Lecture3_Knitr_Exercise

Abbie M. Popa

8/20/2018

First make a new Rmd file

Delete the example code, leaving the setup options

Load the guinea pig tooth growth data, look at the data, and read a description of it

```
data("ToothGrowth")
ToothGrowth
```

```
##     len supp dose
## 1   4.2   VC  0.5
## 2  11.5   VC  0.5
## 3   7.3   VC  0.5
## 4   5.8   VC  0.5
## 5   6.4   VC  0.5
## 6  10.0   VC  0.5
## 7  11.2   VC  0.5
## 8  11.2   VC  0.5
## 9   5.2   VC  0.5
## 10  7.0   VC  0.5
## 11 16.5   VC  1.0
## 12 16.5   VC  1.0
## 13 15.2   VC  1.0
## 14 17.3   VC  1.0
## 15 22.5   VC  1.0
## 16 17.3   VC  1.0
## 17 13.6   VC  1.0
## 18 14.5   VC  1.0
## 19 18.8   VC  1.0
## 20 15.5   VC  1.0
## 21 23.6   VC  2.0
## 22 18.5   VC  2.0
## 23 33.9   VC  2.0
## 24 25.5   VC  2.0
## 25 26.4   VC  2.0
## 26 32.5   VC  2.0
## 27 26.7   VC  2.0
## 28 21.5   VC  2.0
## 29 23.3   VC  2.0
## 30 29.5   VC  2.0
## 31 15.2   OJ  0.5
## 32 21.5   OJ  0.5
## 33 17.6   OJ  0.5
```

```
## 34  9.7   OJ  0.5
## 35 14.5   OJ  0.5
## 36 10.0   OJ  0.5
## 37  8.2   OJ  0.5
## 38  9.4   OJ  0.5
## 39 16.5   OJ  0.5
## 40  9.7   OJ  0.5
## 41 19.7   OJ  1.0
## 42 23.3   OJ  1.0
## 43 23.6   OJ  1.0
## 44 26.4   OJ  1.0
## 45 20.0   OJ  1.0
## 46 25.2   OJ  1.0
## 47 25.8   OJ  1.0
## 48 21.2   OJ  1.0
## 49 14.5   OJ  1.0
## 50 27.3   OJ  1.0
## 51 25.5   OJ  2.0
## 52 26.4   OJ  2.0
## 53 22.4   OJ  2.0
## 54 24.5   OJ  2.0
## 55 24.8   OJ  2.0
## 56 30.9   OJ  2.0
## 57 26.4   OJ  2.0
## 58 27.3   OJ  2.0
## 59 29.4   OJ  2.0
## 60 23.0   OJ  2.0
```

```
help("ToothGrowth")
```

Display Column Names and Row Names for the Data

Look at the 16th row of the data

Look at the 3rd column of the data

Look at the variable named “dose”

Store a subset of the data, columns 1 and 3 and rows 24 - 48 for later use

Store the supplement name for later use

```
colnames(ToothGrowth)
```

```
## [1] "len"  "supp" "dose"
```

```
  row.names(ToothGrowth)
```

```
##  [1] "1"  "2"  "3"  "4"  "5"  "6"  "7"  "8"  "9"  "10" "11" "12" "13" "14"
## [15] "15" "16" "17" "18" "19" "20" "21" "22" "23" "24" "25" "26" "27" "28"
## [29] "29" "30" "31" "32" "33" "34" "35" "36" "37" "38" "39" "40" "41" "42"
## [43] "43" "44" "45" "46" "47" "48" "49" "50" "51" "52" "53" "54" "55" "56"
## [57] "57" "58" "59" "60"
```

```
  ToothGrowth[16, ]
```

```
##     len supp dose
## 16 17.3   VC    1
```

```
  ToothGrowth[ , 3]
```

```
##  [1] 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 1.0 1.0 1.0 1.0 1.0 1.0 1.0
## [18] 1.0 1.0 1.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 0.5 0.5 0.5 0.5
## [35] 0.5 0.5 0.5 0.5 0.5 0.5 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 2.0
## [52] 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0
```

```
  ToothGrowth$dose
```

```
##  [1] 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 1.0 1.0 1.0 1.0 1.0 1.0 1.0
## [18] 1.0 1.0 1.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 0.5 0.5 0.5 0.5
## [35] 0.5 0.5 0.5 0.5 0.5 0.5 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 2.0
## [52] 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0
```

```
  tg_subset <- ToothGrowth[24:48, c(1,3)]
  tg_supp <- ToothGrowth$supp
```

Challenge Question: In groups answer

What are the different variables in the dataset?

len, supp, dose

/Library/Frameworks/R.framework/Versions/3.5/Resources/library/datasets/help/ToothGrowth

How many guinea pigs were used in the experiment?

What are the different supplements used in the experiment?

Min. : 4.20 , 1st Qu.:13.07 , Median :19.25 , Mean :18.81 , 3rd Qu.:25.27 , Max. :33.90 , OJ:30 , VC:30 , NA, NA, NA, NA, Min. :0.500 , 1st Qu.:0.500 , Median :1.000 , Mean :1.167 , 3rd Qu.:2.000 , Max. :2.000

What are the different doses used in the experiment?

Calculate the 5-number summary for the dataset

```
  summary(ToothGrowth)
```

```
##       len        supp         dose
##  Min.   : 4.20   OJ:30   Min.   :0.500
##  1st Qu.:13.07   VC:30   1st Qu.:0.500
##  Median :19.25           Median :1.000
##  Mean   :18.81           Mean   :1.167
##  3rd Qu.:25.27           3rd Qu.:2.000
##  Max.   :33.90           Max.   :2.000
```

Challenge Question: What seems odd about the "dose" data?

1st quartile equal min 3rd quartile equals max

Make a table of supplement and dose information

```
  table(ToothGrowth$dose)
```

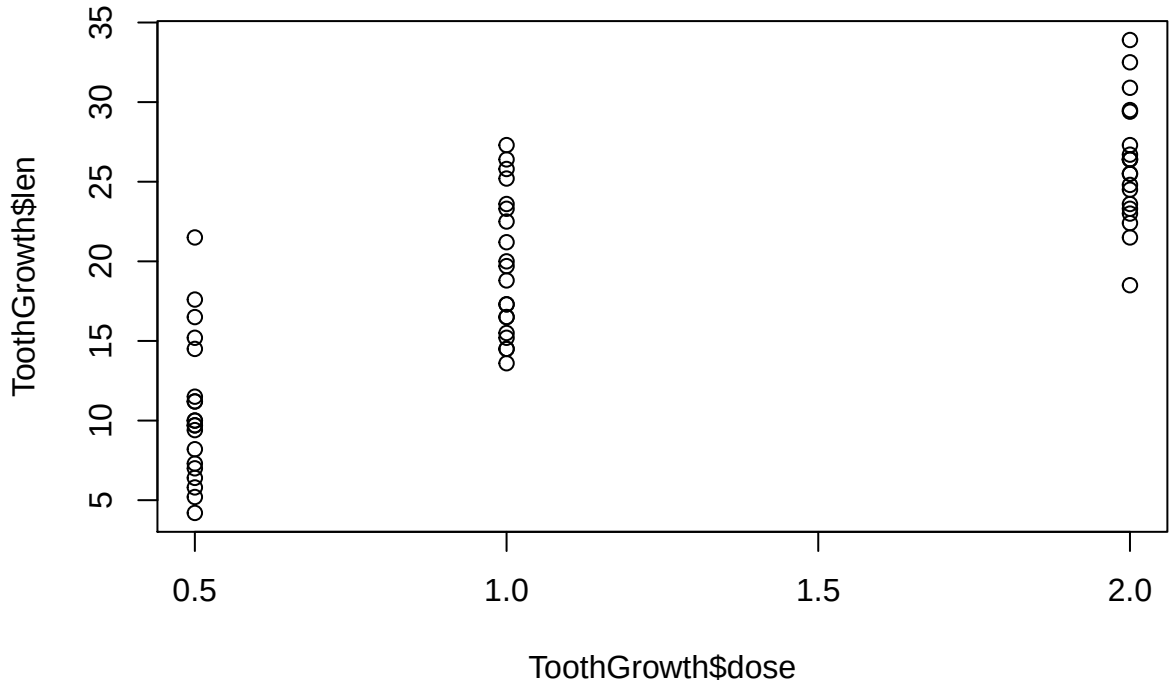
```
##
## 0.5   1   2
##  20  20  20
```

```
  table(ToothGrowth$supp, ToothGrowth$dose)
```

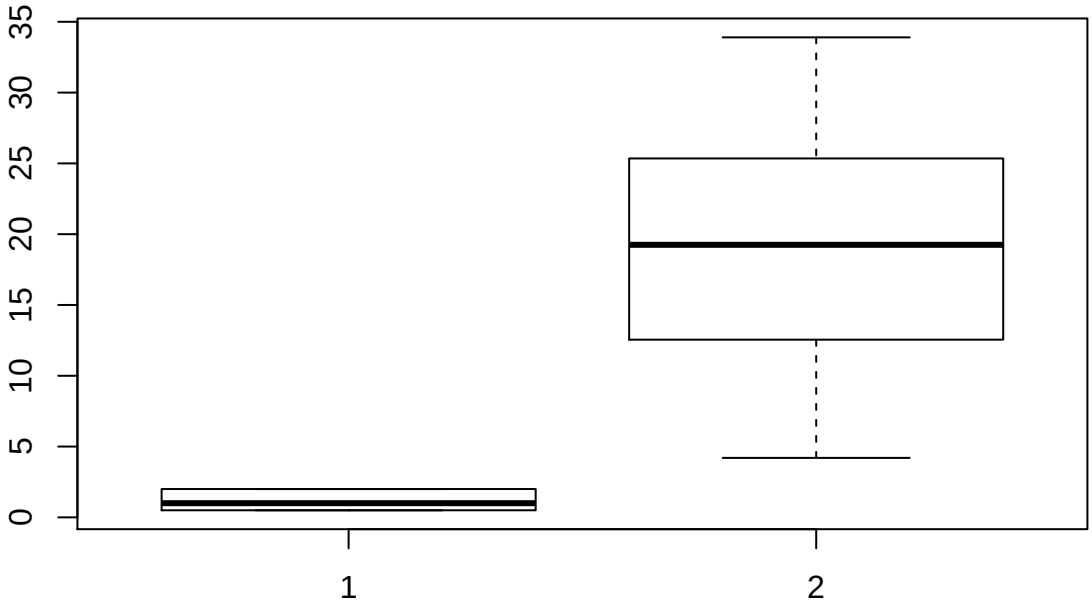
```
##
##      0.5  1  2
##   OJ  10 10 10
##   VC  10 10 10
```

Challenge Question: In groups create a visual representation of tooth growth based on dose and supplement condition

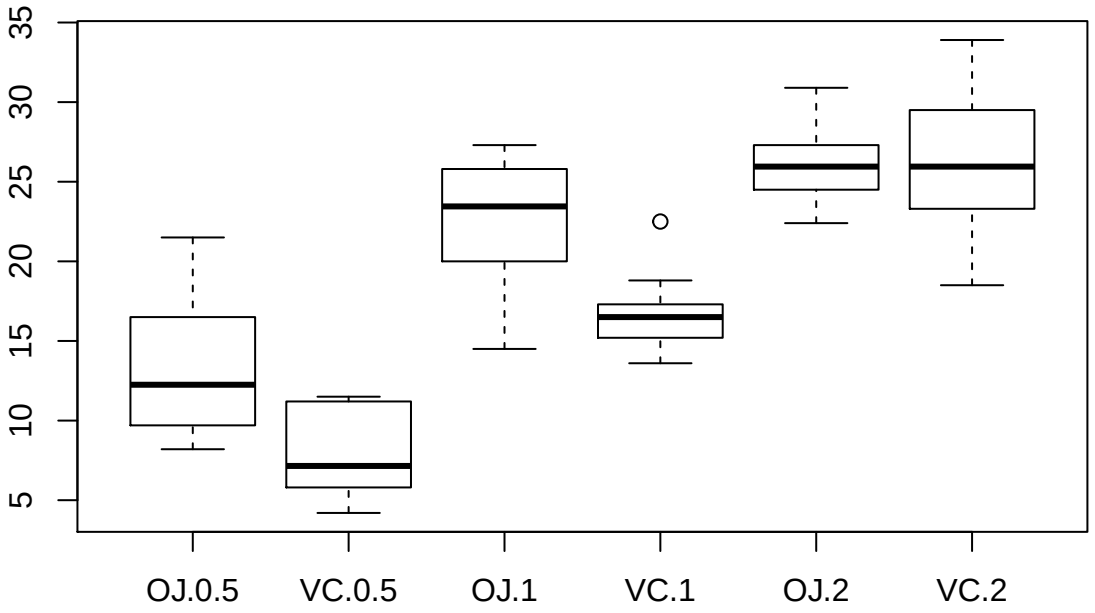
```
  plot(ToothGrowth$dose, ToothGrowth$len)
```




```
boxplot(ToothGrowth$dose, ToothGrowth$len)
```




```
boxplot(ToothGrowth$len~ToothGrowth$supp*ToothGrowth$dose)
```


5
10
15
20
25
30
35
OJ.0.5
VC.0.5
OJ.1
VC.1
OJ.2
VC.2