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Homework #5

[Chaemin Lee, lab2 Anthony]

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highlight and click "Run" the line below before knitting

install.packages("rmarkdown")

```
# set seed replace 12345678 with your student ID
seed = 12345678
```

```
# loads in data for the full population
pop<-read.csv("HW5.csv")
names(pop) <- c("X1", "X2", "Y")
```

```
# sets the seed for the random number generator
set.seed(seed+25)
```

```
# assigns a "random" sample of 29 from the population to 'data'
data<-pop[sample(nrow(pop), 29, replace=FALSE),]
```

```
# use this matrix
matrix<-round(cor(data),4)
matrix
```

```
##        X1     X2      Y
## X1 1.0000 0.4014 0.5439
## X2 0.4014 1.0000 0.3152
## Y  0.5439 0.3152 1.0000
```

```
# multiple regression model
model <- lm(Y ~ X1 + X2, data=data)
summary(model)
```

```
##
## Call:
## lm(formula = Y ~ X1 + X2, data = data)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -1.7774 -0.7774  0.2225  0.7888  1.7000
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  4.09951    0.76462   5.361  1.3e-05 ***
## X1           0.26659    0.09552   2.791  0.00971 **
## X2           0.05572    0.08596   0.648  0.52253
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9935 on 26 degrees of freedom
```

```
## Multiple R-squared:  0.307,  Adjusted R-squared:  0.2537
## F-statistic: 5.759 on 2 and 26 DF,  p-value: 0.008505
```

```
# standardized beta coefficients
model_beta <- lm(scale(Y) ~ scale(X1) + scale(X2), data=data)
summary(model_beta)
```

```
##
## Call:
## lm(formula = scale(Y) ~ scale(X1) + scale(X2), data = data)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -1.5455 -0.6760  0.1935  0.6859  1.4782
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.230e-17  1.604e-01   0.000  1.00000
## scale(X1)   4.975e-01  1.782e-01   2.791  0.00971 **
## scale(X2)   1.155e-01  1.782e-01   0.648  0.52253
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8639 on 26 degrees of freedom
## Multiple R-squared:  0.307,  Adjusted R-squared:  0.2537
## F-statistic: 5.759 on 2 and 26 DF,  p-value: 0.008505
```

```
# calculates Pearson's r and r2
r2 <-round(summary(model)$r.squared,4)
r <-round(sqrt(r2),4)
r
```

```
## [1] 0.5541
```

```
r2
```

```
## [1] 0.307
```