

binomial-regression

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```
library(faraway)
```

```
# Challenger O-rings data analysis
```

```
data(orings)
```

```
?orings
```

```
orings
```

```
##      temp damage
```

```
## 1      53      5
```

```
## 2      57      1
```

```
## 3      58      1
```

```
## 4      63      1
```

```
## 5      66      0
```

```
## 6      67      0
```

```
## 7      67      0
```

```
## 8      67      0
```

```
## 9      68      0
```

```
## 10     69      0
```

```
## 11     70      1
```

```
## 12     70      0
```

```
## 13     70      1
```

```
## 14     70      0
```

```
## 15     72      0
```

```
## 16     73      0
```

```
## 17     75      0
```

```
## 18     75      1
```

```
## 19     76      0
```

```
## 20     76      0
```

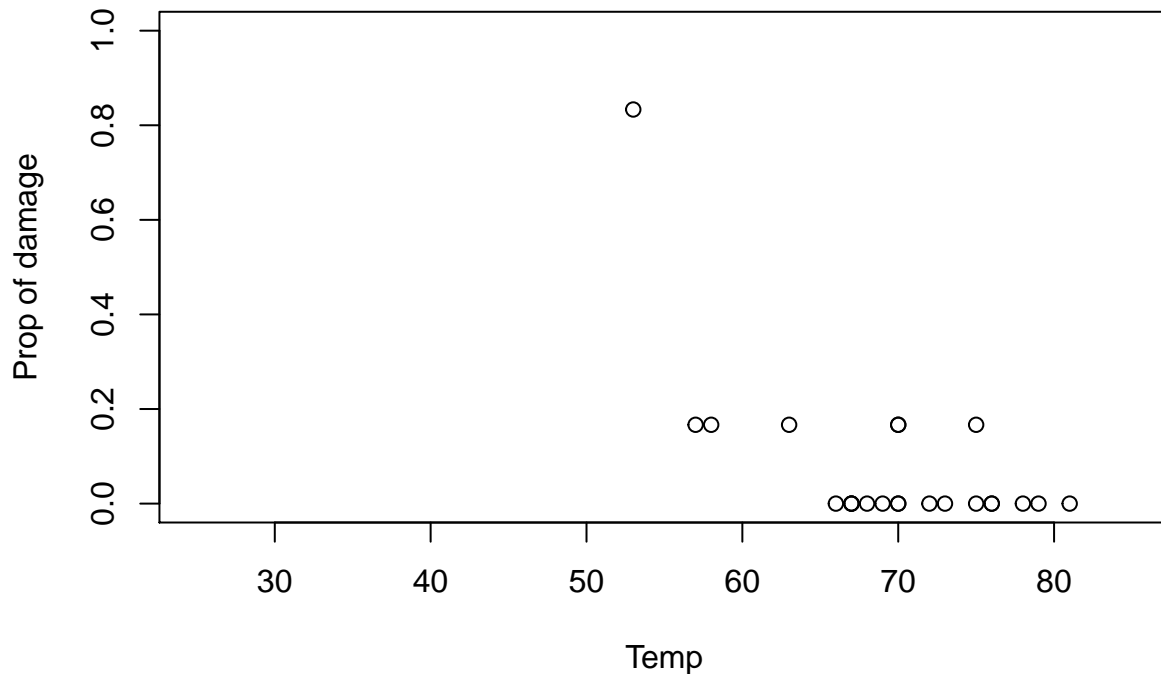
```
## 21     78      0
```

```
## 22     79      0
```

```
## 23     81      0
```

```
attach(orings)
```

```
plot(damage/6~temp,xlim=c(25,85),ylim=c(0,1),xlab="Temp", ylab="Prop of damage")
```



GLM Model

To run the glm model, we need to specify both the success and failure count.

```
m1<-glm(cbind(damage,6-damage)~temp,family=binomial)
summary(m1)
```

```
##
## Call:
## glm(formula = cbind(damage, 6 - damage) ~ temp, family = binomial)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -0.9529  -0.7345  -0.4393  -0.2079   1.9565
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept) 11.66299    3.29626   3.538 0.000403 ***
## temp        -0.21623    0.05318  -4.066 4.78e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 38.898  on 22  degrees of freedom
## Residual deviance: 16.912  on 21  degrees of freedom
## AIC: 33.675
##
## Number of Fisher Scoring iterations: 6
```

Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.