

# Basic statistical inference

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## Part Two : Basic statistical inference

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

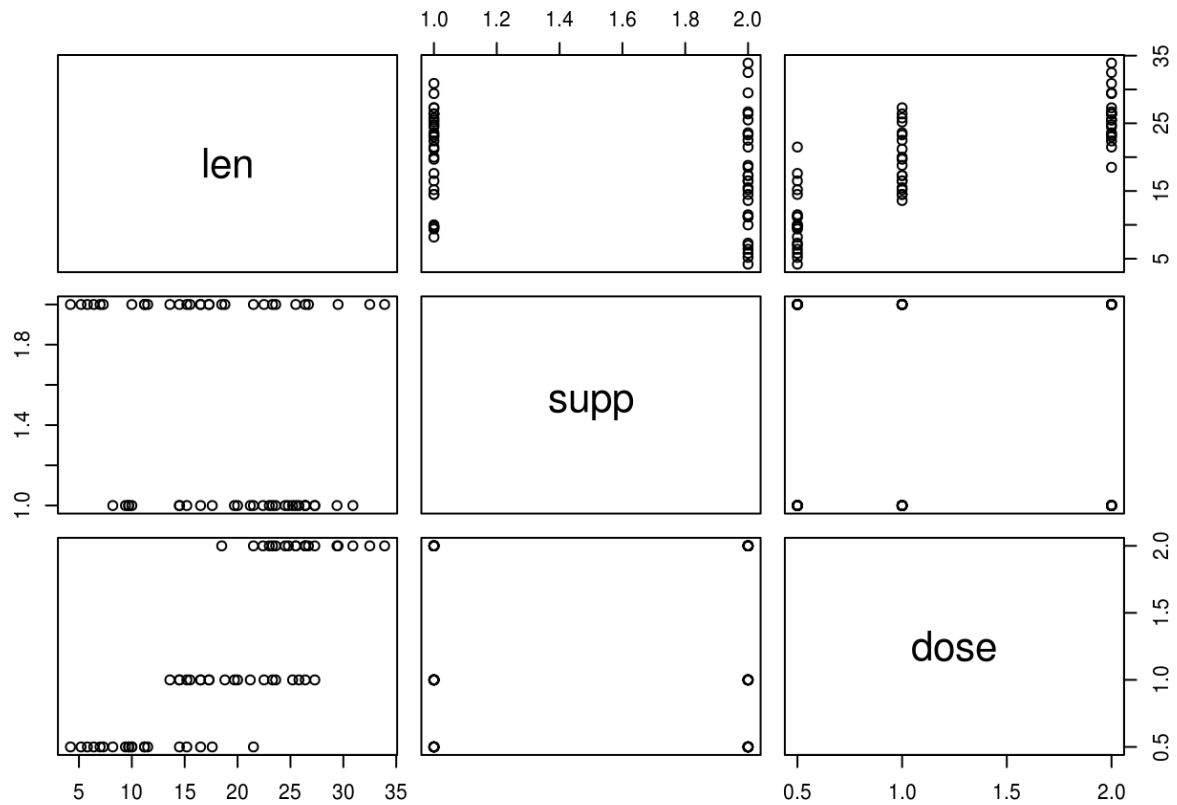
### Loading data and providing a brief summary

```
require(datasets)
data(ToothGrowth)

# Summary of data
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
```

```
# Pairs plot to show some dependency between variables
pairs(ToothGrowth)
```



### Linear model and estimation

```
fit <- lm(len ~ supp + dose, data = ToothGrowth)
#Confidence interval
summary(fit)
```

```
##
## Call:
## lm(formula = len ~ supp + dose, data = ToothGrowth)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -6.600 -3.700  0.373  2.116  8.800
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   9.2725     1.2824   7.231 1.31e-09 ***
## suppVC       -3.7000     1.0936  -3.383  0.0013 **
## dose          9.7636     0.8768  11.135 6.31e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 4.236 on 57 degrees of freedom
## Multiple R-squared:  0.7038, Adjusted R-squared:  0.6934
## F-statistic: 67.72 on 2 and 57 DF,  p-value: 8.716e-16
```

Confidences intervals show that the resultat depend more on the dose given than the type supplement.