

Anova_un_factor_TD

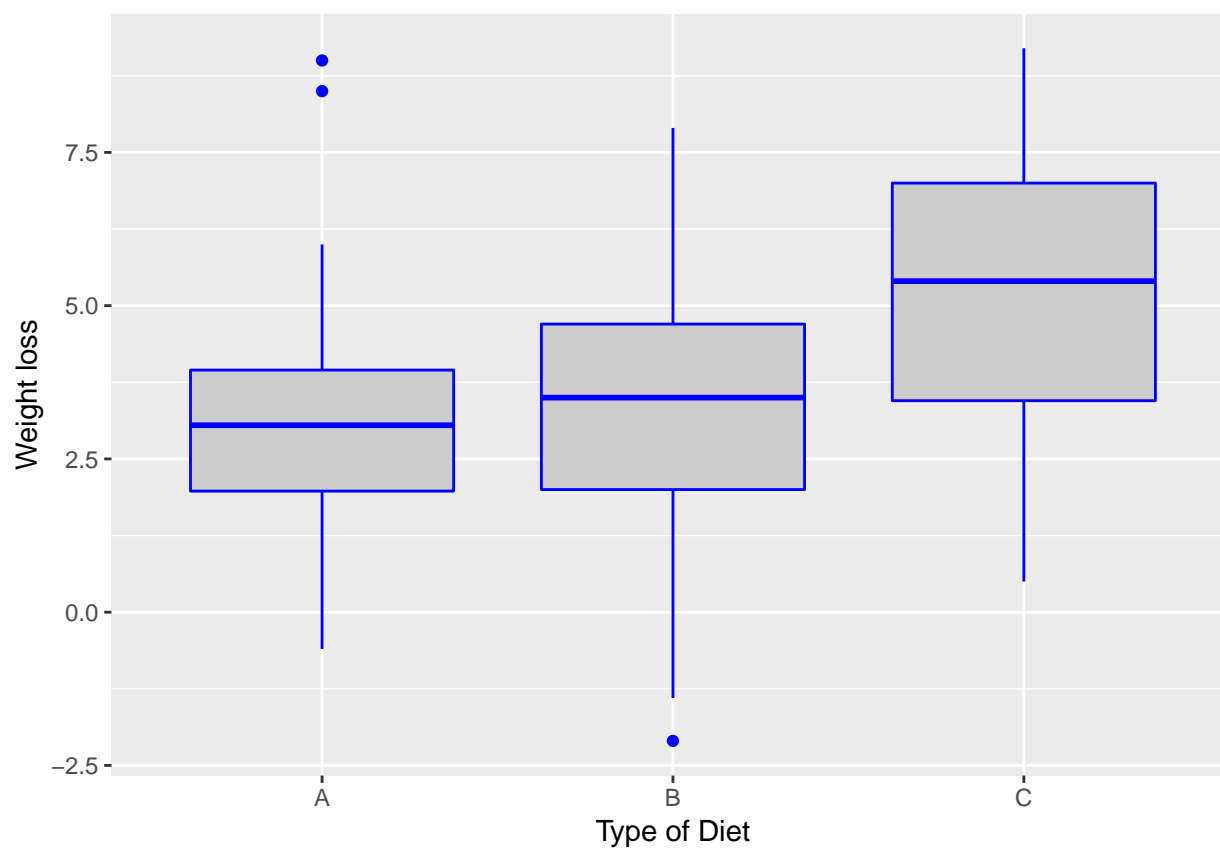
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23 octobre 2017

```
diet = read.csv("diet.csv", row.names=1)
diet$weight.loss = diet$initial.weight - diet$final.weight
table(diet$diet.type)
```

```
##
##  A  B  C
## 24 25 27
```

```
ggplot(diet, aes(x = diet.type, y = weight.loss)) +
  geom_boxplot(fill = "grey80", colour = "blue") +
  scale_x_discrete() + xlab("Type of Diet") +
  ylab("Weight loss")
```

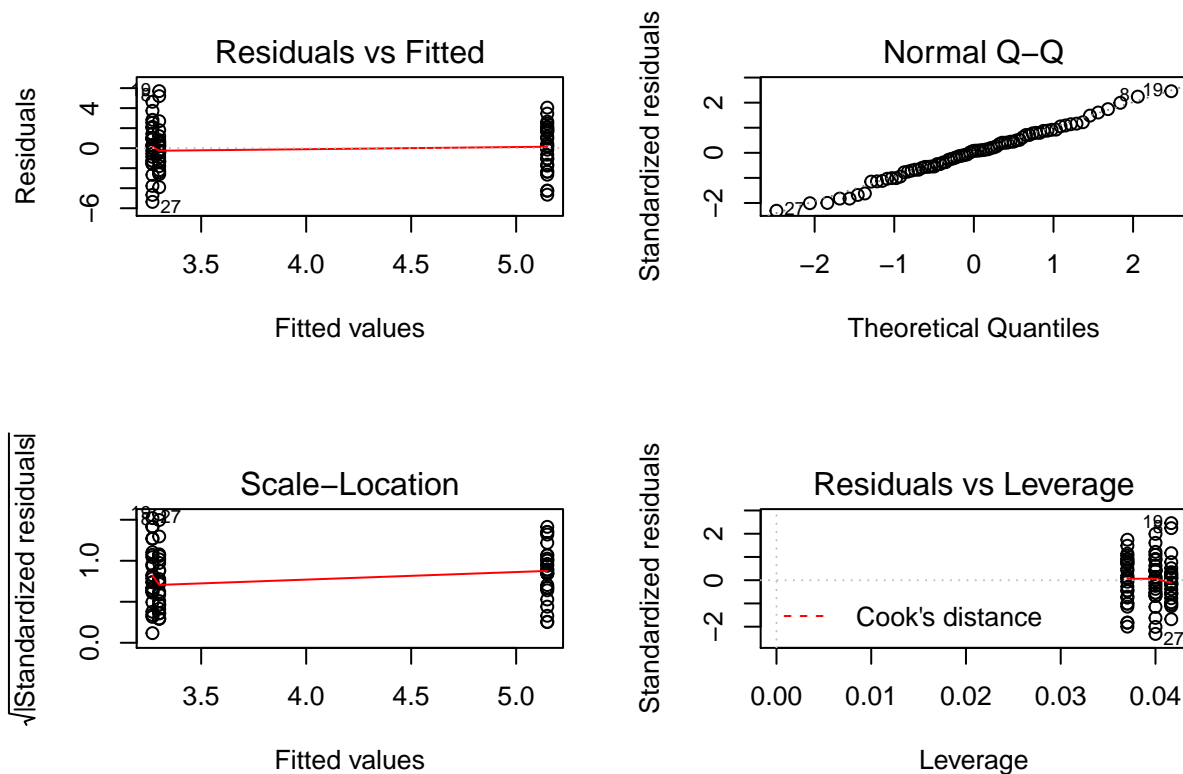


```
diet.mod1 = lm(weight.loss ~ diet.type, data = diet)
summary(diet.mod1)
```

```
##
## Call:
## lm(formula = weight.loss ~ diet.type, data = diet)
##
```

```
## Residuals:
##      Min       1Q   Median       3Q      Max
## -5.3680 -1.4420  0.1759  1.6519  5.7000
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    3.3000     0.4840   6.818 2.26e-09 ***
## diet.typeB     -0.0320     0.6776  -0.047  0.96246
## diet.typeC      1.8481     0.6652   2.778  0.00694 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.371 on 73 degrees of freedom
## Multiple R-squared:  0.1285, Adjusted R-squared:  0.1047
## F-statistic: 5.383 on 2 and 73 DF,  p-value: 0.006596
```

```
par(mfrow=c(2,2))
plot(diet.mod1)
```



```
contrasts(diet$diet.type) <- contr.sum
diet.mod2 = lm(weight.loss ~ diet.type, data = diet)
summary(diet.mod2)
```

```
##
## Call:
## lm(formula = weight.loss ~ diet.type, data = diet)
##
```

```
## Residuals:
##      Min       1Q   Median       3Q      Max
## -5.3680 -1.4420  0.1759  1.6519  5.7000
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   3.9054     0.2723  14.342  <2e-16 ***
## diet.type1    -0.6054     0.3902  -1.552    0.125
## diet.type2    -0.6374     0.3861  -1.651    0.103
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.371 on 73 degrees of freedom
## Multiple R-squared:  0.1285, Adjusted R-squared:  0.1047
## F-statistic: 5.383 on 2 and 73 DF,  p-value: 0.006596
anova(diet.mod1)

## Analysis of Variance Table
##
## Response: weight.loss
##           Df Sum Sq Mean Sq F value    Pr(>F)
## diet.type  2  60.53  30.2635   5.3831 0.006596 **
## Residuals 73 410.40   5.6219
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

test.diet = pairwise.t.test(diet$weight.loss,diet$diet.type,p.adjust.method = "bonferroni")
test.diet

##
## Pairwise comparisons using t tests with pooled SD
##
## data:  diet$weight.loss and diet$diet.type
##
##      A      B
## B 1.000 -
## C 0.021 0.017
##
## P value adjustment method: bonferroni
```