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The Effect of Vitamin C on Tooth Growth in Guinea Pigs

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

```
data(ToothGrowth)  
str(ToothGrowth)
```

```
## 'data.frame': 60 obs. of 3 variables:
```

```
## $len:num 4.211.57.35.86.41011.211.25.27...
```

```
## $supp:Factors/2levels"OJ","VC":2222222222... ## $ dose: num 0.5  
0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5..
```

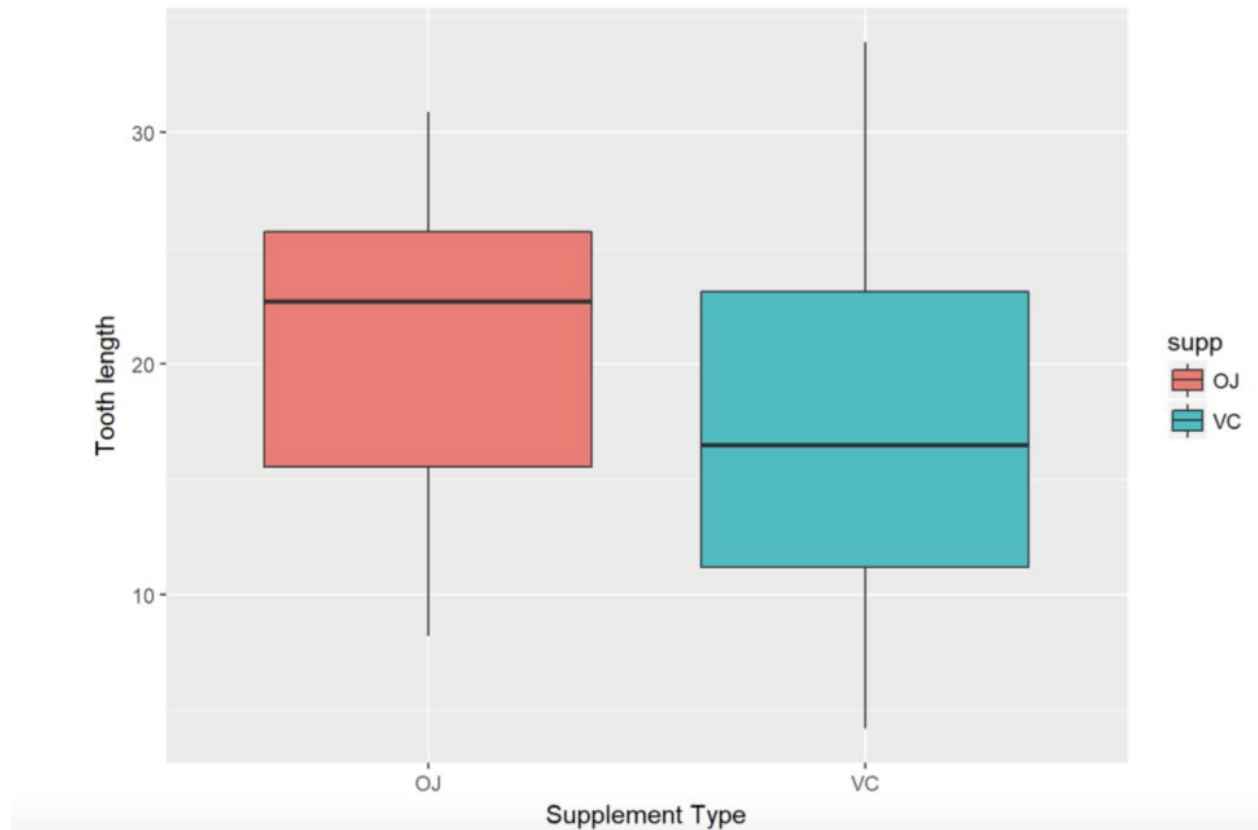
We can see that our data frame ToothGrowth contains 60 observations of 3 variables. Variable supp of type factor has two levels. VC stands for Vitamin C (ascorbic acid) and OJ is Orange Juice.

Summary

```
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
```

2. Graph



3. Using confidence intervals to compare growth of tooth by supplement dose

```
unique(ToothGrowth$dose)
```

```
## [1] 0.5 1.0 2.0
```

There are 3 dose groups: 0.5, 1, and 2 Graph shows relationship between Tooth length to Dose

```
g <- ggplot(aes(x = factor(dose), y = len), data = ToothGrowth) +
  geom_boxplot(aes(fill = factor(dose)))
g <- g + labs(title="Tooth Lenght relationship to Dosage")
print(g)
```



In T-dose# 1- 22.7 and 16.77

In T-dose #2 - 26.06 and 26.14

Conclusion:

1. Dosage had effects on the guinea pigs teeth
2. OJ was better than the VC supplement
3. Increasing dosage level helped increase the teeth's growth