Part 2 : Basic Inferentrial Data Analysis Instructions

Course : Statistical Inference
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Now in the second portion of the project, we're going to analyze the ToothGrowth data in the R datasets package.

1. Load the ToothGrowth data and perform some basic exploratory data analyses

```
>
> library(datasets)
> data(ToothGrowth)
> dim(ToothGrowth)
[1] 60  3
> head(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
> str(ToothGrowth)
'data.frame':   60 obs. of  3 variables:
 $ len : num  4.2 11.5 7.3 5.8 6.4 10 11.2 11.2 5.2 7 ...
 $ supp: Factor w/ 2 levels "OJ","VC": 2 2 2 2 2 2 2 2 2 2 ...
 $ dose: num  0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 ...
>
```

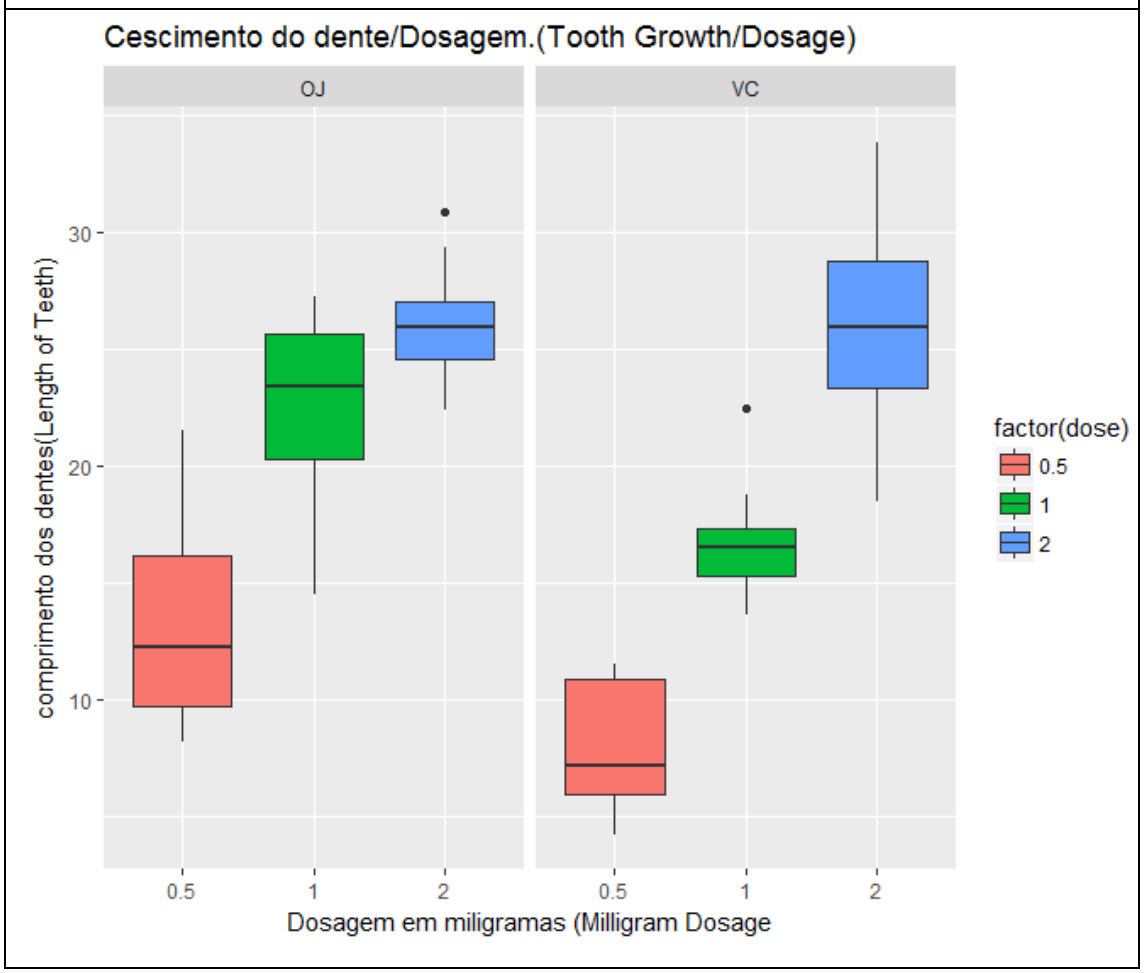
2. Provide a basic summary of the data.

```
>
> ToothGrowth$dose <- as.factor(ToothGrowth$dose)
> table(ToothGrowth$supp, ToothGrowth$dose)

    0.5  1  2
  OJ  10 10 10
  VC  10 10 10
> mean(ToothGrowth$len)
[1] 18.81333
> sd(ToothGrowth$len)
[1] 7.649315
> summary(ToothGrowth)
      len        supp     dose
 Min.   : 4.20   OJ:30   0.5:20
 1st Qu.:13.07   VC:30   1  :20
 Median :19.25           2  :20
 Mean   :18.81
 3rd Qu.:25.27
 Max.   :33.90
>
```

3. Use confidence intervals and/or hypothesis tests to compare tooth growth by supp and dose. (Only use the techniques from class, even if there's other approaches worth considering).

```
>
> grafico <- ggplot(ToothGrowth,
+                   aes(x=factor(dose),y=len,fill=factor(dose)))
> grafico + geom_boxplot(notch=F) + facet_grid(.~supp) +
+ scale_x_discrete("Dosagem em miligramas (Milligram Dosage") +
+ scale_y_continuous("comprimento dos dentes(Length of Teeth)") +
+ ggtitle("Cescimento do dente/Dosagem.(Tooth Growth/Dosage)")
>
```



4. State your conclusions and the assumptions needed for your conclusions.

According to the data obtained and the analyzes made, the high dosages have significant effects, the process
tooth growth according to the charts is only affected by this factor.
For small dosages between 0.5 and 1.0 mg, tooth growth is greater in the OJ method than in the VC method.
For the dosages of 2.0 mg the growth of the teeth is the same for both methods.
For high dosages there is tooth growth independent of the method.