

title: "Homework#2, Lab#2, Econometrics B2000"

author: "Hassan Fayyaz"

date:"09/23/2021"

'Q#1: Names of study group '

#Hassan, Hugo, Mahrukh

'Q#2: Write up the results of your Lab 2 work.'

```
rm(list = ls(all = TRUE))
```

```
setwd("C:/Users/hassa/Desktop/Fall 2021/1_Econometrics_(B2000)/Homeworks/1_HW")
```

```
load("acs2017_ny_data.RData")
```

```
attach(acs2017_ny)
```

'The following objects are masked from acs2017_ny (pos = 3):

AfAm, AGE, Amindian, ANCESTR1, ANCESTR1D, ANCESTR2, ANCESTR2D, Asian,
below_150poverty, below_200poverty, below_povertyline, BPL, BPLD, BUILTYR2, CITIZEN,

CLASSWKR, CLASSWKRD, Commute_bus, Commute_car, Commute_other,
Commute_rail, Commute_subway, COSTELEC, COSTFUEL, COSTGAS, COSTWATR,
DEGFIELD, DEGFIELD2,

DEGFIELD2D, DEGFIELD2DD, DEPARTS, EDUC, educ_advdeg, educ_college, educ_hs,
educ_nohs, educ_somecoll, EDUCD, EMPSTAT, EMPSTATD, FAMSIZE, female, foodstamps,

FOODSTMP, FTOTINC, FUELHEAT, GQ, has_AnyHealthIns, has_PvtHealthIns,
HCOVANY, HCOVPRIV, HHINCOME, Hisp_Cuban, Hisp_DomR, Hisp_Mex, Hisp_PR,
HISPAN, HISPAND,

Hispanic, in_Bronx, in_Brooklyn, in_Manhattan, in_Nassau, in_NYC, in_Queens, in_StatenI,
in_Westchester, INCTOT, INCWAGE, IND, LABFORCE, LINGISOL, MARST,

MIGCOUNTY1, MIGPLAC1, MIGPUMA1, MIGRATE1, MIGRATE1D, MORTGAGE,
NCHILD, NCHLT5, OCC, OWNCOST, OWNERSHP, OWNERSHPD, POVERTY, PUMA,
PWPUMA00, RACE, race_oth, RACED,

RELATE, RELATED, RENT, ROOMS, SCHOOL, SEX, SSMC, TRANTIME,
TRANWORK, UHRSWORK, UNITSSTR, unmarried, veteran, VETSTAT, VETSTATD, white,
WKSWORK2, YRSUSA1

The following objects are masked from acs2017_ny (pos = 4):

AfAm, AGE, Amindian, ANCESTR1, ANCESTR1D, ANCESTR2, ANCESTR2D, Asian,
below_150poverty, below_200poverty, below_povertyline, BPL, BPLD, BUILTYR2, CITIZEN,

CLASSWKR, CLASSWKR, Commute_bus, Commute_car, Commute_other,
Commute_rail, Commute_subway, COSTELEC, COSTFUEL, COSTGAS, COSTWATR,
DEGFIELD, DEGFIELD2,

DEGFIELD2D, DEGFIELDD, DEPARTS, EDUC, educ_advdeg, educ_college, educ_hs,
educ_nohs, educ_somcoll, EDUCD, EMPSTAT, EMPSTATD, FAMSIZE, female, foodstamps,

FOODSTMP, FTOTINC, FUELHEAT, GQ, has_AnyHealthIns, has_PvtHealthIns,
HCOVANY, HCOVPRIV, HHINCOME, Hisp_Cuban, Hisp_DomR, Hisp_Mex, Hisp_PR,
HISPAN, HISPAND,

Hispanic, in_Bronx, in_Brooklyn, in_Manhattan, in_Nassau, in_NYC, in_Queens, in_StatenI,
in_Westchester, INCTOT, INCWAGE, IND, LABFORCE, LINGISOL, MARST,

MIGCOUNTY1, MIGPLAC1, MIGPUMA1, MIGRATE1, MIGRATE1D, MORTGAGE,
NCHILD, NCHLT5, OCC, OWNCOST, OWNERSHP, OWNERSHPD, POVERTY, PUMA,
PWPUMA00, RACE, race_oth, RACED,

RELATE, RELATED, RENT, ROOMS, SCHOOL, SEX, SSMC, TRANTIME,
TRANWORK, UHRSWORK, UNITSSTR, unmarried, veteran, VETSTAT, VETSTATD, white,
WKSWORK2, YRSUSA1

The following objects are masked from acs2017_ny (pos = 5):

AfAm, AGE, Amindian, ANCESTR1, ANCESTR1D, ANCESTR2, ANCESTR2D, Asian,
below_150poverty, below_200poverty, below_povertyline, BPL, BPLD, BUILTYR2, CITIZEN,

CLASSWKR, CLASSWKRD, Commute_bus, Commute_car, Commute_other,
Commute_rail, Commute_subway, COSTELEC, COSTFUEL, COSTGAS, COSTWATR,
DEGFIELD, DEGFIELD2,

DEGFIELD2D, DEGFIELDD, DEPARTS, EDUC, educ_advdeg, educ_college, educ_hs,
educ_nohs, educ_somcoll, EDUCD, EMPSTAT, EMPSTATD, FAMSIZE, female, foodstamps,

FOODSTMP, FTOTINC, FUELHEAT, GQ, has_AnyHealthIns, has_PvtHealthIns,
HCOVANY, HCOVPRIV, HHINCOME, Hisp_Cuban, Hisp_DomR, Hisp_Mex, Hisp_PR,
HISPAN, HISPAND,

Hispanic, in_Bronx, in_Brooklyn, in_Manhattan, in_Nassau, in_NYC, in_Queens, in_StatenI,
in_Westchester, INCTOT, INCWAGE, IND, LABFORCE, LINGISOL, MARST,

MIGCOUNTY1, MIGPLAC1, MIGPUMA1, MIGRATE1, MIGRATE1D, MORTGAGE,
NCHILD, NCHLT5, OCC, OWNCOST, OWNERSHP, OWNERSHPD, POVERTY, PUMA,
PWPUMA00, RACE, race_oth, RACED,

RELATE, RELATED, RENT, ROOMS, SCHOOL, SEX, SSMC, TRANTIME,
TRANWORK, UHRSWORK, UNITSSTR, unmarried, veteran, VETSTAT, VETSTATD, white,
WKSWORK2, YRSUSA1

,

summary(acs2017_ny)

"AGE	female	educ_nohs	educ_hs	educ_somcoll	educ_college
educ_advdeg		SCHOOL		EDUC	
Min. : 0.00	Min. : 0.0000	Min. : 0.000	Min. : 0.0000	Min. : 0.000	Min. : 0.0000
Min. : 0.000	N/A	: 5569	Grade 12	:55119	
1st Qu.:22.00	1st Qu.:0.0000	1st Qu.:0.000	1st Qu.:0.0000	1st Qu.:0.000	1st Qu.:0.0000
1st Qu.:0.000	No, not in school:144968	4 years of college	:30802		
Median :42.00	Median :1.0000	Median :0.000	Median :0.0000	Median :0.000	Median :0.0000
Median :0.000	Median :0.000	Yes, in school : 46048	5+ years of college	:23385	
Mean :41.57	Mean :0.5156	Mean :0.271	Mean :0.2804	Mean :0.173	Mean :0.1567
Mean :0.119	Missing : 0	1 year of college	:19947		
3rd Qu.:60.00	3rd Qu.:1.0000	3rd Qu.:1.000	3rd Qu.:1.0000	3rd Qu.:0.000	3rd Qu.:0.0000
3rd Qu.:0.000		Nursery school to grade 4:14240			
Max. :95.00	Max. :1.0000	Max. :1.000	Max. :1.0000	Max. :1.000	Max. :1.0000
Max. :1.000		2 years of college	:14065		

(Other)

:39027

EDUCD

DEGFIELD

DEGFIELDD

Regular high school diploma :35689 N/A :142398 N/A
:142398

Bachelor's degree :30802 Business : 9802 Psychology
: 2926

1 or more years of college credit, no degree:19947 Education Administration and Teaching :
6708 Business Management and Administration: 2501

Master's degree :17010 Social Sciences : 4836 Accounting
: 2284

Associate's degree, type not specified :14065 Medical and Health Sciences and Services:
3919 General Education : 2238

Some college, but less than 1 year : 9086 Fine Arts : 3491 English
Language and Literature : 2202

(Other) :69986 (Other) : 25431 (Other)
: 42036

DEGFIELD2

DEGFIELD2D

PUMA GQ OWNERSHP OWNERSHPD

N/A :190425 N/A :190425 Min. :
100 Min. :1.000 Min. :0.000 Min. :0.00

Business : 972 Psychology : 284 1st
Qu.:1500 1st Qu.:1.000 1st Qu.:1.000 1st Qu.:12.00

Social Sciences : 853 Economics : 260
Median :3201 Median :1.000 Median :1.000 Median :13.00

Education Administration and Teaching: 611 Political Science and Government
: 243 Mean :2713 Mean :1.148 Mean :1.266 Mean :14.95

Fine Arts : 465 Business Management and Administration :
217 3rd Qu.:3902 3rd Qu.:1.000 3rd Qu.:2.000 3rd Qu.:22.00

Communications : 352 French, German, Latin and Other Common Foreign
Language Studies: 205 Max. :4114 Max. :5.000 Max. :2.000 Max. :22.00

(Other) : 2907 (Other) : 4951

MORTGAGE OWNCOST RENT COSTELEC COSTGAS
 COSTWATR COSTFUEL HHINCOME FOODSTMP LINGISOL
 ROOMS

Min. :0.000 Min. : 0 Min. : 0 Min. : 0 Min. : 0 Min. : 0 Min. : 0 Min.
 : -11800 Min. :1.000 Min. :0.000 Min. :0.000

1st Qu.:0.000 1st Qu.: 1208 1st Qu.: 0 1st Qu.: 960 1st Qu.: 840 1st Qu.: 320 1st
 Qu.:9993 1st Qu.: 41600 1st Qu.:1.000 1st Qu.:1.000 1st Qu.: 4.000

Median :1.000 Median : 2891 Median : 0 Median :1560 Median :2400 Median :1400
 Median :9993 Median : 81700 Median :1.000 Median :1.000 Median : 6.000

Mean :1.453 Mean :38582 Mean : 393 Mean :2311 Mean :5032 Mean :4836
 Mean :7935 Mean :114902 Mean :1.147 Mean :1.002 Mean : 5.887

3rd Qu.:3.000 3rd Qu.:99999 3rd Qu.: 630 3rd Qu.:2520 3rd Qu.:9993 3rd Qu.:9993 3rd
 Qu.:9993 3rd Qu.: 140900 3rd Qu.:1.000 3rd Qu.:1.000 3rd Qu.: 8.000

Max. :4.000 Max. :99999 Max. :3800 Max. :9997 Max. :9997 Max. :9997 Max.
 :9997 Max. :2030000 Max. :2.000 Max. :2.000 Max. :16.000

NA's :10630

BUILTYR2 UNITSSTR FUELHEAT SSMC FAMSIZE
 NCHILD NCHLT5 RELATE RELATED MARST RACE

Min. : 0.000 Min. : 0.00 Min. :0.000 Min. :0.000000 Min. : 1.000 Min. :0.0000
 Min. :0.00000 Min. : 1.000 Min. :101.0 Min. :1.000 Min. :1.00

1st Qu.: 1.000 1st Qu.: 3.00 1st Qu.:2.000 1st Qu.:0.000000 1st Qu.: 2.000 1st Qu.:0.0000
 1st Qu.:0.00000 1st Qu.: 1.000 1st Qu.: 101.0 1st Qu.:1.000 1st Qu.:1.00

Median : 3.000 Median : 3.00 Median :2.000 Median :0.000000 Median : 3.000 Median
 :0.0000 Median :0.00000 Median : 2.000 Median : 201.0 Median :5.000 Median :1.00

Mean : 3.711 Mean : 4.39 Mean :2.959 Mean :0.01102 Mean : 3.087 Mean
 :0.5009 Mean :0.08441 Mean : 3.307 Mean :335.6 Mean :3.742 Mean :2.03

3rd Qu.: 5.000 3rd Qu.: 6.00 3rd Qu.:4.000 3rd Qu.:0.000000 3rd Qu.: 4.000 3rd
 Qu.:1.0000 3rd Qu.:0.00000 3rd Qu.: 3.000 3rd Qu.: 301.0 3rd Qu.:6.000 3rd Qu.:2.00

Max. :22.000 Max. :10.00 Max. :9.000 Max. :2.000000 Max. :19.000 Max. :9.0000
 Max. :5.00000 Max. :13.000 Max. :1301.0 Max. :6.000 Max. :9.00

RACED HISPAN HISPAND BPL BPLD
 ANCESTR1 ANCESTR1D

Min. :100 Min. :0.0000 Min. : 0.00 New York :128517 New York :128517
 Not Reported :32021 Not Reported :32021

1st Qu.:100 1st Qu.:0.0000 1st Qu.: 0.00 West Indies : 8481 China : 4116 Italian
 :20577 Italian (1990-2000, ACS, PRCS) :20577

Median :100 Median :0.0000 Median : 0.00 China : 4964 Dominican Republic: 3517
 Irish, various subheads,:16388 Irish :15651

Mean :205 Mean :0.4153 Mean : 44.75 SOUTH AMERICA: 4957 Pennsylvania :
 3303 German :12781 German (1990-2000, ACS/PRCS) :12605

3rd Qu.:200 3rd Qu.:0.0000 3rd Qu.: 0.00 India : 3476 New Jersey : 3127
 African-American : 9559 African-American (1990-2000, ACS, PRCS): 9559

Max. :990 Max. :4.0000 Max. :498.00 Pennsylvania : 3303 Puerto Rico : 2272
 United States : 8209 United States : 8209

(Other) : 42887 (Other) : 51733 (Other)
 :97050 (Other) :97963

ANCESTR2 ANCESTR2D CITIZEN YRSUSA1
 HCOVANY HCOVPRIV SEX EMPSTAT EMPSTATD

Not Reported:141487 Not Reported :141487 Min. :0.0000 Min. : 0.000 Min.
 :1.000 Min. :1.000 Male :95222 Min. :0.000 Min. : 0.00

German : 9476 German (1990-2000, ACS, PRCS): 9441 1st Qu.:0.0000 1st Qu.: 0.000
 1st Qu.:2.000 1st Qu.:1.000 Female:101363 1st Qu.:1.000 1st Qu.:10.00

Irish : 9238 Irish : 8809 Median :0.0000 Median : 0.000 Median :2.000
 Median :2.000 Median :1.000 Median :10.00

English : 4895 English : 4895 Mean :0.4793 Mean : 5.377 Mean
 :1.951 Mean :1.691 Mean :1.514 Mean :15.16

Italian : 4531 Italian (1990-2000, ACS, PRCS): 4531 3rd Qu.:0.0000 3rd Qu.: 0.000
 3rd Qu.:2.000 3rd Qu.:2.000 3rd Qu.:3.000 3rd Qu.:30.00

Polish : 3113 Polish : 3113 Max. :3.0000 Max. :92.000 Max. :2.000
 Max. :2.000 Max. :3.000 Max. :30.00

(Other) : 23845 (Other) : 24309

LABFORCE OCC IND CLASSWKR CLASSWKRD
 WKSWORK2 UHRSWORK INCTOT FTOTINC INCWAGE
 POVERTY

Min. :0.000 0 :79987 0 :79987 Min. :0.000 Min. : 0.00 Min. :0.000 Min. :
 0.00 Min. : -7300 Min. : -11800 Min. : 0 Min. : 0.0

1st Qu.:1.000 2310 : 3494 7860 : 9025 1st Qu.:0.000 1st Qu.: 0.00 1st Qu.:0.000 1st Qu.: 0.00 1st Qu.: 8000 1st Qu.: 35550 1st Qu.: 0 1st Qu.:159.0

Median :2.000 5700 : 3235 8680 : 6354 Median :2.000 Median :22.00 Median :1.000 Median :12.00 Median : 25000 Median : 74000 Median : 10000 Median :351.0

Mean :1.331 430 : 3025 770 : 6279 Mean :1.116 Mean :13.03 Mean :2.701 Mean :19.77 Mean : 45245 Mean : 107111 Mean : 33796 Mean :318.7

3rd Qu.:2.000 4720 : 2666 8190 : 5873 3rd Qu.:2.000 3rd Qu.:22.00 3rd Qu.:6.000 3rd Qu.:40.00 3rd Qu.: 56500 3rd Qu.: 132438 3rd Qu.: 47000 3rd Qu.:501.0

Max. :2.000 4760 : 2563 7870 : 4041 Max. :2.000 Max. :29.00 Max. :6.000 Max. :99.00 Max. :1563000 Max. :2030000 Max. :638000 Max. :501.0

(Other):101615 (Other):85026 NA's
:31129 NA's :10817 NA's :33427

MIGRATE1 MIGRATE1D MIGPLAC1 MIGCOUNTY1 MIGPUMA1
VETSTAT VETSTATD PWPUMA00 TRANWORK TRANTIME

Min. :0.000 Min. : 0.00 Min. : 0.000 Min. : 0.000 Min. : 0 Min. :0.0000 Min. :0.000 Min. : 0 Min. :0.000 Min. : 0.00

1st Qu.:1.000 1st Qu.:10.00 1st Qu.: 0.000 1st Qu.: 0.000 1st Qu.: 0 1st Qu.:1.0000 1st Qu.:11.000 1st Qu.: 0 1st Qu.: 0.000 1st Qu.: 0.00

Median :1.000 Median :10.00 Median : 0.000 Median : 0.000 Median : 0 Median :1.0000 Median :11.000 Median : 0 Median :0.000 Median : 0.00

Mean :1.122 Mean :11.51 Mean : 6.184 Mean : 4.117 Mean : 277 Mean :0.8621 Mean :9.412 Mean :1255 Mean :9.725 Mean :14.75

3rd Qu.:1.000 3rd Qu.:10.00 3rd Qu.: 0.000 3rd Qu.: 0.000 3rd Qu.: 0 3rd Qu.:1.0000 3rd Qu.:11.000 3rd Qu.: 3100 3rd Qu.:10.000 3rd Qu.: 20.00

Max. :4.000 Max. :40.00 Max. :900.000 Max. :810.000 Max. :70100 Max. :2.0000 Max. :20.000 Max. :59300 Max. :70.000 Max. :138.00

DEPARTS in_NYC in_Bronx in_Manhattan in_StatenI in_Brooklyn
in_Queens in_Westchester in_Nassau Hispanic

Min. : 0.0 Min. :0.0000 Min. :0.0000 Min. :0.00000 Min. :0.00000 Min. :0.000 Min. :0.0000 Min. :0.00000 Min. :0.00000 Min. :0.0000

1st Qu.: 0.0 1st Qu.:0.0000 1st Qu.:0.0000 1st Qu.:0.00000 1st Qu.:0.00000 1st Qu.:0.000 1st Qu.:0.000 1st Qu.:0.0000 1st Qu.:0.00000 1st Qu.:0.0000

Median : 0.0 Median :0.0000 Median :0.0000 Median :0.00000 Median :0.00000 Median :0.0000
:0.000 Median :0.0000 Median :0.00000 Median :0.00000 Median :0.0000

Mean : 373.3 Mean :0.3615 Mean :0.0538 Mean :0.04981 Mean :0.02084 Mean :0.126
Mean :0.1111 Mean :0.04413 Mean :0.07032 Mean :0.1387

3rd Qu.: 732.0 3rd Qu.:1.0000 3rd Qu.:0.0000 3rd Qu.:0.00000 3rd Qu.:0.00000 3rd Qu.:0.0000
3rd Qu.:0.0000 3rd Qu.:0.00000 3rd Qu.:0.00000 3rd Qu.:0.00000 3rd Qu.:0.0000

Max. :2345.0 Max. :1.0000 Max. :1.0000 Max. :1.00000 Max. :1.00000 Max. :1.000
Max. :1.000 Max. :1.0000 Max. :1.00000 Max. :1.00000 Max. :1.0000

Hisp_Mex	Hisp_PR	Hisp_Cuban	Hisp_DomR	white	AfAm
Amindian	Asian	race_oth	unmarried		

Min. :0.00000 Min. :0.0000 Min. :0.000000 Min. :0.00000 Min. :0.0000 Min. :0.000
Min. :0.000000 Min. :0.00000 Min. :0.0000 Min. :0.0000 Min. :0.00

1st Qu.:0.00000 1st Qu.:0.0000 1st Qu.:0.000000 1st Qu.:0.00000 1st Qu.:0.0000 1st Qu.:0.000
1st Qu.:0.000 1st Qu.:0.000000 1st Qu.:0.00000 1st Qu.:0.0000 1st Qu.:0.00

Median :0.00000 Median :0.0000 Median :0.000000 Median :0.00000 Median :1.0000
Median :0.000 Median :0.000000 Median :0.00000 Median :0.0000 Median :0.00

Mean :0.01626 Mean :0.0436 Mean :0.003403 Mean :0.02827 Mean :0.6997 Mean :0.125
Mean :0.003779 Mean :0.08656 Mean :0.1324 Mean :0.45

3rd Qu.:0.00000 3rd Qu.:0.0000 3rd Qu.:0.000000 3rd Qu.:0.00000 3rd Qu.:1.0000 3rd Qu.:0.000
3rd Qu.:0.000000 3rd Qu.:0.00000 3rd Qu.:0.0000 3rd Qu.:0.0000 3rd Qu.:1.00

Max. :1.00000 Max. :1.0000 Max. :1.000000 Max. :1.00000 Max. :1.0000 Max. :1.000
Max. :1.000000 Max. :1.00000 Max. :1.0000 Max. :1.0000 Max. :1.00

veteran	has_AnyHealthIns	has_PvtHealthIns	Commute_car	Commute_bus
Commute_subway	Commute_rail	Commute_other	below_povertyline	below_150poverty

Min. :0.00000 Min. :0.0000 Min. :0.0000 Min. :0.0000 Min. :0.00000 Min. :0.00000
Min. :0.00000 Min. :0.00000 Min. :0.00000 Min. :0.000 Min. :0.00000

1st Qu.:0.00000 1st Qu.:1.0000 1st Qu.:0.0000 1st Qu.:0.0000 1st Qu.:0.00000 1st Qu.:0.00000
1st Qu.:0.00000 1st Qu.:0.00000 1st Qu.:0.00000 1st Qu.:0.000 1st Qu.:0.0000

Median :0.00000 Median :1.0000 Median :1.0000 Median :0.0000 Median :0.00000
Median :0.00000 Median :0.00000 Median :0.00000 Median :0.000 Median :0.0000

Mean :0.04443 Mean :0.9513 Mean :0.6906 Mean :0.2997 Mean :0.02162 Mean :0.07468
Mean :0.01332 Mean :0.05506 Mean :0.122 Mean :0.1965

3rd Qu.:0.00000 3rd Qu.:1.0000 3rd Qu.:1.0000 3rd Qu.:1.0000 3rd Qu.:0.00000 3rd
Qu.:0.00000 3rd Qu.:0.00000 3rd Qu.:0.00000 3rd Qu.:0.000 3rd Qu.:0.0000

Max. :1.00000 Max. :1.0000 Max. :1.0000 Max. :1.0000 Max. :1.00000 Max.
:1.00000 Max. :1.00000 Max. :1.00000 Max. :1.000 Max. :1.0000

below_200poverty foodstamps

Min. :0.0000 Min. :0.0000

1st Qu.:0.0000 1st Qu.:0.0000

Median :0.0000 Median :0.0000

Mean :0.2676 Mean :0.1465

3rd Qu.:1.0000 3rd Qu.:0.0000

Max. :1.0000 Max. :1.0000 "

summary(acs2017_ny\$DEGFIELD)

,

	N/A	Agriculture
Environment and Natural Resources		
	142398	262
282		
	Architecture	Area, Ethnic, and Civilization Studies
Communications		
	442	258
2105		
	Communication Technologies	Computer and Information
Sciences	Cosmetology Services and Culinary Arts	
	79	1530
50		

	Education Administration and Teaching	Engineering
	Engineering Technologies	
	6708	3145
246		
	Linguistics and Foreign Languages	Family and Consumer
Sciences	Law	
	683	272
124		
	English Language, Literature, and Composition	Liberal Arts and
Humanities	Library Science	
	2315	779
42		
	Biology and Life Sciences	Mathematics and Statistics
Military Technologies		
	2361	904
3		
	Interdisciplinary and Multi-Disciplinary Studies (General)	Physical Fitness, Parks,
	Recreation, and Leisure	Philosophy and Religious Studies
	358	264
523		
	Theology and Religious Vocations	Physical Sciences
	Nuclear, Industrial Radiology, and Biological Technologies	
	259	1597
12		
	Psychology	Criminal Justice and Fire Protection
	Public Affairs, Policy, and Social Work	
	3208	884
789		
	Social Sciences	Construction Services
	Electrical and Mechanic Repairs and Technologies	
	4836	46
14		
	Precision Production and Industrial Arts	Transportation Sciences and
	Technologies	Fine Arts


```
[100] "has_PvtHealthIns" "Commute_car" "Commute_bus" "Commute_subway"
"Commute_rail" "Commute_other" "below_povertyline" "below_150poverty"
"below_200poverty"
```

```
[109] "foodstamps"
```

```
> '
```

```
#####
```

```
'GROUPS: Psychology & Engineering majors' #
```

```
'Subgroups: INCWAGE | AGE | RaCE' #
```

```
#####
```

```
#####
#####
```

#Here we are trying to determine how much income a Psychology majors has depending on their race & age:

```
#####
#####
```

'MEAN FOR PSYCHOLOGY MAJORS'

```
mean(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 53075.32
```

```
mean(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 46.11534
```

```
mean(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 1.764027
```

'MEDIAN FOR PSYCHOLOGY MAJORS'

```
median(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 37000
```

```
median(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 44
```

```
median(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 1
```

#STANDARD ERROR BASED ON INCWAGE, AGE, & RACE of Psychology majors:

```
sd(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 80216.94
```

```
length(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 3208
```

'STANDARD ERROR BASED ON INCWAGE: Therefore, we conclude that the standard error, based on the the information provided is $se = 1416.279$ '

```
sd(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 16.36811
```

```
length(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 3208
```

'STANDARD ERROR BASED ON AGE: Therefore, we conclude that the standard error, based on the the information provided is $se = 0.289$ '

```
sd(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 1.800146
```

```
length(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 3208
```

'STANDARD ERROR BASED ON RACE: Therefore, we conclude that the standard error, based on the the information provided is $se = 0.032$ '

```
var(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 6434758093
```

```
var(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 267.915
```

```
var(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
#[1] 3.240527
```

```
summary(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
' Min. 1st Qu.  Median   Mean 3rd Qu.   Max.
```

```
  0      0 37000 53075 70000 638000 '
```

```
summary(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
'Min. 1st Qu.  Median   Mean 3rd Qu.   Max.
```

```
20.00 32.00 44.00 46.12 60.00 95.00 '
```

```
summary(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Psychology"])
```

```
'Min. 1st Qu.  Median   Mean 3rd Qu.   Max.
```

```
1.000 1.000 1.000 1.764 1.000 9.000 '
```

```
chisq <- chisq.test(table(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Psychology"]))
```

```
chisq
```

'Chi-squared test for given probabilities

```
data: table(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Psychology"])
```

X-squared = 91081, df = 378, p-value < 2.2e-16'

```
chisq <- chisq.test(table(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Psychology"]))
chisq
```

'Chi-squared test for given probabilities

```
data: table(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Psychology"])
X-squared = 1155.7, df = 72, p-value < 2.2e-16'
```

```
chisq <- chisq.test(table(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Psychology"]))
chisq
```

'Chi-squared test for given probabilities

```
data: table(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Psychology"])
X-squared = 14395, df = 8, p-value < 2.2e-16'
```

```
#####
#####
```

#Here we are trying to determine how much income an Engineering majors has depending on their race & age:

```
#####
#####
```

'MEAN FOR ENGINEERING MAJORS'

```
mean(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Engineering"])
#[1] 80738.76
```

```
mean(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Engineering"])
#[1] 50.83657
mean(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Engineering"])
#[1] 2.069634
```

'MEDIAN FOR ENGINEERING MAJORS'

```
median(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Engineering"])
#[1] 60000
median(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Engineering"])
#[1] 51
median(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Engineering"])
#[1] 1
```

#STANDARD ERROR BASED ON INCWAGE, AGE, & RACE of Engineering majors:

```
sd(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Engineering"])
length(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Engineering"])
```

'STANDARD ERROR BASED ON INCWAGE: Therefore, we conclude that the standard error, based on the the information provided is $se = 1936.174$ '

```
sd(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Engineering"])
#[1] 108581.2
length(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Engineering"])
#[1] 3145
```

'STANDARD ERROR BASED ON AGE: Therefore, we conclude that the standard error, based on the the information provided is $se = 0.314$ '


```
sd(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Engineering"])
#[1] 1.974693
length(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Engineering"])
#[1] 3145
```

'STANDARD ERROR BASED ON RACE: Therefore, we conclude that the standard error, based on the the information provided is $se = 0.035$ '

```
var(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Engineering"])
#[1] 11789882110
var(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Engineering"])
#[1] 310.8556
var(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Engineering"])
#[1] 3.899412
```

```
summary(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Engineering"])
```

```
'Min. 1st Qu.  Median   Mean 3rd Qu.  Max.
```

```
  0    0 60000  80739 109000 638000 '
```

```
summary(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Engineering"])
```

```
'Min. 1st Qu.  Median   Mean 3rd Qu.  Max.
```

```
19.00 36.00 51.00 50.84 64.00 95.00 '
```

```
summary(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Engineering"])
```

```
'Min. 1st Qu.  Median   Mean 3rd Qu.  Max.
```

```
 1.00  1.00  1.00  2.07  2.00  9.00 '
```

```
chisq <- chisq.test(table(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Engineering"]))
chisq
```

'Chi-squared test for given probabilities

```
data: table(acs2017_ny$INCWAGE[acs2017_ny$DEGFIELD == "Engineering"])
```

```
X-squared = 77640, df = 338, p-value < 2.2e-16'
```

```
chisq <- chisq.test(table(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Engineering"]))
```

```
chisq
```

'Chi-squared test for given probabilities

```
data: table(acs2017_ny$AGE[acs2017_ny$DEGFIELD == "Engineering"])
```

```
X-squared = 609.01, df = 72, p-value < 2.2e-16'
```

```
chisq <- chisq.test(table(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Engineering"]))
```

```
chisq
```

'Chi-squared test for given probabilities

```
data: table(acs2017_ny$RACE[acs2017_ny$DEGFIELD == "Engineering"])
```

```
X-squared = 12358, df = 8, p-value < 2.2e-16'
```

#CONCLUSION: This data concludes that on average engineers earn more than psychology regardless of their age and race.