Homework 2

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Exercise 1

1.1

-0.1788512

1.2

```
                [,1]
intercept 22075.1066
age        -180.1765
```

1.3

standard formulas

```
  intercept         age
357.827521    6.968652
```

bootstrap

49 replications

```
        BT: est     BT: sd
[1,] 22102.6561 295.917678
[2,]  -180.5019   5.679335
```

499 replications

```
        BT: est     BT: sd
[1,] 22066.0043 305.614962
[2,]  -180.0364   5.364861
```

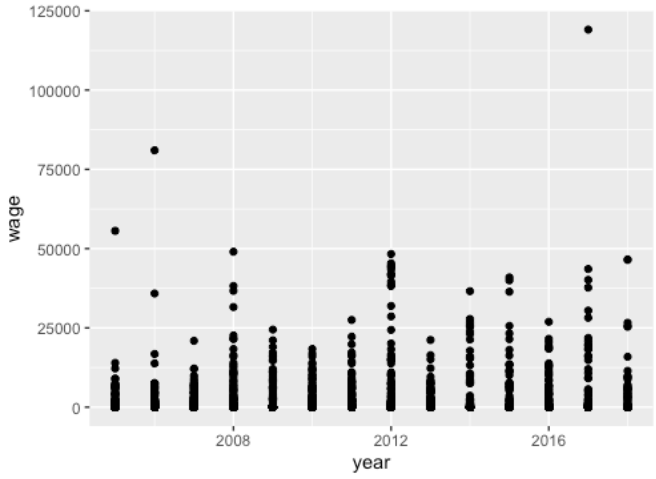
Exercise 2

2.1

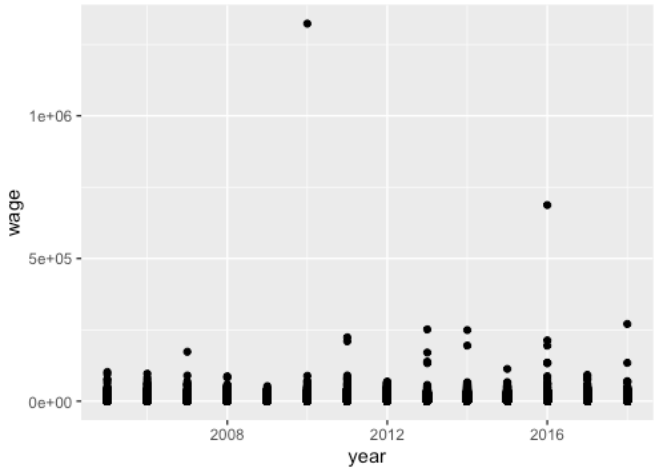
Created in programming

2.2

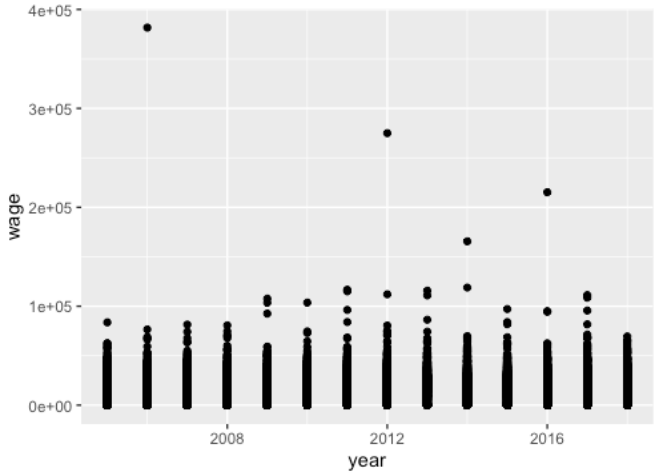
0-18:



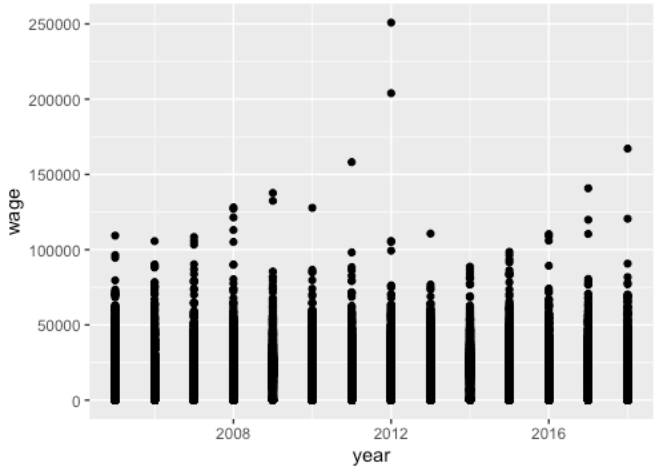
18-25:



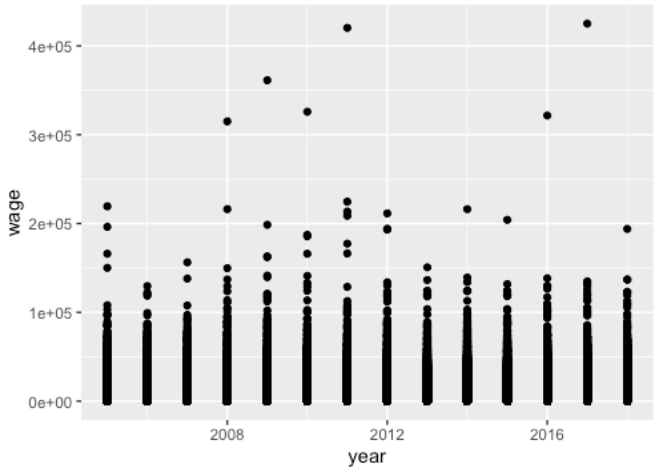
26-30:



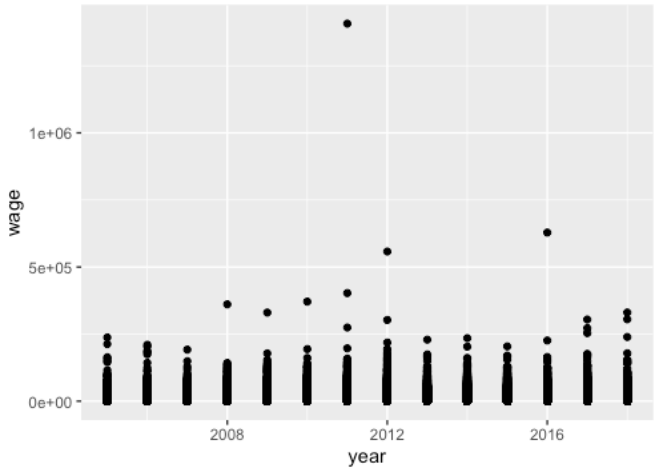
31-35:



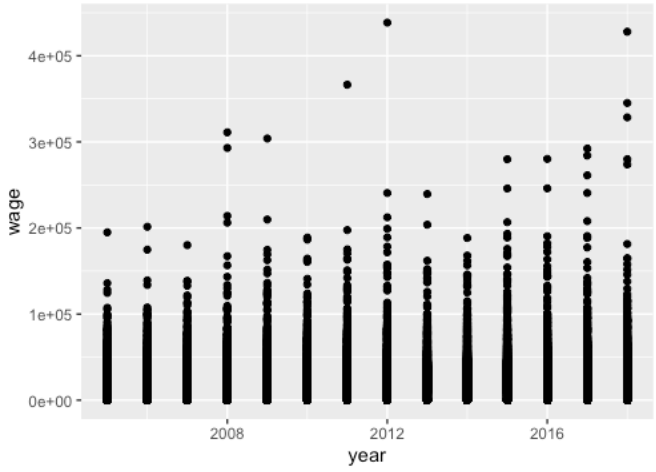
36-40:



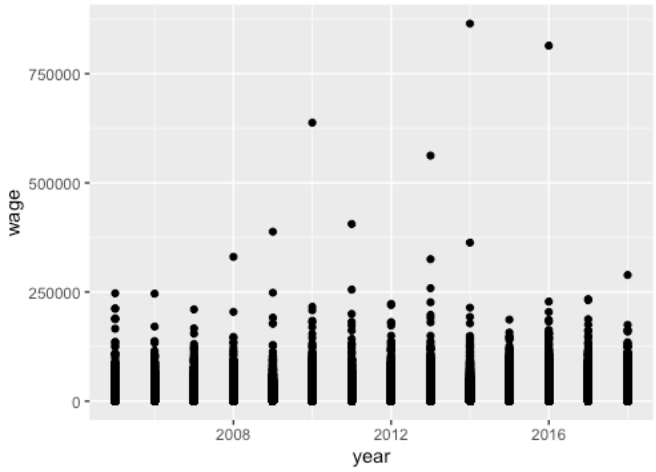
41-45:



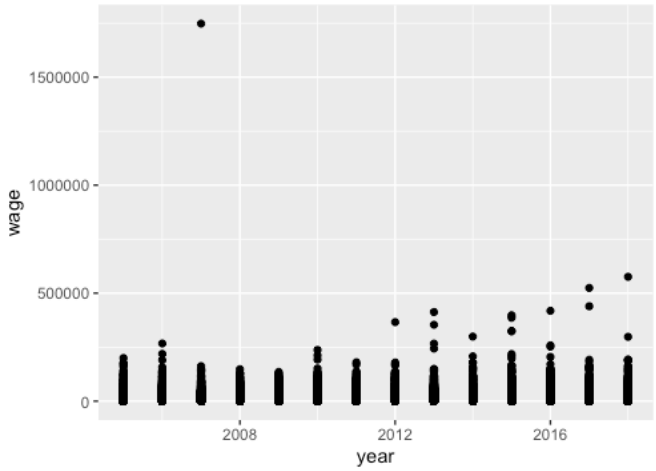
46-50:



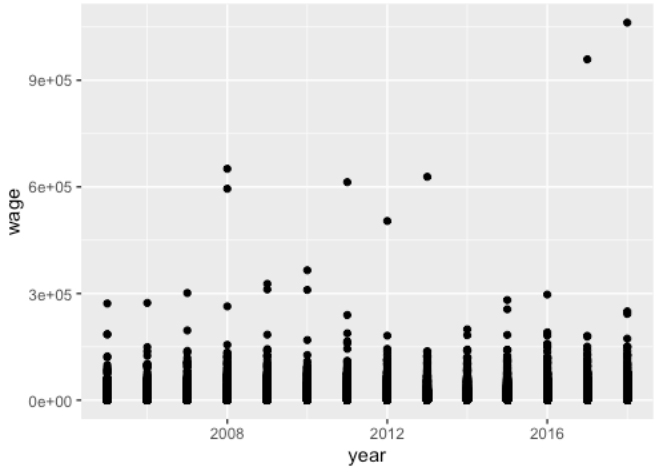
51-55:



56-60:



60+:



2.3

Excluding time fixed effects:

```
                [,1]
intercept 22075.1066
age        -180.1765
```

Including time fixed effects:

```
                wage
intercept1 22559.2993
age         -182.4896
```

The estimated coefficients decreases.

Exercise 3

3.1

Excluded in programming

3.2

3.3

```
Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.4654  -0.5284   0.2938   0.7033   2.5822

Coefficients:
             Estimate Std. Error z value Pr(>|z|)
(Intercept)  3.8291873  0.0505722   75.72   <2e-16 ***
age         -0.0678642  0.0009246  -73.40   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

3.4

We cannot estimate including wages as the determinant of the labor market, because it is omitted with the employment status. Once individuals get employed, he will receive wage which is not a determinant on employment status.

Exercise 4

Probit:

```
Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.3309  -0.6057   0.3056   0.7375   2.8148

Coefficients:
             Estimate Std. Error  z value Pr(>|z|)
(Intercept)  3.572379   0.018300  195.213   <2e-16 ***
age         -0.063590   0.000258 -246.455   <2e-16 ***
year2006     0.008744   0.017372    0.503   0.6147
year2007     0.036271   0.017174    2.112   0.0347 *
year2008     0.042294   0.017208    2.458   0.0140 *
year2009    -0.008325   0.017115   -0.486   0.6267
year2010    -0.002783   0.016909   -0.165   0.8693
year2011     0.024255   0.016801    1.444   0.1488
year2012     0.010830   0.016567    0.654   0.5133
year2013    -0.017260   0.016829   -1.026   0.3051
year2014     0.012913   0.016741    0.771   0.4405
year2015     0.001498   0.016716    0.090   0.9286
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Logit:

```
Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.2421  -0.5466   0.2595   0.6449   2.8174

Coefficients:
             Estimate Std. Error  z value Pr(>|z|)
(Intercept)  7.030702   0.037402  187.975  < 2e-16 ***
age         -0.124143   0.000554 -224.098  < 2e-16 ***
year2006     0.020509   0.031865    0.644  0.51983
year2007     0.061578   0.031485    1.956  0.05049 .
year2008     0.081826   0.031555    2.593  0.00951 **
year2009     0.005498   0.031364    0.175  0.86085
year2010     0.014255   0.030945    0.461  0.64505
year2011     0.068384   0.030746    2.224  0.02614 *
year2012     0.055240   0.030322    1.822  0.06848 .
year2013     0.012652   0.030801    0.411  0.68125
year2014     0.068207   0.030611    2.228  0.02587 *
year2015     0.055309   0.030554    1.810  0.07026 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Linear:

```
Residuals:
     Min       1Q   Median       3Q      Max
-1.27519 -0.23173  0.02784  0.28419  1.09432

Coefficients:
              Estimate Std. Error  t value Pr(>|t|)
(Intercept)  1.5446069  0.0038082  405.599   <2e-16 ***
age         -0.0184661  0.0000484 -381.532   <2e-16 ***
year2006     0.0021767  0.0041665    0.522   0.6014
year2007     0.0065161  0.0041151    1.583   0.1133
year2008     0.0075729  0.0041161    1.840   0.0658 .
year2009    -0.0017817  0.0041056   -0.434   0.6643
year2010    -0.0008924  0.0040617   -0.220   0.8261
year2011     0.0053247  0.0040339    1.320   0.1868
year2012     0.0035873  0.0039811    0.901   0.3675
year2013    -0.0022910  0.0040519   -0.565   0.5718
year2014     0.0045557  0.0040345    1.129   0.2588
year2015     0.0023945  0.0040345    0.594   0.5528
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Exercise 5

Probit:

```
     Margin          se
1 0.6337799 0.001339341
```

Logit:

```
     Margin          se
1 0.6783121 0.001470586
```