Coursera Course Project Part 2

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Part 2 Tooth Growth Data

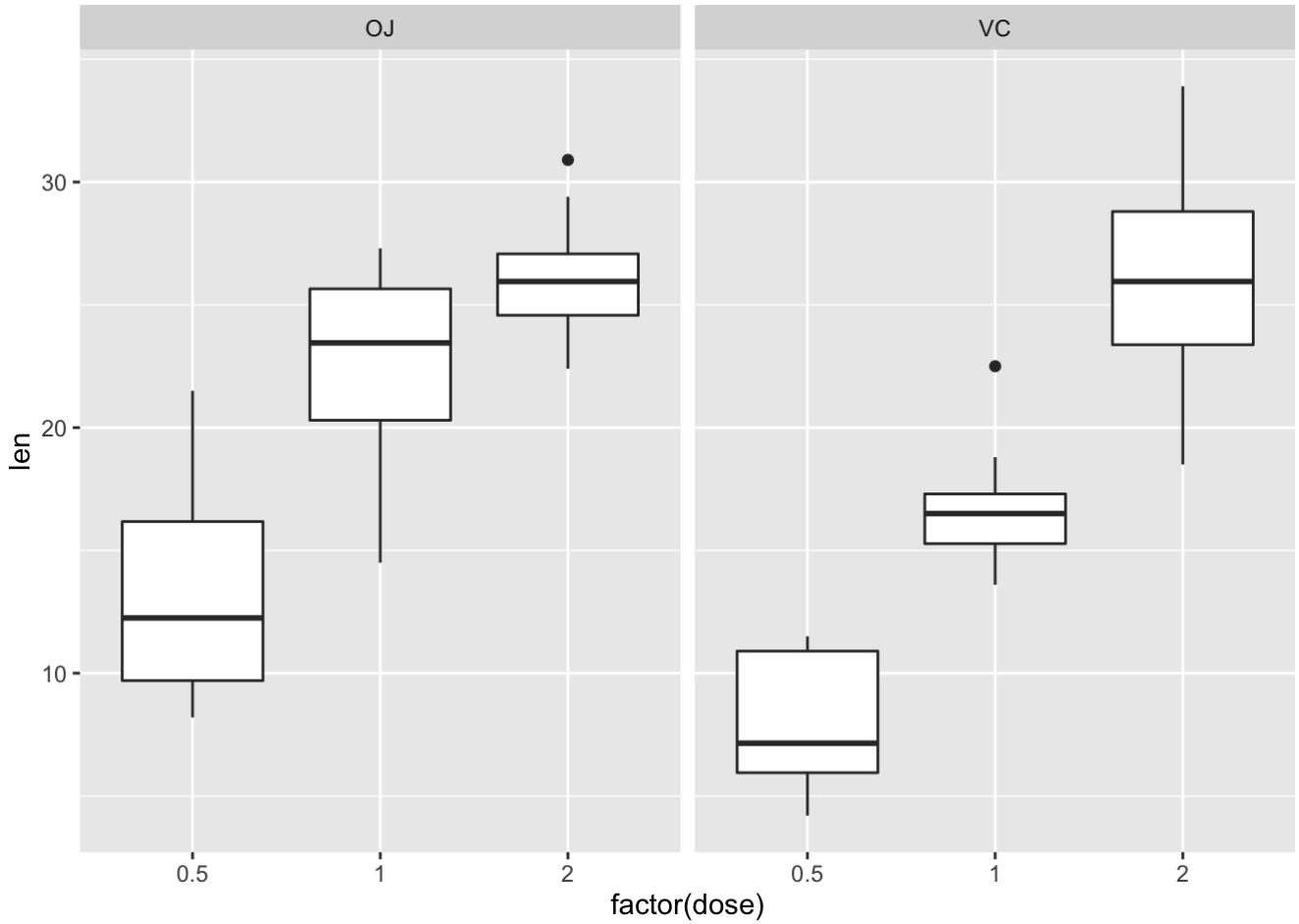
For the second part of the course project we are to compare the tooth growth data for two groups; groups that took 'OJ' supp, and another group that took 'VC' supp. these comparisons will be made at three seperate levels, depending on the dosage taken by the participants (.5, 1 or 2)

Data summary regarding dosage

First we will explor the data by comparing the two seperate groups with regards to dosage

```
library(datasets)
library(ggplot2)

g <- ggplot(ToothGrowth, aes(factor(dose), len )) +
                        geom_boxplot() + facet_grid(.~supp)
print(g)
```



there apprears to be a upwards trend in both groups as dosage increases. ‘Supp’ also seems to affect the groups differently for the first two dosages.

Subsetting data

next we will subset our dataframe by dosage amount so we can run t-tests and compare the different groups.

```
data(ToothGrowth)
doseGrowth1 <- subset(ToothGrowth, dose == 0.5)
doseGrowth2 <- subset(ToothGrowth, dose == 1)
doseGrowth3 <- subset(ToothGrowth, dose == 2)
```

now that we have subset our toothGrowth dataset with regards to dose, we will now conduct three tests to determine if there is a difference between ‘OJ’ and ’VC" supp groups:

test1 h0: dosegrowth1(VC) = dosegrowth1(OJ) test2 h0: dosegrowth2(VC) = dosegrowth2(OJ) test3 h0: dosegrowth3(VC) = dosegrowth3(OJ)

Test1

```
t.test(len~supp, data = doseGrowth1)
```

```
##
##  Welch Two Sample t-test
##
## data:  len by supp
## t = 3.1697, df = 14.969, p-value = 0.006359
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  1.719057 8.780943
## sample estimates:
## mean in group OJ mean in group VC
##            13.23             7.98
```

The results of this t-test seem to indicate for a dose of .5 there is a significant difference between the two supp groups (p<.05).

Test2

```
t.test(len~supp, data = doseGrowth2)
```

```
##
##  Welch Two Sample t-test
##
## data:  len by supp
## t = 4.0328, df = 15.358, p-value = 0.001038
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  2.802148 9.057852
## sample estimates:
## mean in group OJ mean in group VC
##            22.70            16.77
```

The results of this t-test seem to indicate for a dose of 1 there is a significant difference between the two supp groups (p<.05).

Test3

```
t.test(len~supp, data = doseGrowth3)
```

```
##
##  Welch Two Sample t-test
##
## data:  len by supp
## t = -0.046136, df = 14.04, p-value = 0.9639
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -3.79807  3.63807
## sample estimates:
## mean in group OJ mean in group VC
##            26.06            26.14
```

for the last dosage group there does not seem to be a difference between the two groups (p>.05) therefore the null hypothesis is not rejected.