

One Way

ANOVA

Results from Rweb

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Type "demo()" for some demos, "help()" for on-line help, or
"help.start()" for a HTML browser interface to help.
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```
Rweb:> postscript(file= "/tmp/Rout.2605.ps", height = 8, width = 8)
Rweb:> X <- read.table("/tmp/Rdata.2605.data", header=T)
Rweb:> attach(X)
Rweb:> names(X)
[1] "y" "x"
Rweb:>
Rweb:>
Rweb:> #oneway anova: 7 levels with 3 observations in each group.
Rweb:> y
 [1] 20.2 20.4 19.7 21.1 21.8 22.4 22.3 23.1 22.5 23.3 24.1 24.3 23.3 24.5 23.9
[16] 25.1 24.2 23.9 24.3 24.4 25.1
Rweb:> groups<-gl(7,3,21)
Rweb:> groups
 [1] 1 1 1 2 2 2 3 3 3 4 4 4 5 5 5 6 6 6 7 7 7
Levels: 1 2 3 4 5 6 7
Rweb:> anova(lm(y~groups))
Analysis of Variance Table

Response: y
          Df Sum Sq Mean Sq F value    Pr(>F)
groups     6 48.578   8.096  29.114 3.898e-07 ***
Residuals 14  3.893   0.278
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Rweb:> #suppose now the 7 levels correspond to a quantitative
Rweb:> # variable x
Rweb:> x
 [1] 86 86 86 88 88 88 90 90 90 92 92 92 94 94 94 96 96 96 98 98 98
Rweb:> plot(x,y)
Rweb:> out1.lm<-lm(y~x)
Rweb:> summary(out1.lm)

Call:
lm(formula = y ~ x)

Residuals:
    Min       1Q   Median       3Q      Max
-1.19643 -0.51190 -0.02738  0.62619  1.25714
```

```

Coefficients:
      Estimate Std. Error t value Pr(>|t|)
(Intercept) -9.86905    3.54696  -2.782  0.0119 *
x            0.35774    0.03852   9.288 1.71e-08 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.706 on 19 degrees of freedom
Multiple R-Squared: 0.8195,    Adjusted R-squared: 0.81
F-statistic: 86.26 on 1 and 19 degrees of freedom,    p-value: 1.707e-08

```

```

Rweb:> anova(out1.lm)
Analysis of Variance Table

```

```

Response: y
      Df Sum Sq Mean Sq F value    Pr(>F)
x       1 43.000  43.000   86.26 1.707e-08 ***
Residuals 19  9.471   0.498
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```

```

Rweb:> xsq<-x*x
Rweb:> out2.lm<-lm(y~x+xsq)
Rweb:> summary(out2.lm)

```

```

Call:
lm(formula = y ~ x + xsq)

```

```

Residuals:
      Min       1Q   Median       3Q      Max
-0.87619 -0.30000 -0.09286  0.35476  0.78810

```

```

Coefficients:
      Estimate Std. Error t value Pr(>|t|)
(Intercept) -3.040e+02  6.718e+01  -4.526 0.000262 ***
x            6.765e+00  1.462e+00   4.626 0.000210 ***
xsq         -3.482e-02  7.946e-03  -4.382 0.000359 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.5046 on 18 degrees of freedom
Multiple R-Squared: 0.9127,    Adjusted R-squared: 0.903
F-statistic: 94.06 on 2 and 18 degrees of freedom,    p-value: 2.955e-10

```

```

Rweb:> anova(out2.lm)
Analysis of Variance Table

```

```

Response: y
      Df Sum Sq Mean Sq F value    Pr(>F)
x       1 43.000  43.000 168.908 1.383e-10 ***
xsq     1  4.889   4.889  19.204 0.0003593 ***
Residuals 18  4.582   0.255
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Rweb:>

```

Images

