# Pruebas

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## Análisis rápido de las varaibles

### Variables explicativas

```
library(lmtest)
```

```
## Warning: package 'lmtest' was built under R version 3.6.3
```

```
## Loading required package: zoo
```

```
## Warning: package 'zoo' was built under R version 3.6.3
```

```
##
## Attaching package: 'zoo'
```

```
## The following objects are masked from 'package:base':
##
##     as.Date, as.Date.numeric
```

```
library(tseries)
```

```
## Warning: package 'tseries' was built under R version 3.6.3
```

```
## Registered S3 method overwritten by 'quantmod':
##   method            from
##   as.zoo.data.frame zoo
```

```
library(readxl)
```

```
## Warning: package 'readxl' was built under R version 3.6.3
```

```r
base <- read_excel("F:/Estadistica aplicada/Base de datos encuestas.xlsx")

pa <- base$`¿CUAL ES TU PROMEDIO ACTUAL EN LA CARRERA?`

a <- base$`27.  ¿CUANTO GASTAS SEMANALMENTE EN COSAS RELACIONADAS CON LA ESCUELA?`
b <- base$`30.  ¿CUANTOS HIJOS TIENES?`
c <- base$`32.  ¿CUANTAS HORAS DIARIAS DUERMES EN PROMEDIO?`
d <- base$`¿CUAL ES TU EDAD?`
e <- base$`¿CUAL FUE TU PROMEDIO DE BACHILLERATO?`
f <- base$`¿CUAL ES TU AVANCE DE CREDITOS?`
g <- base$`¿CUANTAS MATERIAS INSCRIBES EN PROMEDIO AL SEMESTRE?`
h <- base$`¿CUANTAS MATERIAS HAS REPROBADO?`
i <- base$`¿CUANTAS HORAS AL DIA, PASAS EN PROMEDIO EN LA FACULTAD?`
j <- base$`¿CUANTAS HORAS EN PROMEDIO, LE DEDICAS A ESA ACTIVIDAD POR SEMANA?`
k <- base$`¿CUANTAS HORAS AL DIA TE TOMA TRANSPORTARTE A LA ESCUELA?`
l <- base$`¿CUANTAS PERSONAS HABITAN CONTIGO?`
m <- base$`¿CUANTAS HORAS A LA SEMANA TRABAJAS?`
n <- base$`¿CUAL ES EL INGRESO PROMEDIO MENSUAL DE TU FAMILIA?`
ol <- base$`¿CUANTAS VECES AL MES CONSUMES ALCOHOL?`
```

- Probando rápidamente cada variable explicativa

```r
lma <- lm(pa~a)
lma
```

```
##
## Call:
## lm(formula = pa ~ a)
##
## Coefficients:
## (Intercept)            a
##   8.5603648   -0.0001394
```

```r
#summary(lma)
#dwtest(lma)
#jarque.bera.test(lma)
bptest(lma)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lma
## BP = 0.51234, df = 1, p-value = 0.4741
```

```r
lmb <- lm(pa~b)
lmb
```

```
##
## Call:
## lm(formula = pa ~ b)
##
```

```
## Coefficients:
## (Intercept)            b
##      8.5668       0.3332
```

```
#summary(lmb)
dwtest(lmb)
```

```
##
##  Durbin-Watson test
##
## data:  lmb
## DW = 1.8172, p-value = 0.1121
## alternative hypothesis: true autocorrelation is greater than 0
```

```
#jarque.bera.test(lmb)
bptest(lmb)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmb
## BP = 0.45862, df = 1, p-value = 0.4983
```

```
lmc <- lm(pa~c)
lmc
```

```
##
## Call:
## lm(formula = pa ~ c)
##
## Coefficients:
## (Intercept)            c
##     8.41298      0.01626
```

```
#summary(lmc)
#dwtest(lmc)
#jarque.bera.test(lmc)
bptest(lmc)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmc
## BP = 3.6184, df = 1, p-value = 0.05715
```

```
lmd <- lm(pa~d)
lmd
```

```
##
## Call:
```

```
## lm(formula = pa ~ d)
##
## Coefficients:
## (Intercept)            d
##     9.65062     -0.05443
```

```
summary(lmd)
```

```
##
## Call:
## lm(formula = pa ~ d)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.27084 -0.44868  0.04245  0.43439  1.49689
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  9.65062    0.37528  25.716  < 2e-16 ***
## d           -0.05443    0.01777  -3.063  0.00235 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6301 on 364 degrees of freedom
## Multiple R-squared:  0.02513,    Adjusted R-squared:  0.02245
## F-statistic: 9.384 on 1 and 364 DF,  p-value: 0.002352
```

```
#dwtest(lmd)
#jarque.bera.test(lmd)
#bptest(lmd)

lme <- lm(pa~e)
lme
```

```
##
## Call:
## lm(formula = pa ~ e)
##
## Coefficients:
## (Intercept)            e
##      4.3215       0.4771
```

```
summary(lme)
```

```
##
## Call:
## lm(formula = pa ~ e)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.83353 -0.37665 -0.00373  0.33595  1.33896
##
```

```
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  4.32150    0.41878   10.32   <2e-16 ***
## e            0.47708    0.04763   10.02   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5651 on 364 degrees of freedom
## Multiple R-squared:  0.2161, Adjusted R-squared:  0.2139
## F-statistic: 100.3 on 1 and 364 DF,  p-value: < 2.2e-16
```

```
#dwtest(lme)
#jarque.bera.test(lme)
#bptest(lme)

lmf <- lm(pa~f)
lmf
```

```
##
## Call:
## lm(formula = pa ~ f)
##
## Coefficients:
## (Intercept)   f10% - 20%   f20% - 30%   f30% - 40%   f40% - 50%   f50% - 60%
##      7.8000       0.5422       0.6592       0.5038       0.7014       0.9407
##  f60% - 70%   f70% - 80%   f80% - 90%  f90% - 100%
##      0.5865       0.6803       0.9493       0.6200
```

```
summary(lmf)
```

```
##
## Call:
## lm(formula = pa ~ f)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.95919 -0.39870  0.00429  0.39863  1.40081
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)   7.8000     0.3108  25.098  < 2e-16 ***
## f10% - 20%    0.5422     0.3367   1.610  0.10825
## f20% - 30%    0.6592     0.3271   2.015  0.04466 *
## f30% - 40%    0.5038     0.3237   1.556  0.12052
## f40% - 50%    0.7014     0.3192   2.197  0.02863 *
## f50% - 60%    0.9407     0.3180   2.958  0.00330 **
## f60% - 70%    0.5865     0.3338   1.757  0.07978 .
## f70% - 80%    0.6803     0.3267   2.082  0.03805 *
## f80% - 90%    0.9493     0.3498   2.714  0.00697 **
## f90% - 100%   0.6200     0.3436   1.805  0.07199 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
## Residual standard error: 0.6216 on 356 degrees of freedom
## Multiple R-squared:  0.07227,    Adjusted R-squared:  0.04882
## F-statistic: 3.082 on 9 and 356 DF,  p-value: 0.001416
```

```
#dwtest(lmf)
#jarque.bera.test(lmf)
#bptest(lmf)


lmg <- lm(pa~g)
lmg
```

```
##
## Call:
## lm(formula = pa ~ g)
##
## Coefficients:
## (Intercept)            g
##     8.22056      0.04718
```

```
summary(lmg)
```

```
##
## Call:
## lm(formula = pa ~ g)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.05648 -0.45577  0.04352  0.44564  1.44634
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  8.22056    0.08781  93.615  < 2e-16 ***
## g            0.04718    0.01349   3.498 0.000527 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6277 on 364 degrees of freedom
## Multiple R-squared:  0.03252,    Adjusted R-squared:  0.02986
## F-statistic: 12.23 on 1 and 364 DF,  p-value: 0.0005271
```

```
#dwtest(lmg)
#jarque.bera.test(lmg)
bptest(lmg)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmg
## BP = 0.039435, df = 1, p-value = 0.8426
```

```r
lmh <- lm(pa~h)
lmh
```

```
##
## Call:
## lm(formula = pa ~ h)
##
## Coefficients:
## (Intercept)            h
##      8.8351      -0.1428
```

```r
summary(lmh)
```

```
##
## Call:
## lm(formula = pa ~ h)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.33510 -0.26399  0.05045  0.30767  1.70658
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  8.83510    0.03582  246.65   <2e-16 ***
## h           -0.14278    0.01023  -13.95   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5151 on 364 degrees of freedom
## Multiple R-squared:  0.3485, Adjusted R-squared:  0.3467
## F-statistic: 194.7 on 1 and 364 DF,  p-value: < 2.2e-16
```

```r
#dwtest(lmh)
#jarque.bera.test(lmh)
bptest(lmh)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmh
## BP = 0.5319, df = 1, p-value = 0.4658
```

```r
lmi <- lm(pa~i)
lmi
```

```
##
## Call:
## lm(formula = pa ~ i)
##
## Coefficients:
## (Intercept)            i
##    8.530289    -0.002927
```

```r
#summary(lmi)
#dwtest(lmi)
#jarque.bera.test(lmi)
bptest(lmi)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmi
## BP = 0.37747, df = 1, p-value = 0.539
```

```r
lmj <- lm(pa~j)
lmj
```

```
##
## Call:
## lm(formula = pa ~ j)
##
## Coefficients:
## (Intercept)            j
##      8.4566       0.0128
```

```r
summary(lmj)
```

```
##
## Call:
## lm(formula = pa ~ j)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.05656 -0.45075  0.04344  0.46087  1.36549
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 8.456557   0.040332 209.671   <2e-16 ***
## j           0.012795   0.006009   2.129   0.0339 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6342 on 364 degrees of freedom
## Multiple R-squared:  0.0123, Adjusted R-squared:  0.009588
## F-statistic: 4.534 on 1 and 364 DF,  p-value: 0.03391
```

```r
#dwtest(lmj)
#jarque.bera.test(lmj)
bptest(lmj)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmj
## BP = 0.3464, df = 1, p-value = 0.5562
```

```r
lmk<- lm(pa~k)
lmk
```

```
##
## Call:
## lm(formula = pa ~ k)
##
## Coefficients:
## (Intercept)            k
##     8.53476     -0.01236
```

```r
#summary(lmk)
#dwtest(lmk)
#jarque.bera.test(lmk)
bptest(lmk)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmk
## BP = 0.96433, df = 1, p-value = 0.3261
```

```r
lml <- lm(pa~l)
lml
```

```
##
## Call:
## lm(formula = pa ~ l)
##
## Coefficients:
## (Intercept)            l
##     8.46227      0.01113
```

```r
#summary(lml)
#dwtest(lml)
#jarque.bera.test(lml)
#bptest(lml)

lmm <- lm(pa~m)
lmm
```

```
##
## Call:
## lm(formula = pa ~ m)
##
## Coefficients:
## (Intercept)            m
##     8.59551     -0.01454
```

```r
summary(lmm)
```

```
##
## Call:
## lm(formula = pa ~ m)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.95013 -0.42216  0.06034  0.40449  1.23257
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  8.595514   0.044784  191.93  < 2e-16 ***
## m           -0.014539   0.003224   -4.51 1.03e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6046 on 230 degrees of freedom
##   (134 observations deleted due to missingness)
## Multiple R-squared:  0.08125,    Adjusted R-squared:  0.07725
## F-statistic: 20.34 on 1 and 230 DF,  p-value: 1.034e-05
```

```r
#dwtest(lmm)
#jarque.bera.test(lmm)
bptest(lmm)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmm
## BP = 0.018998, df = 1, p-value = 0.8904
```

```r
lmn<- lm(pa~n)
lmn
```

```
##
## Call:
## lm(formula = pa ~ n)
##
## Coefficients:
##        (Intercept)    n$2,448 - $5,000  n$20,001 - $50,000   n$5,001 - $10,000
##            8.48713            -0.15928             0.06201            -0.06406
##             n15000              n50000           nNO SABE
##           -0.78713             0.53514            -0.58713
```

```r
summary(lmn)
```

```
##
## Call:
## lm(formula = pa ~ n)
##
```

```
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.08713 -0.41899  0.05086  0.45086  1.46287
##
## Coefficients:
##                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)          8.48713    0.05217 162.685  < 2e-16 ***
## n$2,448 - $5,000    -0.15928    0.12892  -1.235  0.21748
## n$20,001 - $50,000   0.06201    0.08310   0.746  0.45608
## n$5,001 - $10,000   -0.06406    0.08781  -0.729  0.46620
## n15000              -0.78713    0.62603  -1.257  0.20945
## n50000               0.53514    0.14287   3.746  0.00021 ***
## nNO SABE            -0.58713    0.62603  -0.938  0.34894
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6239 on 359 degrees of freedom
## Multiple R-squared:  0.05754,    Adjusted R-squared:  0.04178
## F-statistic: 3.653 on 6 and 359 DF,  p-value: 0.00156
```

```
dwtest(lmn)
```

```
##
##  Durbin-Watson test
##
## data:  lmn
## DW = 1.6073, p-value = 7.873e-05
## alternative hypothesis: true autocorrelation is greater than 0
```

```
#jarque.bera.test(lmm)
bptest(lmn)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmn
## BP = 5.1371, df = 6, p-value = 0.5263
```

```
lmol <- lm(pa~ol)
#lmol
#summary(lmol)
#dwtest(lmol)
#jarque.bera.test(lmo)
#bptest(lmo)
```

## Variables dicotómicas

```
p <- base$`28.  ¿TE ENCUENTRAS EN UNA RELACION CON ALGUNA PERSONA?`
p[p=="SI"] <- 1
p[p=="NO"] <- 0
```

```
pp <- as.numeric(p)

q <- base$`29.  ¿TIENES HIJOS?`
q[q=="SI"] <- 1
q[q=="NO"] <- 0
qq <- as.numeric(q)

r <- base$`¿TE GUSTA TU CARRERA?`
r[r=="SI"] <- 1
r[r=="NO"] <- 0
rr <- as.numeric(r)
```

```
## Warning: NAs introducidos por coerción
```

```
s <- base$`¿REALIZAS ALGUNA ACTIVIDAD EXTRACURRICULAR?`
s[s=="SI"] <- 1
s[s=="NO"] <- 0
ss <- as.numeric(s)

t <- base$`¿ERES FORANEO?`
t[t=="SI"] <- 1
t[t=="NO"] <- 0
tt <- as.numeric(t)

u <- base$`¿CUENTAS CON HABITACION PROPIA?`
u[u=="SI"] <- 1
u[u=="NO"] <- 0
uu <- as.numeric(u)

v <- base$`¿ERES RESPONSABLE DE ALGUNA MASCOTA?`
v[v=="SI"] <- 1
v[v=="NO"] <- 0
vv <- as.numeric(v)

w <- base$`¿CUENTAS CON ALGUNA BECA?`
w[w=="SI"] <- 1
w[w=="NO"] <- 0
ww <- as.numeric(w)

x <- base$`¿ESTUDIAS Y TRABAJAS?`
x[x=="SI"] <- 1
x[x=="NO"] <- 0
xx <- as.numeric(x)
```

- Probando rápidamente cada variable dicotomica

```
lmp <- lm(pa~as.factor(pp))
lmp
```

```
##
## Call:
## lm(formula = pa ~ as.factor(pp))
```

```
##
## Coefficients:
##    (Intercept)  as.factor(pp)1
##        8.52052        -0.03578
```

```
summary(lmp)
```

```
##
## Call:
## lm(formula = pa ~ as.factor(pp))
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.08474 -0.43118  0.01526  0.46276  1.46526
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)     8.52052    0.04381  194.47   <2e-16 ***
## as.factor(pp)1 -0.03578    0.06754   -0.53    0.597
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6379 on 364 degrees of freedom
## Multiple R-squared:  0.0007703,  Adjusted R-squared:  -0.001975
## F-statistic: 0.2806 on 1 and 364 DF,  p-value: 0.5966
```

```
#dwtest(lmp)
#jarque.bera.test(lmp)
bptest(lmp)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmp
## BP = 3.472, df = 1, p-value = 0.06242
```

```
lmq<- lm(pa~qq)
lmq
```

```
##
## Call:
## lm(formula = pa ~ qq)
##
## Coefficients:
## (Intercept)           qq
##      8.5044       0.3956
```

```
#summary(lmq)
#dwtest(lmq)
#jarque.bera.test(lmq)
bptest(lmq)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmq
## BP = 0.46103, df = 1, p-value = 0.4971
```

```
lmr<- lm(pa~r)
lmr
```

```
##
## Call:
## lm(formula = pa ~ r)
##
## Coefficients:
##                                                                                 (Intercept)
##                                                                                     8.66667
##                                                                                           r1
##                                                                                    -0.15143
##                                                                                 rMAS O MENOS
##                                                                                    -0.66667
##                                                                                      rNO SE
##                                                                                    -0.31151
## rTIENE ALGO QUE NO LE GUSTA DEL TODO PERO LA FACULTAD Y LOS PROFESORES. PROFWSORES6 VIEJOS
##                                                                                    -0.06667
```

```
#summary(lmr)
#dwtest(lmr)
#jarque.bera.test(lmr)
bptest(lmr)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmr
## BP = 2.0467, df = 4, p-value = 0.7272
```

```
lms<- lm(pa~s)
lms
```

```
##
## Call:
## lm(formula = pa ~ s)
##
## Coefficients:
## (Intercept)           s1
##      8.4173       0.1773
```

```
summary(lms)
```

```
##
## Call:
```

```
## lm(formula = pa ~ s)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.01728 -0.41728  0.03405  0.48272  1.35538
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  8.41728    0.04659 180.673   <2e-16 ***
## s1           0.17733    0.06607   2.684   0.0076 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.632 on 364 degrees of freedom
## Multiple R-squared:  0.01941,    Adjusted R-squared:  0.01671
## F-statistic: 7.205 on 1 and 364 DF,  p-value: 0.007604
```

```
#dwtest(lms)
#jarque.bera.test(lms)
bptest(lms)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lms
## BP = 0.11021, df = 1, p-value = 0.7399
```

```
lmt<- lm(pa~t)
lmt
```

```
##
## Call:
## lm(formula = pa ~ t)
##
## Coefficients:
## (Intercept)           t1
##      8.4482       0.2556
```

```
summary(lmt)
```

```
##
## Call:
## lm(formula = pa ~ t)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.0482 -0.4482  0.0518  0.4518  1.4118
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  8.44820    0.03733  226.28   <2e-16 ***
## t1           0.25558    0.07888    3.24   0.0013 **
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6292 on 364 degrees of freedom
## Multiple R-squared:  0.02804,    Adjusted R-squared:  0.02536
## F-statistic:  10.5 on 1 and 364 DF,  p-value: 0.001304
```

```
#dwtest(lmt)
#jarque.bera.test(lmt)
bptest(lmt)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmt
## BP = 0.25308, df = 1, p-value = 0.6149
```

```
lmw<- lm(pa~w)
lmw
```

```
##
## Call:
## lm(formula = pa ~ w)
##
## Coefficients:
## (Intercept)           w1
##      8.2919       0.4652
```

```
summary(lmw)
```

```
##
## Call:
## lm(formula = pa ~ w)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.89192 -0.30584  0.06786  0.40308  1.65808
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  8.29192    0.04224 196.316  < 2e-16 ***
## w1           0.46522    0.06234   7.462 6.31e-13 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5943 on 364 degrees of freedom
## Multiple R-squared:  0.1327, Adjusted R-squared:  0.1303
## F-statistic: 55.69 on 1 and 364 DF,  p-value: 6.314e-13
```

```
dwtest(lmw)
```

```
##
##  Durbin-Watson test
##
## data:  lmw
## DW = 1.6134, p-value = 0.0001023
## alternative hypothesis: true autocorrelation is greater than 0
```

```
#jarque.bera.test(lmw)
bptest(lmw)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmw
## BP = 0.22334, df = 1, p-value = 0.6365
```

```
lmx <- lm(pa~x)
lmx
```

```
##
## Call:
## lm(formula = pa ~ x)
##
## Coefficients:
## (Intercept)           x1
##      8.5631      -0.2811
```

```
summary(lmx)
```

```
##
## Call:
## lm(formula = pa ~ x)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.16306 -0.40806  0.03694  0.43694  1.38694
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  8.56306    0.03681 232.618  < 2e-16 ***
## x1          -0.28106    0.08132  -3.456 0.000613 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.628 on 364 degrees of freedom
## Multiple R-squared:  0.03177,    Adjusted R-squared:  0.02911
## F-statistic: 11.95 on 1 and 364 DF,  p-value: 0.0006125
```

```
dwtest(lmx)
```

```
##
```

```
##  Durbin-Watson test
##
## data:  lmx
## DW = 1.6467, p-value = 0.0003505
## alternative hypothesis: true autocorrelation is greater than 0
```

```
#jarque.bera.test(lmx)
bptest(lmx)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  lmx
## BP = 0.18341, df = 1, p-value = 0.6685
```

**Dedspués de hacer todas las pruebas, concluimos que las variables que tomaremos en cuenta serán "¿Cuántas materias inscribes al semestre?", "¿Cuántas horas trabajas?", "¿Cuántas materias has reprobado?", "¿Realizas alguna actividad extracurricular?", "¿Tienes beca?", "¿Estudias y trabajas?"** bajo el criterio de que al menos es una varaible estadísticamente significativa y pasa alguna de las tres pruebas entre Durbin-Watson, Jarque-Bera y Breusch-Pagan.