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Assignment_MAT1021(LAB)

<u>Correlation</u> and <u>Regression</u>

1. Find the correlation coefficient of the following data:

									35	
Y	18	20	22	27	21	29	27	29	28	29

>#code

> X

[1] 23 27 28 28 29 30 31 33 35 36

> y

[1] 18 20 22 27 21 29 27 29 28 29

> cor.test(x,y,method="pearson")

Pearson's product-moment correlation

data: x and y

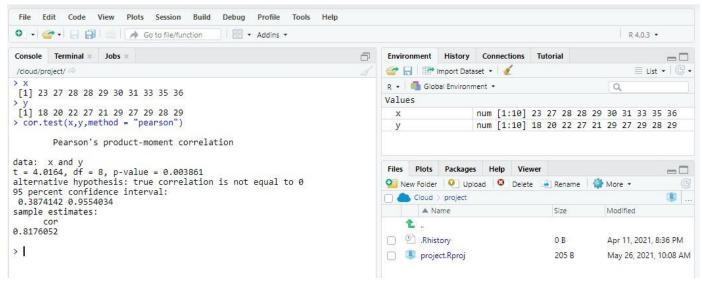
t = 4.0164, df = 8, p-value 0.003861

alternative hypothesis: true correlation is not equal to e 95 percent confidence interval:

0.3874142 0.9554034

sample estimates:

cor 0.8176052



2. Find the rank correlation from the following data:

Pie	A	В	C	D	E	F	G	H	I
Judge 1	18	24	23	13	27	19	30	10	20
Judge 2	7	18	9	4	17	8	29	5	10

>#code

> j1[1] 18 24 23 13 27 19 30 10 20

> j2[1] 7 18 9 4 17 8 29 5 10

> cor.test(j1,j2,method="spearman")

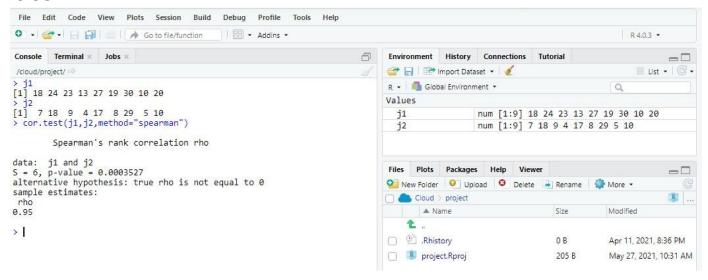
Spearman's rank correlation

rhodata: j1 and j2S = 6, p-value = 0.0003527

alternative hypothesis: true rho is not equal to 0

sample estimates: rho

0.95



3. Obtain a linear relationship between weight (kg) and height (cm) of the data below:

Height	165	170	140	130	175	165	180	170	170
Weight	65	66	59	50	65	68	70	65	69

>#code

> x < -c(165,170,140,130,175,165,180,170,170)

> y<-c(65,66,59,50,65,68,70,65,69)

> model<-lm(x \sim y)

> summary.lm(model)

Call:

 $Im(formula = x \sim y)$

Residuals:

Min 1Q Median 3Q Max -10.084 -4.920 2.269 2.597 10.015

Coefficients:

Estimate Std. Error t value Pr(>|t|)
(Intercept) 3.5514 25.1179 0.141 0.89155
y 2.4836 0.3902 6.365 0.00038 *

Signif. codes: 0 '*' 0.001 '*' 0.01 " 0.05 '.' 0.1 ' ' 1

Residual standard error: 6.813 on 7 degrees of freedom

Multiple R-squared: 0.8527, Adjusted R-squared: 0.8316

F-statistic: 40.52 on 1 and 7 DF, p-value: 0.0003797

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                                                                         model
                                                                                          List of 12
> x<-c(165,170,140,130,175,165,180,170,170)
> y<-c(65,66,59,50,65,68,70,65,69)
                                                                         Values
> model<-lm(x~y)
                                                                                         num [1.0] 10 24 22 12 27 10 20 10 20
                                                                          44
> summary.lm(model)
                                                                         Files Plots Packages Help Viewer
Call:
                                                                         lm(formula = x \sim y)
                                                                                                                                R ...
                                                                         Cloud > project
Residuals:
                                                                               ▲ Name
                                                                                                          Size
                                                                                                                    Modified
  Min 1Q Median
                         3Q
                                 Max
                                                                             1 ..
-10.084 -4.920 2.269 2.597 10.015
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                                                                                                          0 B
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Coefficients:
                                                                         project.Rproj
                                                                                                          205 B
                                                                                                                    May 27, 2021, 7:50 PM
          Estimate Std. Error t value Pr(>|t|)
(Intercept) 3.5514 25.1179 0.141 0.89155
y 2.4836 0.3902 6.365 0.00038 ***
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Signif. codes: 0 (***, 0.001 (**, 0.01 (*) 0.05 (., 0.1 (, 1
Residual standard error: 6.813 on 7 degrees of freedom
Multiple R-squared: 0.8527, Adjusted R-squared: 0.8316
F-statistic: 40.52 on 1 and 7 DF, p-value: 0.0003797
>
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