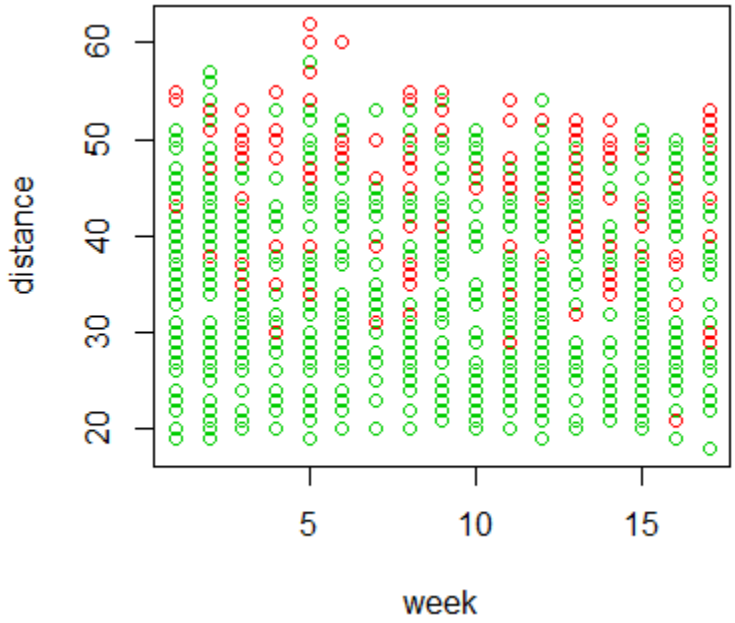
GEOMETRY of LDA and QDA

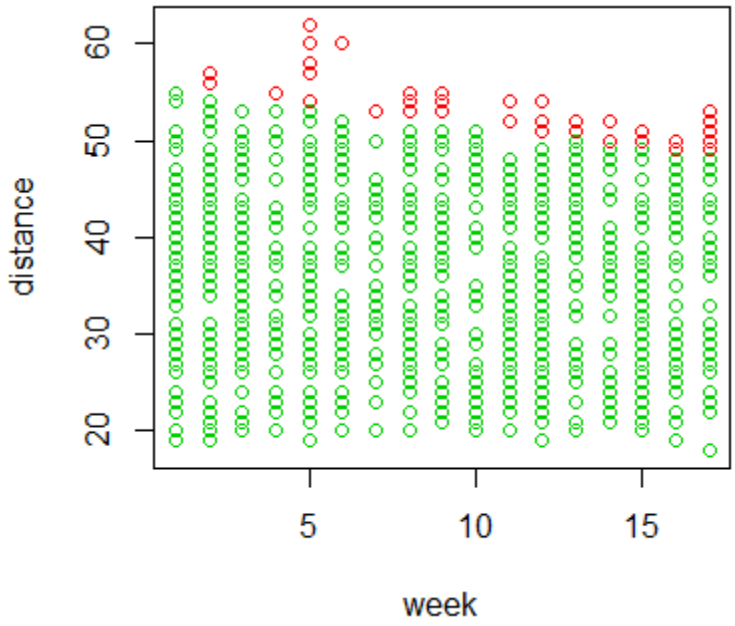
There is a nice Field Goal data among the data sets on our course web site. We'll read this text file directly from the site.

```
> FG = read.table(url("http://fs2.american.edu/~baron/627/R/Field%20goals.txt"))
> attach(FG)
The following objects are masked from FG (pos = 5):

   V1, V2, V3

> distance = V1; made = V2; week = V3;
> plot( week, distance, col = made+2 )    # Adding 2, the colors become green and red for made and missed field goals.
```



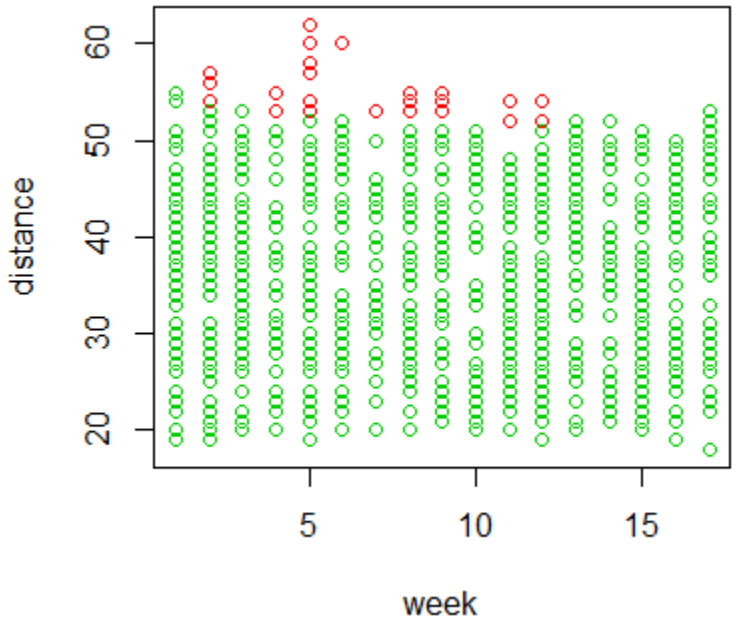
 # Apply LDA and QDA to predict success of a field goal attempt

```
> GF.lda = lda( made ~ distance + week, CV=TRUE )
> mean( GF.lda$class == made )
[1] 0.8090717                                          # Classification rate of 80.9%
> plot( week, distance, col = as.numeric(GF.lda$class)+1 )
```



 # We see a linear decision boundary for LDA.

```
> GF.qda = qda ( made ~ distance + week, CV=TRUE )
> plot( week, distance, col = as.numeric(GF.qda$class)+1 )
```



 # A curvy boundary.