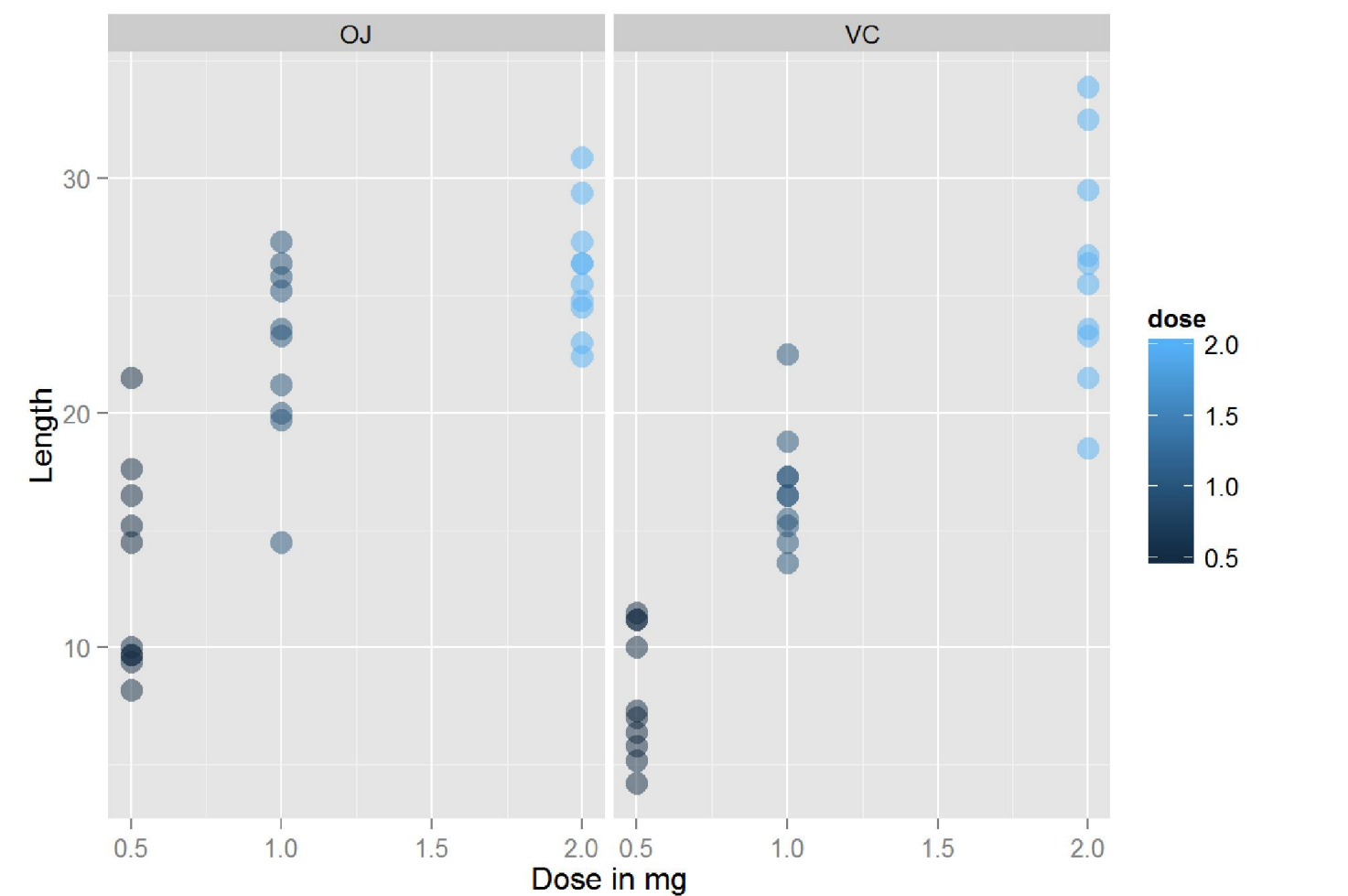# Statistical Inference_Inferential Data Analysis

Summary:

We are plotting Dose versus length from the ToothGrowth data with different supplements given(OC- Oranje Juice,VC- Absorbic Acid). From the Exploratory Data Analsysis,we can infer the supplement OJ seems to be effective with Doses 0.5,1.0 mgs when compared with when compared with the Supplement VC. The supplement VC seems to be effective with Dose 2 mg compared to supplement OJ. Let us verify by finding Confidence intervals.

Confidence Intervals:

```
## Confidence Int. for the Supplement OJ and dose 0.5 mg is   10.03972 16.42028
```

```
## Confidence Int. for the Supplement VC and dose 0.5mg  is   6.015176 9.944824
```

```
## Confidence Int. for the Supplement OJ and dose 1.0mg is   19.90227 25.49773
```

```
## Confidence Int. for the Supplement VC and dose 1.0mg  is   14.97066 18.56934
```

```
## Confidence Int. for the Supplement OJ and dose 2 mg is   24.16069 27.95931
```

```
## Confidence Int. for the Supplement VC and dose 2 mg  is   22.70791 29.57209
```

T-Tests:

T-Tests for the Dose 0.5 mg for the both supplements(OJ-VC):

```
##
##  Paired t-test
##
## data:  len by supp
## t = 2.9791, df = 9, p-value = 0.01547
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##   1.263458 9.236542
## sample estimates:
## mean of the differences
##                    5.25
```

T-Tests for the Dose 1.0 mg for the both supplements(OJ-VC):

```
##
##  Paired t-test
##
## data:  len by supp
## t = 3.3721, df = 9, p-value = 0.008229
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##   1.951911 9.908089
## sample estimates:
## mean of the differences
##                    5.93
```

T-Tests for the Dose 2.0 mg for the both supplements(OJ-VC):

```
## 
##  Paired t-test
## 
## data:  len by supp
## t = -0.0426, df = 9, p-value = 0.967
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -4.328976  4.168976
## sample estimates:
## mean of the differences
##                   -0.08
```

Conclusion:

From the above analysis we can infer that that by increasing the dose (Mg) , the length of the tooth is getting increased.we can infer that supplement OJ seems to be effective(Confidence interval is positive) with Doses 0.5,1.0 mgs when compared with the Supplement VC. The supplement VC seems to be effective with Dose 2 mg compared to supplement OJ. Let us verify by finding Confidence intervals.