

# Econometrics\_Problem\_Set\_4.R

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```
library(readstata13)

## Warning: package 'readstata13' was built under R version 3.4.4
injury <- read.dta13("INJURY.DTA")

## Create appropriate subsets to calculate mean for kentucky
kentucky <- subset(injury, ky == 1)

kentucky_high <- subset(kentucky, highearn == 1)
kentucky_low <- subset(kentucky, highearn == 0)

kentucky_high_after <- subset(kentucky_high, afchnge == 1)
kentucky_high_before <- subset(kentucky_high, afchnge == 0)
kentucky_low_after <- subset(kentucky_low, afchnge == 1)
kentucky_low_before <- subset(kentucky_low, afchnge == 0)

kymeanha <- mean(kentucky_high_after$durat)
kymeanhb <- mean(kentucky_high_before$durat)
kymeanla <- mean(kentucky_low_after$durat)
kymeanlb <- mean(kentucky_low_before$durat)

## same as above for michigan
michigan <- subset(injury, mi == 1)

michigan_high <- subset(michigan, highearn == 1)
michigan_low <- subset(michigan, highearn == 0)

michigan_high_after <- subset(michigan_high, afchnge == 1)
michigan_high_before <- subset(michigan_high, afchnge == 0)
michigan_low_after <- subset(michigan_low, afchnge == 1)
michigan_low_before <- subset(michigan_low, afchnge == 0)

mimeanha <- mean(michigan_high_after$durat)
mimeanhb <- mean(michigan_high_before$durat)
mimeanla <- mean(michigan_low_after$durat)
mimeanlb <- mean(michigan_low_before$durat)

## reconstruct the results of Table 4 for mean duration
table <- data.frame('High Earning Before Increase' = c(kymeanhb, mimeanhb),
                    'High Earning After Increase' = c(kymeanha, mimeanha),
                    'Low Earning Before Increase' = c(kymeanlb, mimeanlb),
                    'Low Earning After Increase' = c(kymeanla, mimeanla))
table <- cbind(table, '(2) - (1)' = table$High.Earning.After.Increase -
                 table$High.Earning.Before.Increase)
table <- cbind(table, '(4) - (3)' = table$Low.Earning.After.Increase -
                 table$Low.Earning.Before.Increase)
table <- cbind(table, 'Difference in Differences' = table$`'(2) - (1) - table$`'(4) - (3)`)`
```

```
table
```

```
## High.Earning.Before.Increase High.Earning.After.Increase
## 1 11.17660 12.89363
## 2 14.77929 19.43379
## Low.Earning.Before.Increase Low.Earning.After.Increase (2) - (1)
## 1 6.271554 7.037328 1.717024
## 2 10.958829 13.650943 4.654501
## (4) - (3) Difference in Differences
## 1 0.7657738 0.9512506
## 2 2.6921149 1.9623864
```

```
## create a linear model as done for Table 6 column (i)
```

```
durationlm <- lm(data = kentucky, ldurat ~ afchnge + highearn + afchnge*highearn + lprewage + lprewage
                *highearn + male + married + lage + manuf + construc + head + neck + upextr + trunk +
                lowback + lowextr + occdis)
summary(durationlm)
```

```
##
## Call:
## lm(formula = ldurat ~ afchnge + highearn + afchnge * highearn +
##     lprewage + lprewage * highearn + male + married + lage +
##     manuf + construc + head + neck + upextr + trunk + lowback +
##     lowextr + occdis, data = kentucky)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -3.5098 -0.8185  0.0797  0.7662  4.5316
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.922238   0.556025  -1.659  0.09725 .
## afchnge        0.015508   0.044762   0.346  0.72901
## highearn     -1.522196   1.099035  -1.385  0.16610
## lprewage       0.258267   0.103842   2.487  0.01291 *
## male         -0.072298   0.046195  -1.565  0.11763
## married       0.050936   0.040913   1.245  0.21319
## lage         0.252259   0.052258   4.827 1.42e-06 ***
## manuf        -0.172515   0.041609  -4.146 3.43e-05 ***
## construc      0.076292   0.052351   1.457  0.14509
## head         -0.510859   0.128823  -3.966 7.42e-05 ***
## neck          0.269329   0.161074   1.672  0.09457 .
## upextr       -0.163026   0.100823  -1.617  0.10595
## trunk         0.123274   0.108647   1.135  0.25658
## lowback      -0.009912   0.101192  -0.098  0.92197
## lowextr      -0.115599   0.101971  -1.134  0.25700
## occdis        0.278392   0.210203   1.324  0.18543
## afchnge:highearn 0.214688   0.069311   3.097  0.00196 **
## highearn:lprewage 0.231877   0.187021   1.240  0.21509
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.246 on 5329 degrees of freedom
## (279 observations deleted due to missingness)
## Multiple R-squared:  0.04882, Adjusted R-squared:  0.04578
```

## F-statistic: 16.09 on 17 and 5329 DF, p-value: < 2.2e-16