HW2

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2018년 10월 23일

```
fatality.data$dk18<- ifelse(mlda==18,1,0); head(fatality.data$dk18)
```

```
## [1] 0 0 0 0 0 0
```

```
fatality.data$dk19<- ifelse(mlda==19,1,0); head(fatality.data$dk19)
```

```
## [1] 1 1 1 1 0 0
```

```
fatality.data$dk20<- ifelse(mlda==20,1,0); head(fatality.data$dk20)
```

```
## [1] 0 0 0 0 0 0
```

```
fatality.data$inc2<- (log(perinc))**2
fatality.data$inc3<- (log(perinc))**3
fatality.data$mjcs= ifelse(jaild==1|comserd==1,1,0); head(fatality.data$mjcs)
```

```
## [1] 0 0 0 0 0 0
```

<MODEL4>

```
lm.fit4<-plm(mrall~beertax + dk18+dk19+dk20 + jaild+comserd+ vmiles+ unrate+
inc2+inc3, data=fatality.data, model="within", index=c("state","year"),
effect="twoways")
coeftest(lm.fit4, vcov=vcovHC) #beertax 통계적으로 유의하지 않다.
```

```
##
## t test of coefficients:
##
##            Estimate  Std. Error t value  Pr(>|t|)
## beertax -2.3748e-05  2.2815e-05 -1.0409    0.2988
## dk18     3.5078e-07  6.5721e-06  0.0534    0.9575
## dk19    -1.1529e-06  4.1396e-06 -0.2785    0.7808
## dk20     1.5391e-06  4.5648e-06  0.3372    0.7363
## jaild    8.0678e-07  1.6538e-06  0.4878    0.6261
## comserd  6.9964e-06  9.5858e-06  0.7299    0.4661
## vmiles   8.4875e-10  5.2569e-10  1.6145    0.1076
## unrate  -4.9793e-06  1.2191e-06 -4.0845 5.820e-05 ***
## inc2     2.8773e-04  5.6578e-05  5.0856 6.849e-07 ***
## inc3    -1.9162e-05  3.8630e-06 -4.9605 1.243e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```r
b1<-coeftest(lm.fit4, vcov=vcovHC)[1,1]; se_b1<-coeftest(lm.fit4,
vcov=vcovHC)[1,2]
L<- b1-1.96*se_b1; U<- b1+1.96*se_b1
CI_lmfit4<-c(L,U); CI_lmfit4 #신뢰구간이 0을 포함하고 있음
```

```
## [1] -6.846597e-05  2.096926e-05
```

<MODEL 6>

```r
lm.fit6<-plm(mrall~beertax + mlda+ mjcs+ vmiles + unrate+ inc2+inc3,
data=fatality.data, model="within", index=c("state","year"),effect=
"twoways")
summary(lm.fit6)
```

```
## Twoways effects Within Model
##
## Call:
## plm(formula = mrall ~ beertax + mlda + mjcs + vmiles + unrate +
##     inc2 + inc3, data = fatality.data, effect = "twoways", model =
"within",
##     index = c("state", "year"))
##
## Unbalanced Panel: n = 48, T = 6-7, N = 335
##
## Residuals:
##        Min.     1st Qu.      Median     3rd Qu.        Max.
## -4.0658e-05 -7.8350e-06  4.7339e-07  6.9964e-06  5.0814e-05
##
## Coefficients:
##            Estimate  Std. Error t-value  Pr(>|t|)
## beertax -2.3694e-05  1.6455e-05 -1.4399    0.1510
## mlda     2.3139e-07  1.6480e-06  0.1404    0.8884
## mjcs     6.1832e-06  5.7276e-06  1.0795    0.2813
## vmiles   8.9573e-10  8.3602e-10  1.0714    0.2849
## unrate  -4.9848e-06  1.0907e-06 -4.5704 7.374e-06 ***
## inc2     2.8966e-04  5.2838e-05  5.4821 9.543e-08 ***
## inc3    -1.9305e-05  3.6304e-06 -5.3175 2.186e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Total Sum of Squares:    1.0289e-07
## Residual Sum of Squares: 6.0359e-08
## R-Squared:      0.41339
## Adj. R-Squared: 0.28493
## F-statistic: 27.5839 on 7 and 274 DF, p-value: < 2.22e-16
```

```r
coeftest(lm.fit6, vcov=vcovHC) #beertax 통계적으로 유의하지 않다.
```

```
##
## t test of coefficients:
##
##              Estimate  Std. Error t value  Pr(>|t|)
## beertax -2.3694e-05  2.3653e-05 -1.0017   0.31736
## mlda     2.3139e-07  1.8262e-06  0.1267   0.89926
## mjcs     6.1832e-06  7.6175e-06  0.8117   0.41767
## vmiles   8.9573e-10  5.3726e-10  1.6672   0.09661 .
## unrate  -4.9848e-06  1.2262e-06 -4.0652 6.275e-05 ***
## inc2     2.8966e-04  5.7974e-05  4.9964 1.042e-06 ***
## inc3    -1.9305e-05  3.9679e-06 -4.8652 1.931e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
b2<-coeftest(lm.fit6, vcov=vcovHC)[1,1]; se_b2<-coeftest(lm.fit6,
vcov=vcovHC)[1,2]
LL<- b2-1.96*se_b2; UU<- b2+1.96*se_b2
CI_lmfit6<-c(LL,UU); CI_lmfit6 #0을 포함
```

```
## [1] -7.005408e-05  2.266627e-05
```