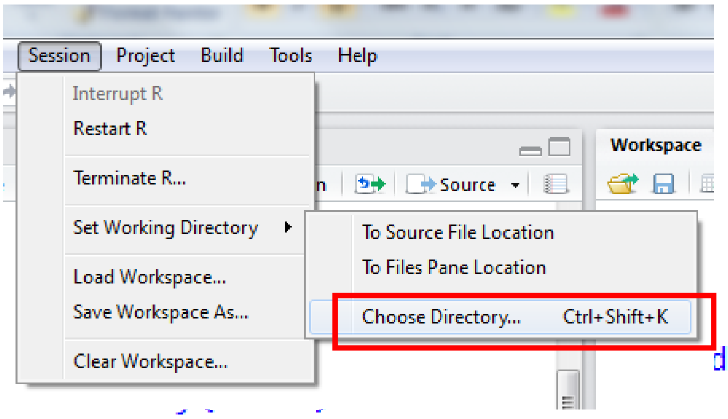
Perform logistic regression using glm()

First load in the data from a csv file. To do so, set the working directory to the folder where you have saved the csv file.



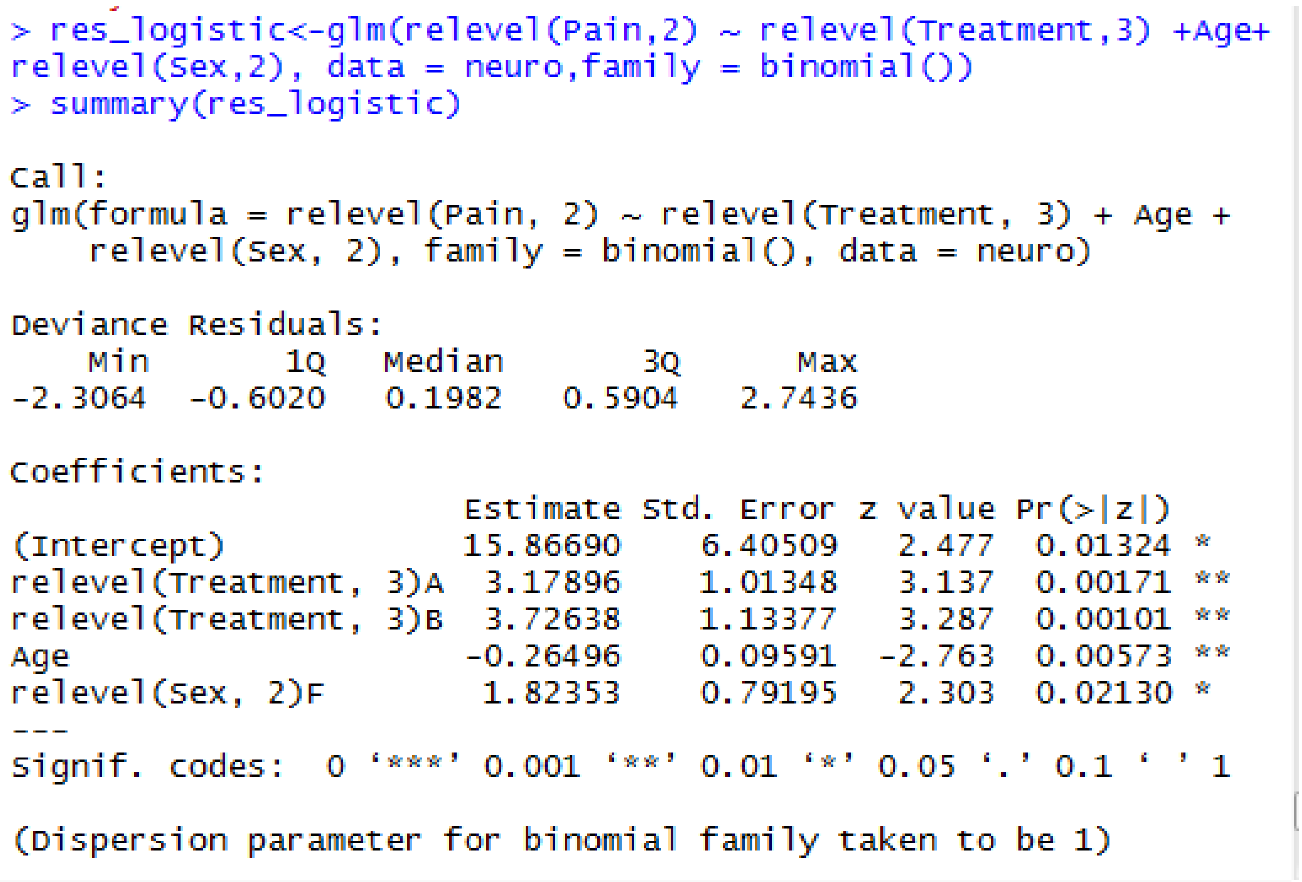
```
der=TRUE,sep=",")
```

```
 Treatment Sex        Age            Duration        Pain
 A:20      F:30   Min.   :59.00   Min.   : 1.00   No :35
 B:20      M:30   1st Qu.:66.75   1st Qu.: 8.50   Yes:25
 P:20             Median :69.00   Median :16.00
                  Mean   :70.05   Mean   :16.73
                  3rd Qu.:74.00   3rd Qu.:26.00
                  Max.   :83.00   Max.   :50.00
```

Notice that Treatment is stored with A=1, B=2, P=3.

```
> as.integer(neuro$Treatment)
 [1] 3 2 3 3 2 2 1 2 2 1 1 1 2 1 3 1 3 1 3 2 2 1 1 1 2 3 2 2 3
[30] 3 1 1 2 2 2 1 3 2 2 3 3 3 1 2 1 3 3 1 2 3 3 3 2 1 3 1 3 1
[59] 2 1
> (neuro$Treatment)
 [1] P B P P B B A B B A A A B A P A P A P B B A A A B P B B P
[30] P A A B B B A P B B P P P A B A P P A B P P P B A P A P A
[59] B A
Levels: A B P
```

So if we want to reference to e.g. treatment P (like in SAS need to use relevel():



```
> res_logistic<-glm(relevel(Pain,2) ~ relevel(Treatment,3) +Age+
relevel(Sex,2), data = neuro,family = binomial())
> summary(res_logistic)

Call:
glm(formula = relevel(Pain, 2) ~ relevel(Treatment, 3) + Age + 
    relevel(Sex, 2), family = binomial(), data = neuro)

Deviance Residuals: 
    Min       1Q   Median       3Q      Max  
-2.3064  -0.6020   0.1982   0.5904   2.7436  

Coefficients:
                        Estimate Std. Error z value Pr(>|z|)   
(Intercept)             15.86690    6.40509   2.477  0.01324 * 
relevel(Treatment, 3)A   3.17896    1.01348   3.137  0.00171 **
relevel(Treatment, 3)B   3.72638    1.13377   3.287  0.00101 **
Age                     -0.26496    0.09591  -2.763  0.00573 **
relevel(Sex, 2)F         1.82353    0.79195   2.303  0.02130 * 
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)
```

Note the binomial option in glm indicate logistic regression is to be performed. Note this agrees with Example 5’s output.