

Toothgrowth Analysis

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Overview

Now we're going to analyze the ToothGrowth data in the R datasets package.

- Load the ToothGrowth data and perform some basic exploratory data analyses
- Provide a basic summary of the data.
- 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)
- State your conclusions and the assumptions needed for your conclusions.

Some criteria that you will be evaluated on

- Did you perform an exploratory data analysis of at least a single plot or table highlighting basic features of the data?
- Did the student perform some relevant confidence intervals and/or tests?
- Were the results of the tests and/or intervals interpreted in the context of the problem correctly?
- Did the student describe the assumptions needed for their conclusions?

Exploratory Data Analysis

```
rm(list=ls())  
data("ToothGrowth")
```

Output of ?ToothGrowth The response is the length of odontoblasts (teeth) in each of 10 guinea pigs at each of three dose levels of Vitamin C (0.5, 1, and 2 mg) with each of two delivery methods (orange juice or ascorbic acid).

The dataset shows The Effect of Vitamin C on Tooth Growth in Guinea Pigs

The dataset is a data frame with 60 observations on 3 variables.

```
[,1] len numeric Tooth length  
[,2] supp factor Supplement type (VC or OJ).  
[,3] dose numeric Dose in milligrams.
```

```
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 ...
```