

# Econometrics\_Problem\_Set\_3.R

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```
library(readstata13)

## Warning: package 'readstata13' was built under R version 3.4.4
## create dataset
card95 <- read.dta13("Card1995.dta")

card95$exp <- (card95$age76 - card95$ed76) + card95$ed76*(card95$age76 - card95$ed76)

lmwageexp <- lm(card95$lwage76 ~ card95$exp, na.action=na.exclude)
lmwageexp

##
## Call:
## lm(formula = card95$lwage76 ~ card95$exp, na.action = na.exclude)
##
## Coefficients:
## (Intercept)    card95$exp
##      5.582012      0.003322

lmwageexp2 <- lm(card95$lwage76 ~ card95$exp + I(card95$exp^2), na.action=na.exclude)
lmwageexp2

##
## Call:
## lm(formula = card95$lwage76 ~ card95$exp + I(card95$exp^2), na.action = na.exclude)
##
## Coefficients:
##      (Intercept)      card95$exp  I(card95$exp^2)
##      5.721e+00      1.963e-03      3.167e-06

test1 <- card95[, c("lwage76", "exp")]
test1$predicted <- predict(lmwageexp)
test1$residuals <- residuals(lmwageexp)
test1 <- na.omit(test1)
cor(test1)

##           lwage76           exp      predicted      residuals
## lwage76  1.0000000  3.382650e-01  3.382650e-01  9.410509e-01
## exp      0.3382650  1.000000e+00  1.000000e+00 -2.490176e-16
## predicted 0.3382650  1.000000e+00  1.000000e+00 -1.892976e-16
## residuals 0.9410509 -2.490176e-16 -1.892976e-16  1.000000e+00

test2 <- card95[, c("lwage76", "exp")]
test2$predicted <- predict(lmwageexp2)
test2$residuals <- residuals(lmwageexp2)
test2$exp2 <- test2$exp^2
test2 <- na.omit(test2)
cor(test2)
```

```

##          lwage76          exp      predicted      residuals
## lwage76  1.0000000  3.382650e-01  3.386233e-01  9.409220e-01
## exp      0.3382650  1.000000e+00  9.989419e-01 -2.172164e-16
## predicted 0.3386233  9.989419e-01  1.000000e+00 -1.430376e-16
## residuals 0.9409220 -2.172164e-16 -1.430376e-16  1.000000e+00
## exp2      0.3378847  9.937270e-01  9.978188e-01 -6.882996e-17
##          exp2
## lwage76   3.378847e-01
## exp       9.937270e-01
## predicted  9.978188e-01
## residuals -6.882996e-17
## exp2      1.000000e+00

```