Assignment 1

Ghazal

DA3 Assignment 1

1.Introduction

This assignment presents earnings per hour of **this** occpuation for the ones who has more than associate degree or occupational /vocational

2. Data

3. Regressions

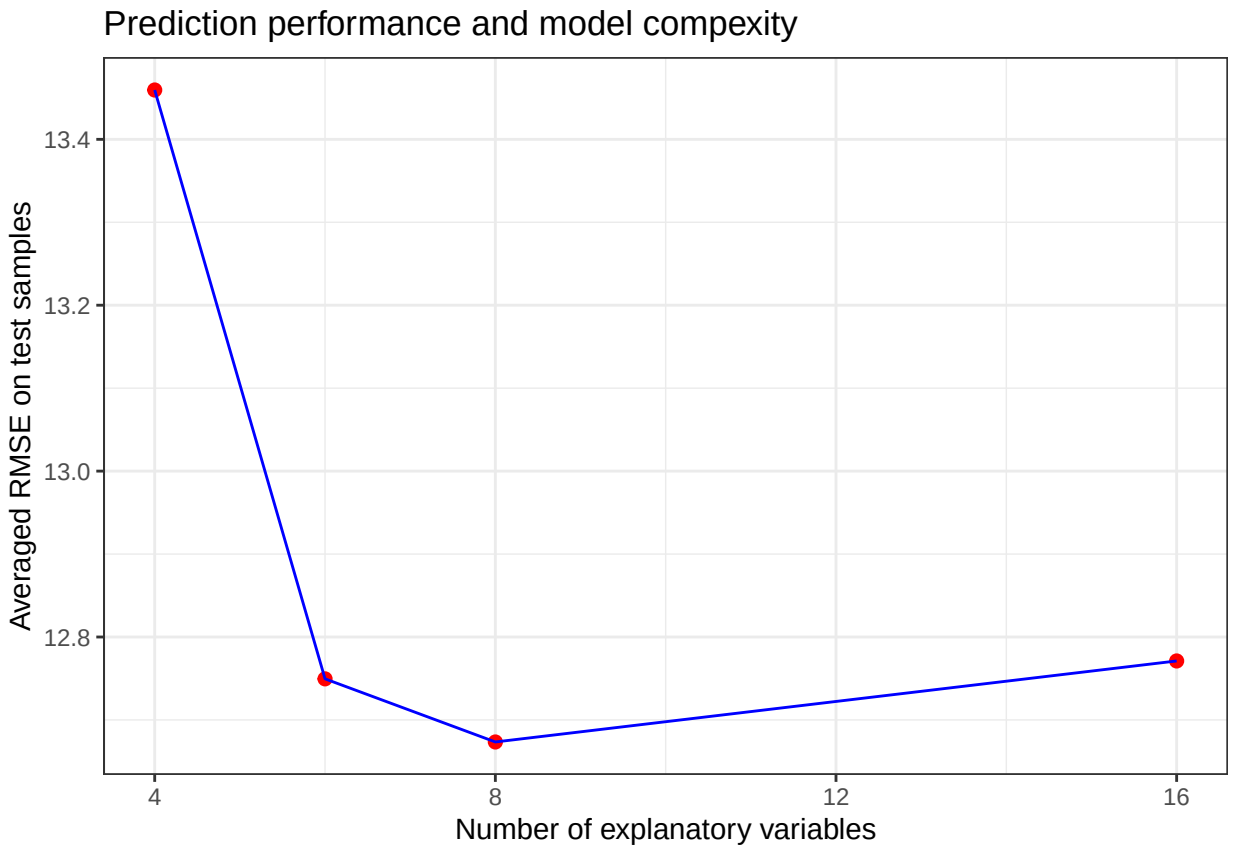
4. Performance of Models

5. Prediction

5. Summary

```
##                                         M1                  M2
## Dependent Var.:                Hourly wage         Hourly wage
##
## Intercept                  26.10*** (0.5409)    -16.75** (5.429)
## MA Degree                    4.821** (1.636)     4.388** (1.553)
## Professional Degree             4.015 (4.092)       2.881 (3.919)
## PhD                         24.20*** (6.838)     21.01** (6.494)
## Age                                             1.895*** (0.2938)
## Age Squared                                    -0.0190*** (0.0036)
## Female
## Private Sector
## Has Child
## MA Degree x Female
## Professional Degree x Female
## PhD x Female
## Age x Female
## Age Squared x Female
## Female x Private Sector
## Female x Has Child
## ---------------------------- ----------------- -------------------
## S.E. type                    Heteroskeda.-rob. Heteroskedast.-rob.
## AIC                                  5,635.0             5,559.1
## BIC                                  5,653.2             5,586.4
## RMSE                                  13.391              12.649
## R2                                   0.03195             0.13629
```

```
## Observations                              701                 701
## No. Variables                               3                   5
##                                            M3                  M4
## Dependent Var.:                    Hourly wage         Hourly wage
##
## Intercept                      -17.50** (5.695)    -38.14** (14.09)
## MA Degree                       4.371** (1.575)      -1.333 (3.142)
## Professional Degree               1.489 (4.190)      -1.463 (4.922)
## PhD                              21.00** (6.489)    17.83*** (2.500)
## Age                            1.976*** (0.2939)   2.885*** (0.7324)
## Age Squared                  -0.0199*** (0.0036) -0.0287*** (0.0087)
## Female                        -4.124*** (1.204)      28.02. (15.66)
## Private Sector                   2.546* (1.185)       3.085 (2.425)
## Has Child                                           0.3646 (2.521)
## MA Degree x Female                                  7.772* (3.630)
## Professional Degree x Female                         9.736 (9.366)
## PhD x Female                                         3.571 (9.116)
## Age x Female                                      -1.493. (0.8231)
## Age Squared x Female                               0.0153 (0.0099)
## Female x Private Sector                           -0.9502 (2.773)
## Female x Has Child                                  1.407 (2.807)
## ---------------------------- ------------------- -------------------
## S.E. type                    Heteroskedast.-rob. Heteroskedast.-rob.
## AIC                                    5,545.3             5,545.4
## BIC                                    5,581.7             5,618.2
## RMSE                                    12.490              12.349
## R2                                     0.15794             0.17677
## Observations                               701                 701
## No. Variables                                7                  15
```




```
# Select Model 3

###############
# 5C) Prediction
#   Compare model1 and model3 to predict our the hourly wage


dt <- dt %>% select(grade92, age, female, w, ed_BA, ed_MA, ed_Profess, ed_PhD, agesq, privt_sec, child)
```

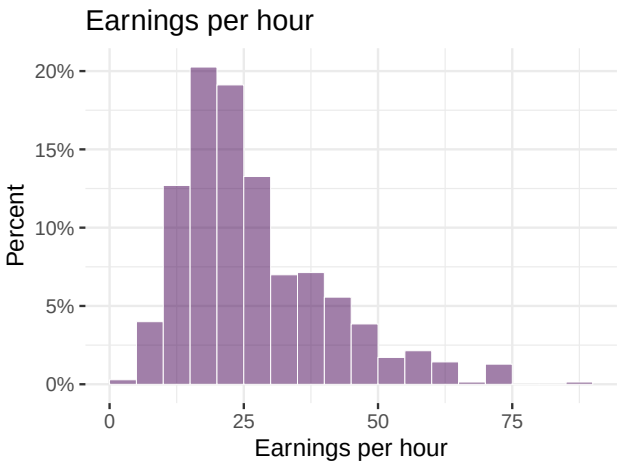
Appendix

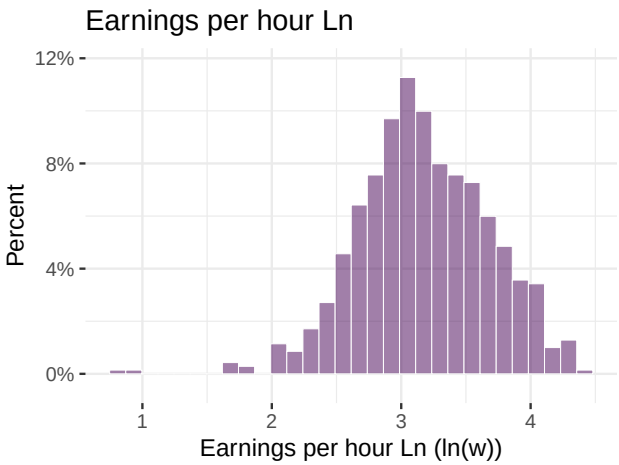
Descriptive Data Summary

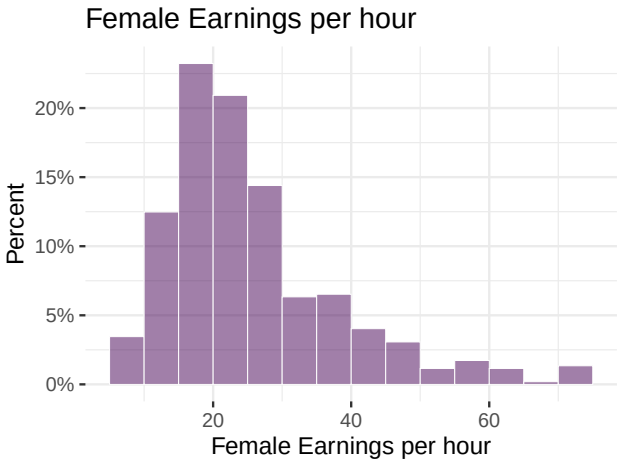
Table 1: Descriptive Summary Statistics

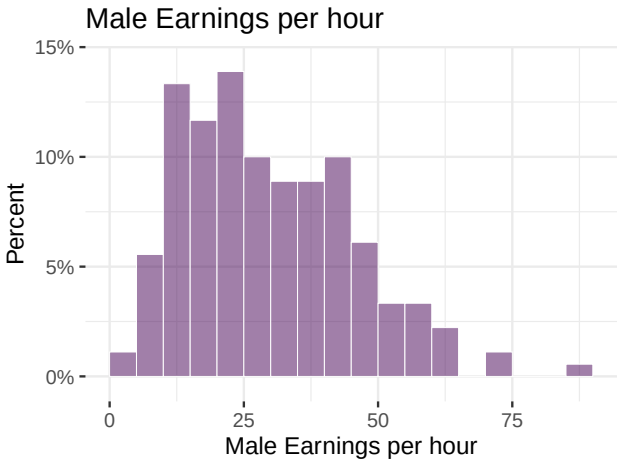
	Median	Mean	SD	Min	Max	P05	P95	N
Weekly earnings	961.53	1111.08	605.24	75.00	2884.61	400.00	2394.00	701
Weekly hours worked	40.00	40.88	7.44	6.00	65.00	28.00	55.00	701
Earning per hour	23.50	26.92	13.62	2.31	85.26	11.00	55.88	701
Female	1.00	0.74	0.44	0.00	1.00	0.00	1.00	701
BA Degree	0.00	0.44	0.50	0.00	1.00	0.00	1.00	701
MA Degree	0.00	0.13	0.34	0.00	1.00	0.00	1.00	701
Professional Degree	0.00	0.01	0.10	0.00	1.00	0.00	0.00	701
PhD	0.00	0.01	0.08	0.00	1.00	0.00	0.00	701
Age	40.00	40.83	11.91	19.00	64.00	23.00	61.00	701
Work in Private Sector	1.00	0.79	0.41	0.00	1.00	0.00	1.00	701
Has child	0.00	0.37	0.48	0.00	1.00	0.00	1.00	701

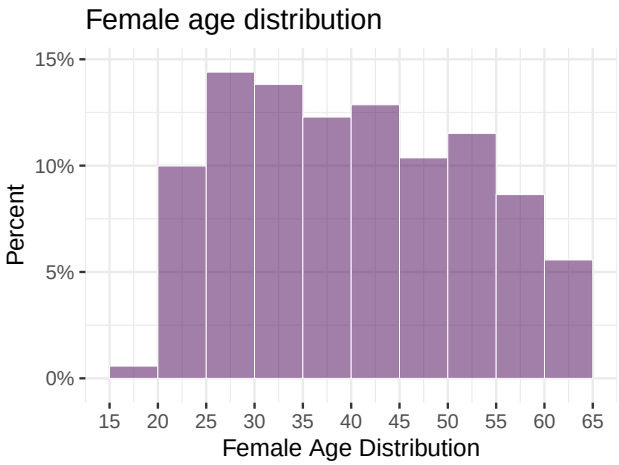
Histograms

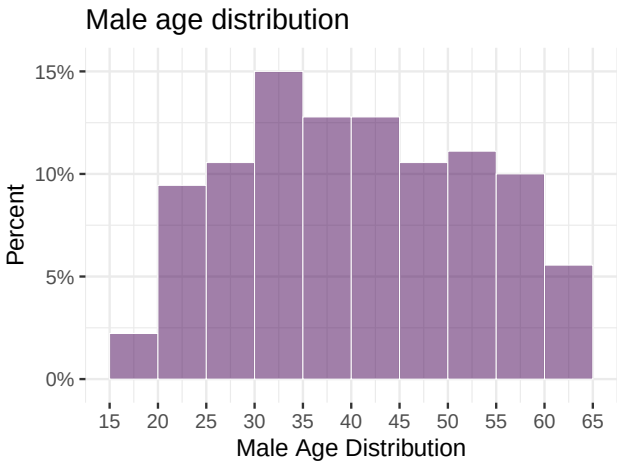

Earnings per hour
Percent
20%
15%
10%
5%
0%
0
25
50
75
Earnings per hour


Earnings per hour Ln
Percent
12%
8%
4%
0%
1
2
3
4
Earnings per hour Ln (ln(w))

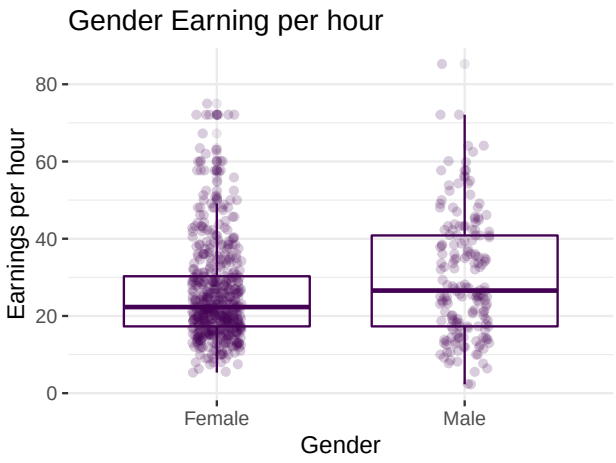

Female Earnings per hour
Percent
20%
15%
10%
5%
0%
20
40
60
Female Earnings per hour

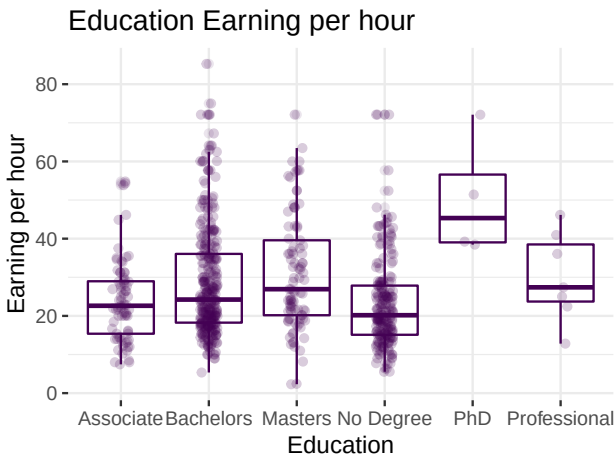

Male Earnings per hour
Percent
15%
10%
5%
0%
0
25
50
75
Male Earnings per hour

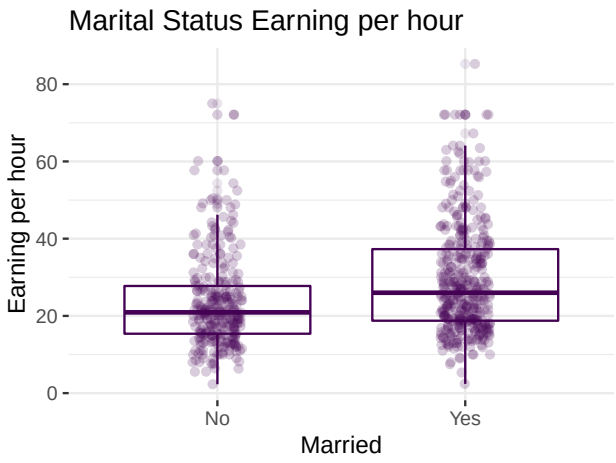

Female age distribution
Percent
15%
10%
5%
0%
15
20
25
30
35
40
45
50
55
60
65
Female Age Distribution

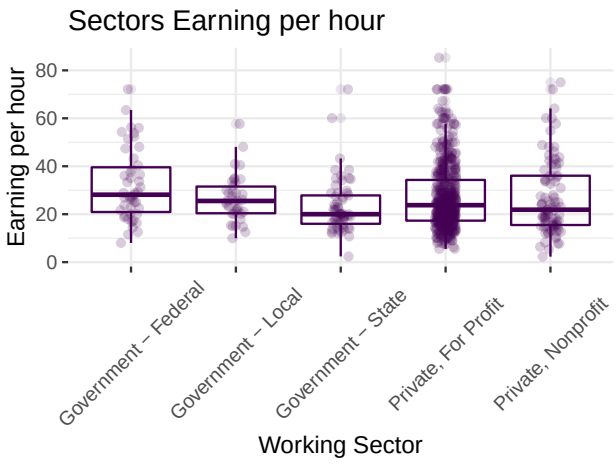

Male age distribution
Percent
15%
10%
5%
0%
15
20
25
30
35
40
45
50
55
60
65
Male Age Distribution

One variable plots

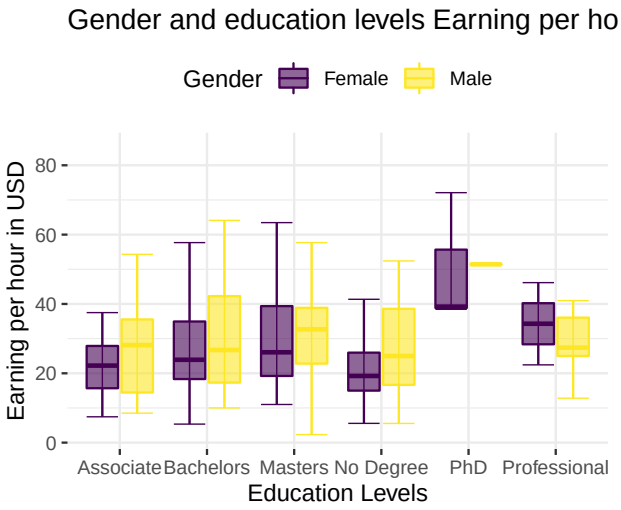


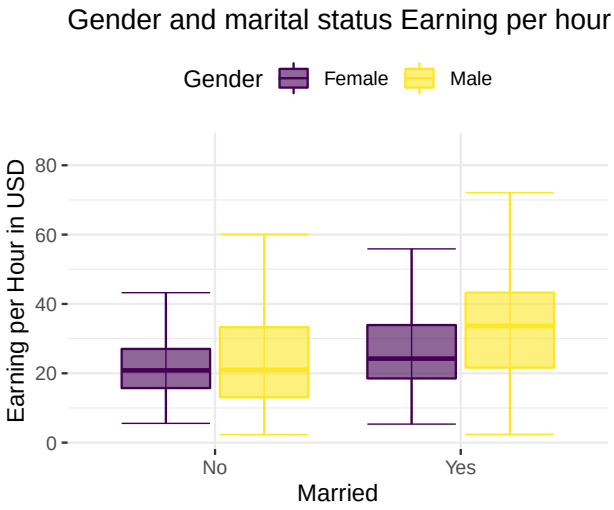


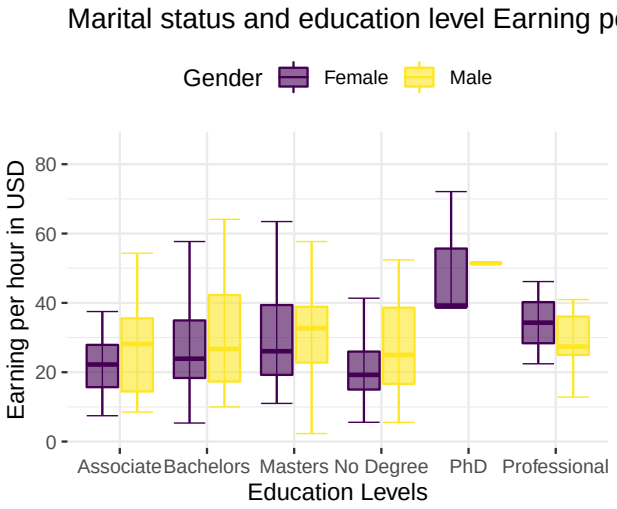


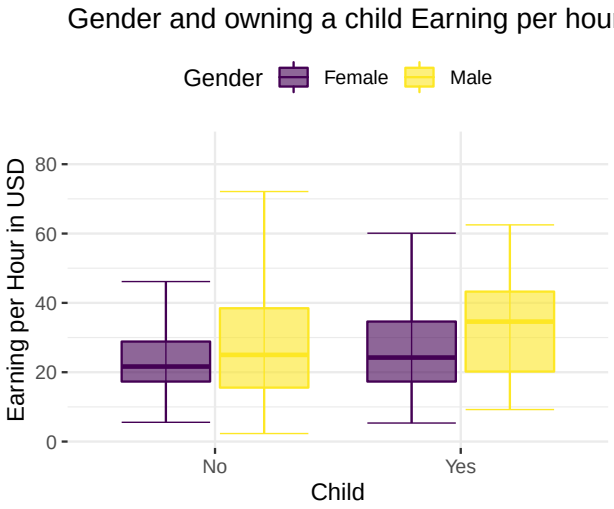


Two Variable plots

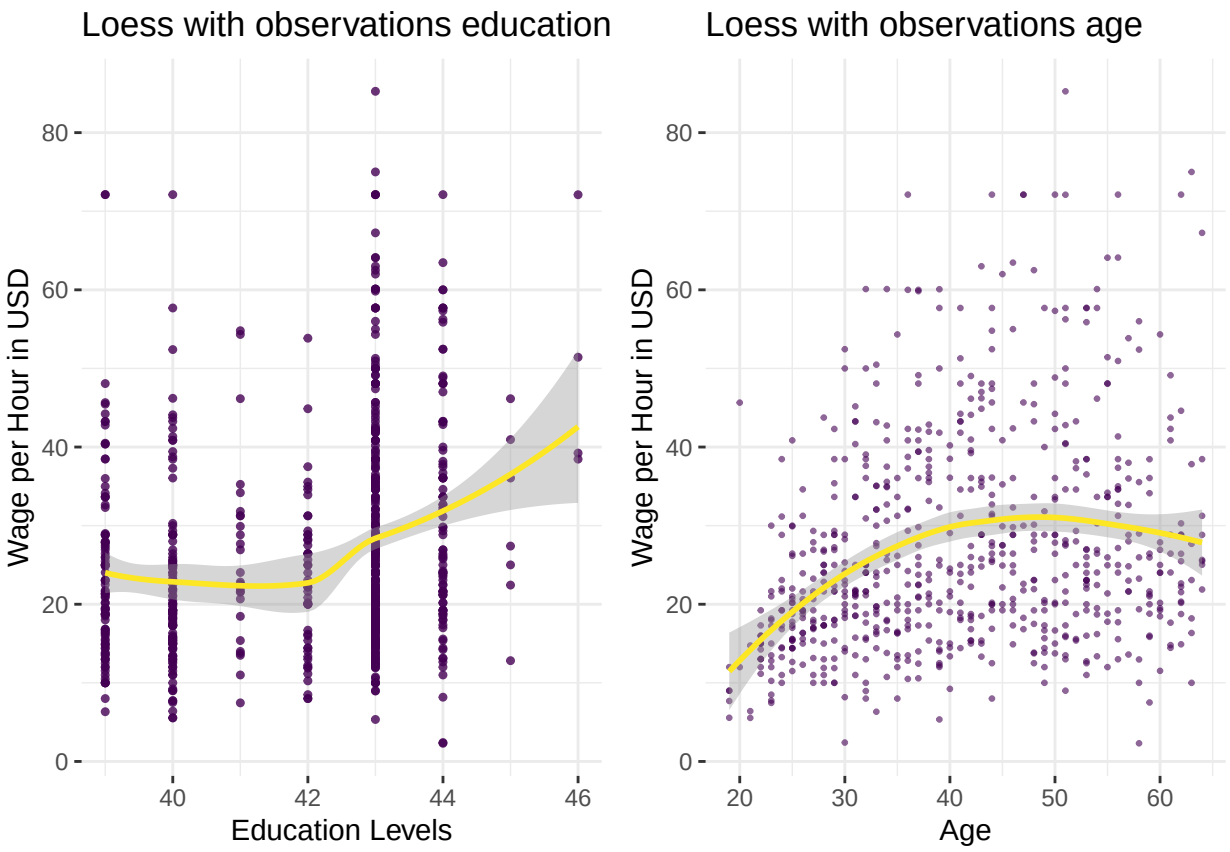








Loess


Loess with observations education
Wage per Hour in USD
0
20
40
60
80
40
42
44
46
Education Levels
Loess with observations age
Wage per Hour in USD
0
20
40
60
80
20
30
40
50
60
Age