

regressions 2

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```
library(dplyr)

## Warning: package 'dplyr' was built under R version 3.4.3
##
## Attaching package: 'dplyr'
## The following objects are masked from 'package:stats':
##   filter, lag
## The following objects are masked from 'package:base':
##   intersect, setdiff, setequal, union
library(sampleSelection)

## Warning: package 'sampleSelection' was built under R version 3.4.4
## Loading required package: maxLik
## Warning: package 'maxLik' was built under R version 3.4.4
## Loading required package: miscTools
## Warning: package 'miscTools' was built under R version 3.4.4
##
## Please cite the 'maxLik' package as:
## Henningsen, Arne and Toomet, Ott (2011). maxLik: A package for maximum likelihood estimation in R. Co
## If you have questions, suggestions, or comments regarding the 'maxLik' package, please use a forum o
## https://r-forge.r-project.org/projects/maxlik/
library(ggplot2)

## Warning: package 'ggplot2' was built under R version 3.4.3
library(plm)

## Warning: package 'plm' was built under R version 3.4.4
## Loading required package: Formula
##
## Attaching package: 'plm'
## The following objects are masked from 'package:dplyr':
##   between, lag, lead
library(tidyr)

## Warning: package 'tidyr' was built under R version 3.4.3
```

```

library(scales)

## Warning: package 'scales' was built under R version 3.4.3
library(stringr)

## Warning: package 'stringr' was built under R version 3.4.3
library(grDevices)
library(qwraps2)

## Warning: package 'qwraps2' was built under R version 3.4.4
library(stargazer)

## Warning: package 'stargazer' was built under R version 3.4.3
##
## Please cite as:
## Hlavac, Marek (2018). stargazer: Well-Formatted Regression and Summary Statistics Tables.
## R package version 5.2.1. https://CRAN.R-project.org/package=stargazer
library(Cairo)

mainfont <- "Garamond"
CairoFonts(regular = paste(mainfont,"style=Regular",sep=":"),  

           bold = paste(mainfont,"style=Bold",sep=":"),  

           italic = paste(mainfont,"style=Italic",sep=":"),  

           bolditalic = paste(mainfont,"style=Bold Italic,BoldItalic",sep=":"))

## Warning in CairoFonts(regular = paste(mainfont, "style=Regular", sep =  

## ":"), : CairoFonts() has no effect on Windows. Please use par(family="...")  

## to specify the desired font - see ?par.

pdf <- CairoPDF
png <- CairoPNG

rm(list=ls())

#load data
clean <- read.csv("C:/Users/cheno/Desktop/IFLS_all/DATA/R datasets/IFLS_4_5_clean.csv")

#region should be factor
clean$sc_code <- as.factor(clean$sc_code)

#jl_year should be factor
clean$jl_year_fired <- as.factor(clean$jl_year_fired)

#consider wage rather than monthly income
clean$wage_rate <- (clean$wage_prof/4)/clean$tk22a
clean$wage_rate_H <- (clean$wage_prof_H/4)/clean$tk22a_H

data1 <- clean %>%
  select(employed2, job_cat_H, jl_2, age, age_sq, d106, dependents_young, dependents_old, wor
  drop_na()

log1 <- glm(employed2 ~ ., data = data1)
summary(log1)

```

```

##
## Call:
## glm(formula = employed2 ~ ., data = data1)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -1.7130  -0.3676  -0.1467   0.4337   1.3339
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                -7.034e-01  4.895e-02 -14.371 < 2e-16
## job_cat_H2:self-employed   -1.638e-01  1.115e-02 -14.689 < 2e-16
## job_cat_H3:informal business owner -1.728e-01  2.251e-02  -7.676 1.72e-14
## job_cat_H4:government      -2.562e-02  1.600e-02  -1.601 0.109283
## job_cat_H5:private          -1.413e-02  1.173e-02  -1.205 0.228350
## job_cat_H6:casual           -2.561e-02  1.402e-02  -1.826 0.067837
## jl_2                         8.711e-02  1.974e-02   4.412 1.03e-05
## age                          3.988e-02  1.792e-03  22.256 < 2e-16
## age_sq                        -4.619e-04 2.136e-05 -21.625 < 2e-16
## d1062:elementary             3.909e-02  1.506e-02   2.595 0.009473
## d1063:juniorH                4.831e-02  1.648e-02   2.931 0.003385
## d1064:seniorH                 7.424e-02  1.650e-02   4.500 6.82e-06
## d1065:higher                  3.154e-01  1.847e-02  17.074 < 2e-16
## dependents_young              -7.135e-02  5.876e-03 -12.142 < 2e-16
## dependents_old                 -1.441e-03  4.539e-03  -0.317 0.750932
## working_dependents            2.810e-02  2.924e-02   0.961 0.336580
## other_HHM                      -5.837e-02  1.772e-03 -32.942 < 2e-16
## other_working                  1.224e-01  3.022e-03  40.492 < 2e-16
## sc_code13                      5.978e-02  1.929e-02   3.099 0.001943
## sc_code14                      -6.553e-02  3.849e-02  -1.703 0.088629
## sc_code15                      -1.930e-01  1.348e-01  -1.432 0.152291
## sc_code16                      -7.275e-02  1.887e-02  -3.855 0.000116
## sc_code18                      -5.510e-02  1.919e-02  -2.870 0.004104
## sc_code19                      -2.491e-02  4.098e-02  -0.608 0.543366
## sc_code21                      6.103e-02  8.361e-02   0.730 0.465415
## sc_code31                      2.690e-02  1.762e-02   1.526 0.126912
## sc_code32                      7.448e-03  1.499e-02   0.497 0.619394
## sc_code33                      8.524e-02  1.541e-02   5.533 3.20e-08
## sc_code34                      8.777e-02  1.874e-02   4.684 2.83e-06
## sc_code35                      4.012e-02  1.507e-02   2.663 0.007754
## sc_code36                      5.921e-02  2.066e-02   2.865 0.004169
## sc_code51                      1.545e-01  1.876e-02   8.233 < 2e-16
## sc_code52                      -8.843e-03  1.748e-02  -0.506 0.612984
## sc_code61                      4.097e-01  3.150e-01   1.301 0.193435
## sc_code62                      7.152e-02  8.996e-02   0.795 0.426585
## sc_code63                      -4.416e-02  1.909e-02  -2.313 0.020739
## sc_code64                      1.033e-01  6.551e-02   1.576 0.114965
## sc_code71                      -1.496e-02  4.452e-01  -0.034 0.973189
## sc_code73                      7.306e-03  1.919e-02   0.381 0.703472
## sc_code76                      3.079e-02  7.235e-02   0.426 0.670425
## sc_code91                      4.650e-01  4.453e-01   1.044 0.296377
## wave                          6.024e-02  6.525e-03   9.231 < 2e-16
##
## (Intercept) ***
```

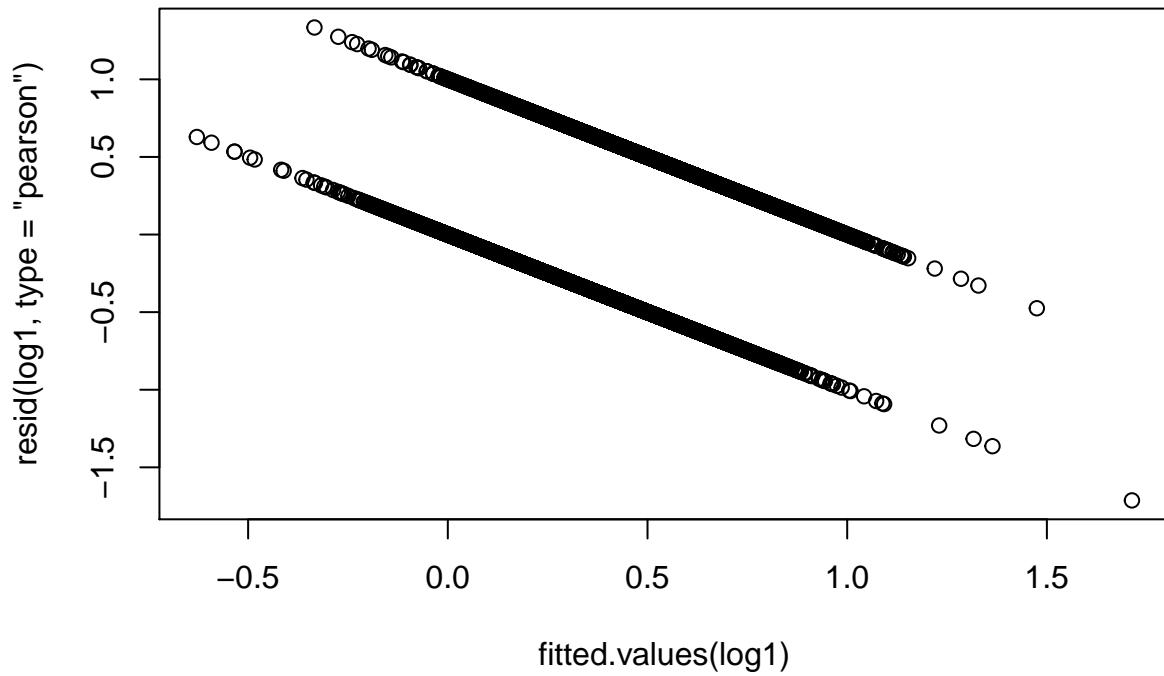
```

## job_cat_H2:self-employed      ***
## job_cat_H3:informal business owner ***
## job_cat_H4:government
## job_cat_H5:private
## job_cat_H6:casual
## jl_2                           ***
## age                            ***
## age_sq                          ***
## dl062:elementary               **
## dl063:juniorH                 **
## dl064:seniorH                 ***
## dl065:higher                  ***
## dependents_young               ***
## dependents_old                ***
## working_dependents            ***
## other_HHM                      ***
## other_working                  ***
## sc_code13                      **
## sc_code14                      .
## sc_code15
## sc_code16                      ***
## sc_code18                      **
## sc_code19
## sc_code21
## sc_code31
## sc_code32
## sc_code33                      ***
## sc_code34                      ***
## sc_code35                      **
## sc_code36                      **
## sc_code51                      ***
## sc_code52
## sc_code61
## sc_code62
## sc_code63                      *
## sc_code64
## sc_code71
## sc_code73
## sc_code76
## sc_code91
## wave                           ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for gaussian family taken to be 0.1979802)
##
## Null deviance: 4749.3  on 19565  degrees of freedom
## Residual deviance: 3865.4  on 19524  degrees of freedom
## AIC: 23881
##
## Number of Fisher Scoring iterations: 2
options(scipen = 999)
wave1<- as.character(round(summary(log1)$coefficients["wave", 4], 18))

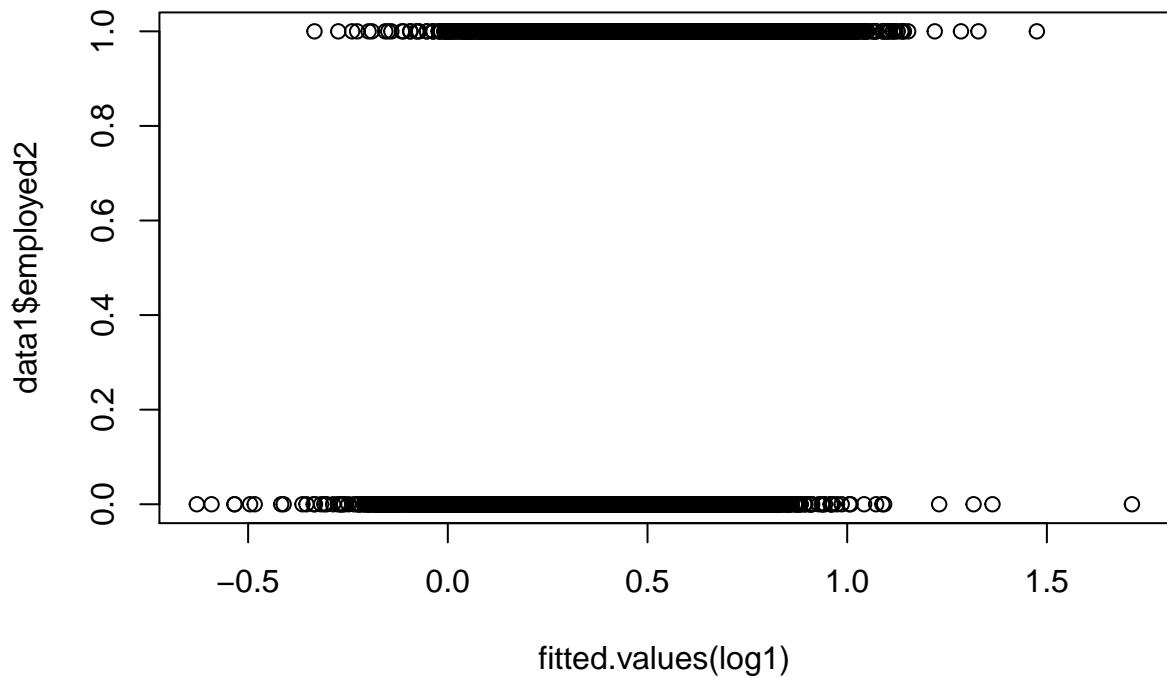
```

```
options(scipen = 0)

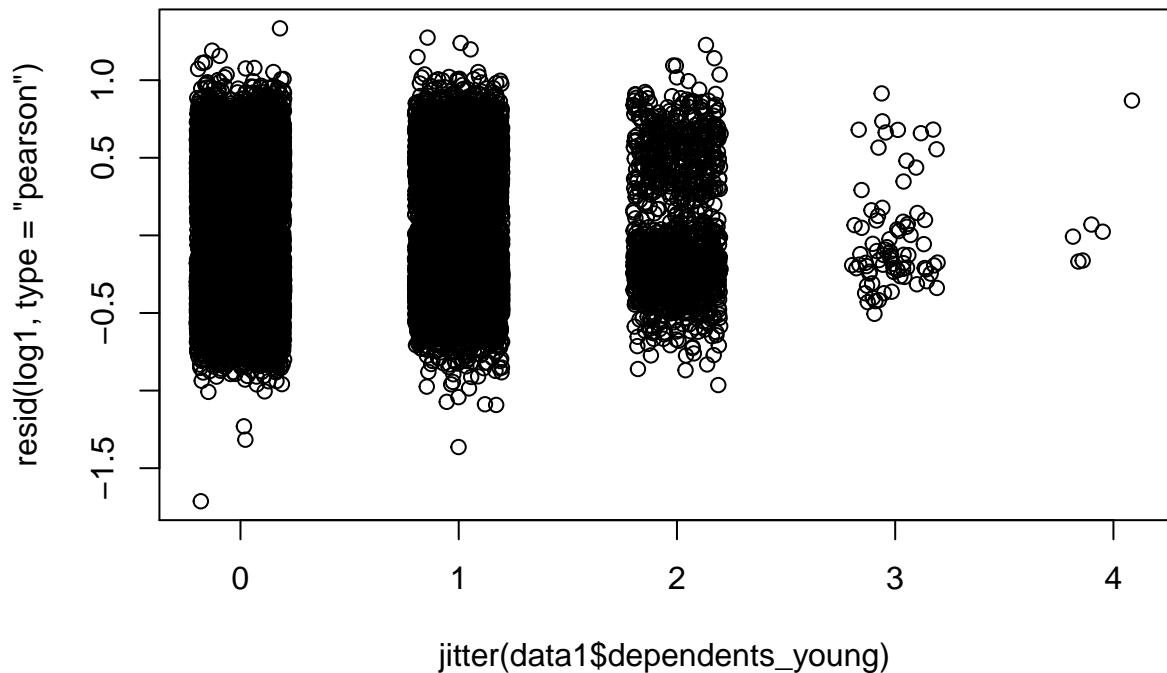
#test for normality, homoskedasticity
plot(resid(log1, type = "pearson")~fitted.values(log1))
```



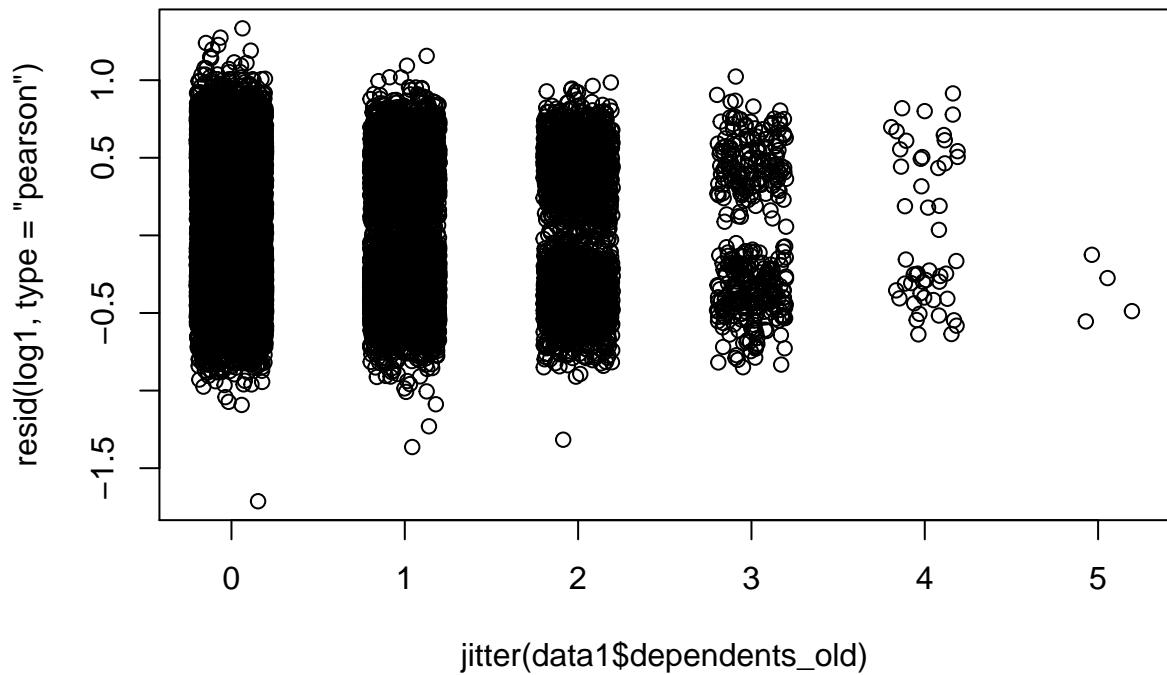
```
plot(data1$employed2~fitted.values(log1))
```



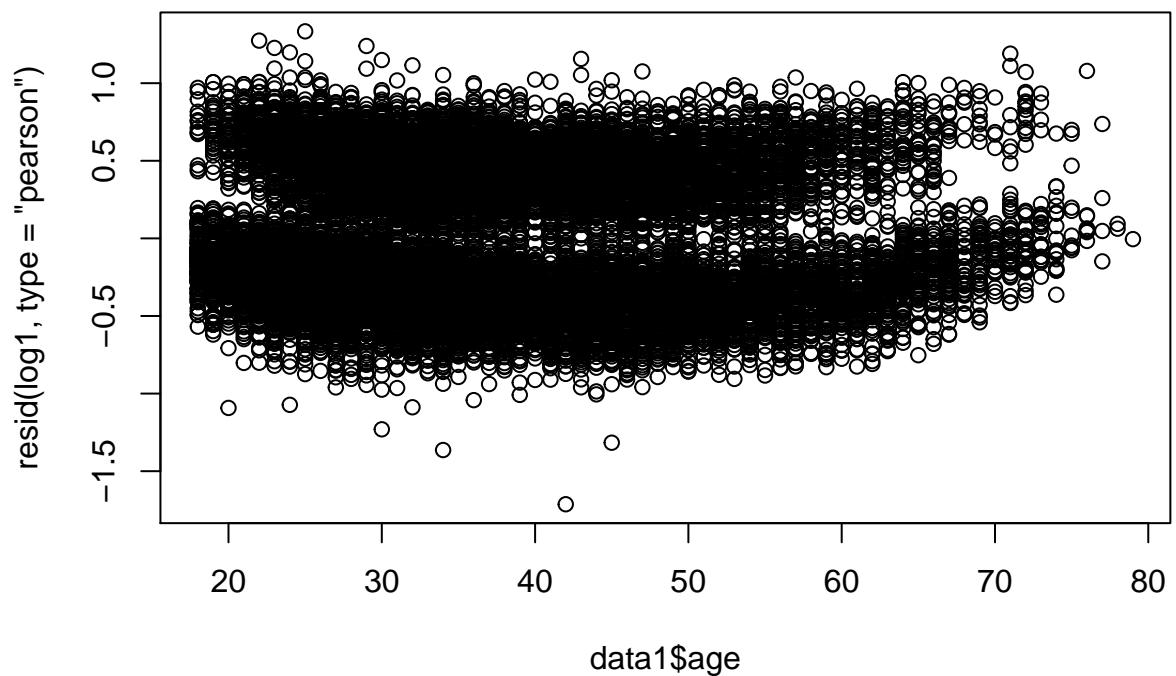
```
plot(resid(log1, type = "pearson") ~ jitter(data1$dependents_young))
```

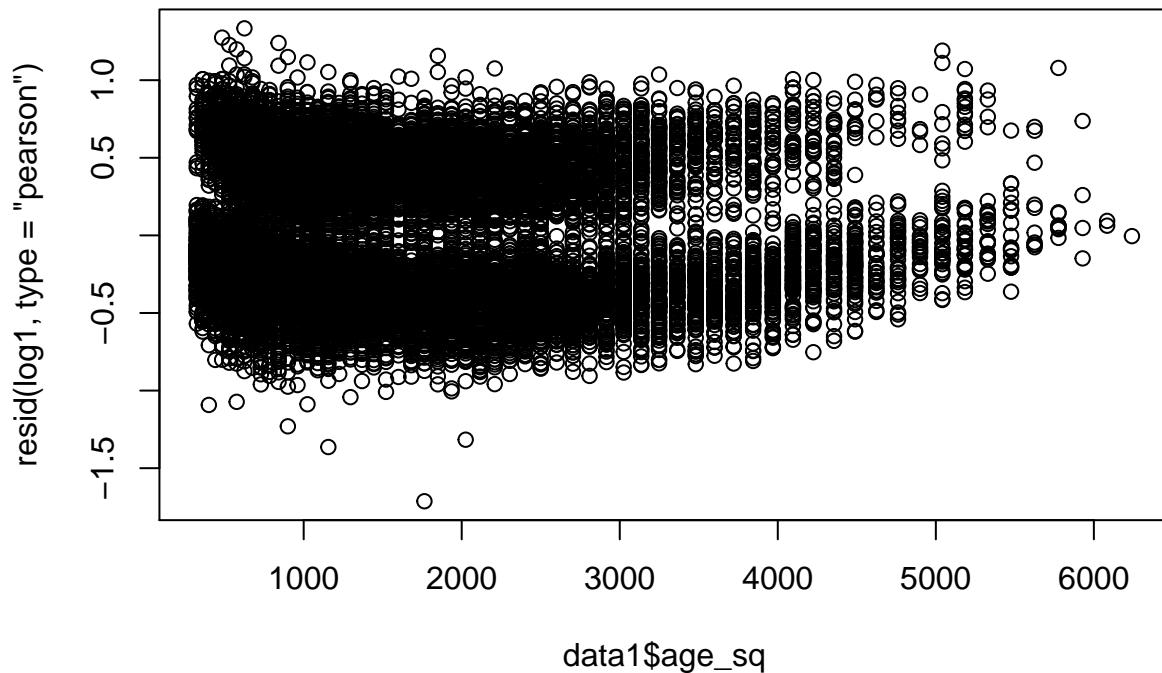


```
plot(resid(log1, type = "pearson") ~ jitter(data1$dependents_old))
```

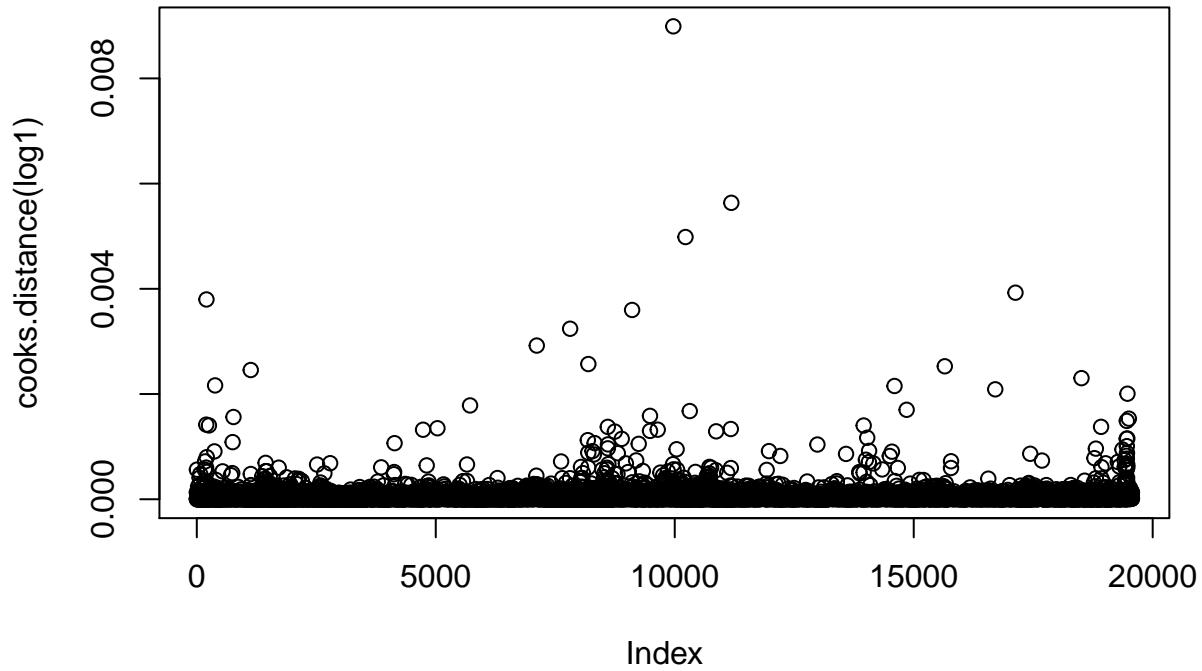


```
plot(resid(log1, type = "pearson") ~ (data1$age + data1$age_sq))
```





```
#look for outliers  
plot(cooks.distance(log1))  
abline(h=1)
```



```

coeff_jl_2 <- exp(log1$coefficients["jl_2"])-1

coeff_dependents_young <- exp(log1$coefficients["dependents_young"]) - 1

log1b <- glm(employed2 ~ . - sc_code,  data = data1)
summary(log1b)

## 
## Call:
## glm(formula = employed2 ~ . - sc_code, data = data1)
## 
## Deviance Residuals:
##      Min        1Q    Median        3Q       Max 
## -1.8406  -0.3723  -0.1565   0.4412   1.2768 
## 
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)    
## (Intercept)                 -6.892e-01  4.705e-02 -14.648 < 2e-16  
## job_cat_H2:self-employed    -1.699e-01  1.115e-02 -15.246 < 2e-16  
## job_cat_H3:informal business owner -1.633e-01  2.262e-02  -7.219 5.41e-13 
## job_cat_H4:government       -2.642e-02  1.604e-02  -1.647  0.0996  
## job_cat_H5:private          -9.297e-03  1.177e-02  -0.790  0.4298  
## job_cat_H6:casual           -1.993e-02  1.404e-02  -1.419  0.1558  
## jl_2                         8.428e-02  1.985e-02   4.246 2.18e-05  
## age                          4.118e-02  1.799e-03  22.892 < 2e-16  

```

```

## age_sq          -4.732e-04  2.146e-05 -22.050  < 2e-16
## d1062:elementary   2.956e-02  1.502e-02   1.968  0.0491
## d1063:juniorH    4.014e-02  1.641e-02   2.446  0.0145
## d1064:seniorH    6.914e-02  1.629e-02   4.244  2.21e-05
## d1065:higher     3.124e-01  1.834e-02  17.038  < 2e-16
## dependents_young -7.396e-02  5.866e-03 -12.607  < 2e-16
## dependents_old   -4.104e-03  4.540e-03  -0.904  0.3660
## working_dependents 3.238e-02  2.941e-02   1.101  0.2708
## other_HHM        -6.041e-02  1.767e-03 -34.194  < 2e-16
## other_working    1.260e-01  3.017e-03  41.758  < 2e-16
## wave             5.828e-02  6.546e-03   8.902  < 2e-16
##
## (Intercept)      ***
## job_cat_H2:self-employed ***
## job_cat_H3:informal business owner ***
## job_cat_H4:government .
## job_cat_H5:private
## job_cat_H6:casual
## jl_2              ***
## age               ***
## age_sq            ***
## d1062:elementary   *
## d1063:juniorH    *
## d1064:seniorH    ***
## d1065:higher     ***
## dependents_young ***
## dependents_old   ***
## working_dependents
## other_HHM         ***
## other_working    ***
## wave              ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for gaussian family taken to be 0.2006291)
##
## Null deviance: 4749.3  on 19565  degrees of freedom
## Residual deviance: 3921.7  on 19547  degrees of freedom
## AIC: 24118
##
## Number of Fisher Scoring iterations: 2
anova1 <- anova(log1b, log1, test = "LRT")
anova1

## Analysis of Deviance Table
##
## Model 1: employed2 ~ (job_cat_H + jl_2 + age + age_sq + d106 + dependents_young +
##                        dependents_old + working_dependents + other_HHM + other_working +
##                        sc_code + wave) - sc_code
## Model 2: employed2 ~ job_cat_H + jl_2 + age + age_sq + d106 + dependents_young +
##                        dependents_old + working_dependents + other_HHM + other_working +
##                        sc_code + wave
##   Resid. Df Resid. Dev Df Deviance Pr(>Chi)
## 1      19547    3921.7

```

```

## 2      19524    3865.4 23    56.332 < 2.2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

data2 <- clean %>%
  select(employed2, job_cat_H, jl_year_fired, age, age_sq, d106, dependents_young, dependents_old,
  drop_na())

log2 <- glm(employed2 ~ ., data = data2)
summary(log2)

## 
## Call:
## glm(formula = employed2 ~ ., data = data2)
## 
## Deviance Residuals:
##      Min        1Q     Median        3Q       Max 
## -1.7132   -0.3671   -0.1469    0.4335    1.3321 
## 
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)    
## (Intercept)                -6.997e-01  4.895e-02 -14.295 < 2e-16  
## job_cat_H2:self-employed   -1.640e-01  1.115e-02 -14.705 < 2e-16  
## job_cat_H3:informal business owner -1.735e-01  2.251e-02 -7.706 1.36e-14 
## job_cat_H4:government      -2.614e-02  1.600e-02 -1.634 0.102321 
## job_cat_H5:private         -1.320e-02  1.172e-02 -1.126 0.260278 
## job_cat_H6:casual          -2.559e-02  1.403e-02 -1.825 0.068081 
## jl_year_fired1              5.441e-02  4.343e-02  1.253 0.210341 
## jl_year_fired2              1.108e-01  4.997e-02  2.218 0.026574 
## jl_year_fired3              1.407e-01  5.815e-02  2.419 0.015586 
## jl_year_fired4              1.011e-01  7.053e-02  1.433 0.151851 
## jl_year_fired5              1.307e-02  8.007e-02  0.163 0.870303 
## age                         3.990e-02  1.792e-03 22.261 < 2e-16  
## age_sq                      -4.623e-04 2.137e-05 -21.635 < 2e-16  
## d1062:elementary            3.906e-02  1.507e-02  2.592 0.009538 
## d1063:juniorH               4.848e-02  1.649e-02  2.941 0.003278 
## d1064:seniorH               7.418e-02  1.650e-02  4.496 6.98e-06 
## d1065:higher                3.151e-01  1.848e-02 17.054 < 2e-16  
## dependents_young             -7.116e-02 5.879e-03 -12.104 < 2e-16  
## dependents_old                -1.508e-03 4.540e-03 -0.332 0.739733 
## working_dependents           2.822e-02  2.925e-02  0.965 0.334672 
## other_HHM                   -5.837e-02 1.773e-03 -32.932 < 2e-16  
## other_working                 1.224e-01  3.023e-03  40.485 < 2e-16  
## sc_code13                    5.977e-02  1.930e-02  3.098 0.001952 
## sc_code14                    -6.492e-02 3.850e-02 -1.686 0.091770 
## sc_code15                    -1.936e-01 1.349e-01 -1.436 0.151075 
## sc_code16                    -7.254e-02 1.888e-02 -3.843 0.000122 
## sc_code18                    -5.518e-02 1.920e-02 -2.874 0.004063 
## sc_code19                    -2.448e-02 4.100e-02 -0.597 0.550448 
## sc_code21                    5.962e-02  8.364e-02  0.713 0.475959 
## sc_code31                    2.794e-02  1.763e-02  1.585 0.112996 
## sc_code32                    8.054e-03  1.500e-02  0.537 0.591288 
## sc_code33                    8.586e-02  1.541e-02  5.571 2.57e-08 
## sc_code34                    8.883e-02  1.874e-02  4.740 2.16e-06 
## sc_code35                    4.062e-02  1.507e-02  2.695 0.007036

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## sc_code36      5.931e-02  2.067e-02  2.869  0.004118
## sc_code51      1.547e-01  1.877e-02  8.246  < 2e-16
## sc_code52     -8.756e-03  1.749e-02 -0.501  0.616593
## sc_code61      4.088e-01  3.151e-01  1.297  0.194526
## sc_code62      7.446e-02  8.998e-02  0.827  0.407976
## sc_code63     -4.349e-02  1.910e-02 -2.277  0.022785
## sc_code64      1.038e-01  6.555e-02  1.583  0.113389
## sc_code71     -1.569e-02  4.453e-01 -0.035  0.971895
## sc_code73      7.813e-03  1.920e-02  0.407  0.684083
## sc_code76      3.019e-02  7.237e-02  0.417  0.676584
## sc_code91      4.650e-01  4.454e-01  1.044  0.296425
## wave          5.945e-02  6.523e-03  9.115  < 2e-16
##
## (Intercept) ***
## job_cat_H2:self-employed ***
## job_cat_H3:informal business owner ***
## job_cat_H4:government
## job_cat_H5:private
## job_cat_H6:casual .
## jl_year_fired1
## jl_year_fired2 *
## jl_year_fired3 *
## jl_year_fired4
## jl_year_fired5
## age ***
## age_sq ***
## dl062:elementary **
## dl063:juniorH **
## dl064:seniorH ***
## dl065:higher ***
## dependents_young ***
## dependents_old
## working_dependents
## other_HHM ***
## other_working ***
## sc_code13 **
## sc_code14 .
## sc_code15
## sc_code16 ***
## sc_code18 **
## sc_code19
## sc_code21
## sc_code31
## sc_code32
## sc_code33 ***
## sc_code34 ***
## sc_code35 **
## sc_code36 **
## sc_code51 ***
## sc_code52
## sc_code61
## sc_code62
## sc_code63 *
## sc_code64

```

```

## sc_code71
## sc_code73
## sc_code76
## sc_code91
## wave
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for gaussian family taken to be 0.1980742)
##
## Null deviance: 4749.3  on 19565  degrees of freedom
## Residual deviance: 3866.4  on 19520  degrees of freedom
## AIC: 23894
##
## Number of Fisher Scoring iterations: 2
log2b <- glm(employed2 ~ .-sc_code,  data = data2)
summary(log2b)

##
## Call:
## glm(formula = employed2 ~ . - sc_code, data = data2)
##
## Deviance Residuals:
##      Min        1Q    Median        3Q        Max
## -1.8409   -0.3725   -0.1569    0.4416    1.2762
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                -6.851e-01  4.705e-02 -14.560 < 2e-16
## job_cat_H2:self-employed   -1.702e-01  1.115e-02 -15.267 < 2e-16
## job_cat_H3:informal business owner -1.641e-01  2.263e-02 -7.251 4.29e-13
## job_cat_H4:government     -2.702e-02  1.605e-02 -1.684  0.0922
## job_cat_H5:private         -8.339e-03  1.177e-02 -0.708  0.4787
## job_cat_H6:casual          -1.996e-02  1.405e-02 -1.421  0.1553
## jl_year_fired1              5.237e-02  4.370e-02  1.199  0.2307
## jl_year_fired2              1.100e-01  5.027e-02  2.189  0.0286
## jl_year_fired3              1.250e-01  5.850e-02  2.136  0.0327
## jl_year_fired4              8.546e-02  7.096e-02  1.204  0.2285
## jl_year_fired5              6.432e-03  8.056e-02  0.080  0.9364
## age                         4.121e-02  1.799e-03 22.902 < 2e-16
## age_sq                      -4.736e-04  2.147e-05 -22.064 < 2e-16
## d1062:elementary            2.956e-02  1.502e-02  1.968  0.0491
## d1063:juniorH               4.040e-02  1.642e-02  2.461  0.0139
## d1064:seniorH               6.921e-02  1.630e-02  4.247 2.18e-05
## d1065:higher                3.122e-01  1.834e-02 17.024 < 2e-16
## dependents_young             -7.381e-02  5.869e-03 -12.577 < 2e-16
## dependents_old               -4.192e-03  4.541e-03 -0.923  0.3560
## working_dependents          3.238e-02  2.942e-02  1.101  0.2710
## other_HHM                   -6.042e-02  1.767e-03 -34.187 < 2e-16
## other_working                1.260e-01  3.018e-03  41.750 < 2e-16
## wave                         5.745e-02  6.543e-03  8.781 < 2e-16
##
## (Intercept)                 ***
## job_cat_H2:self-employed   ***

```

```

## job_cat_H3:informal business owner ***
## job_cat_H4:government .
## job_cat_H5:private
## job_cat_H6:casual
## jl_year_fired1
## jl_year_fired2 *
## jl_year_fired3 *
## jl_year_fired4
## jl_year_fired5
## age ***
## age_sq ***
## d1062:elementary *
## d1063:juniorH *
## d1064:seniorH ***
## d1065:higher ***
## dependents_young ***
## dependents_old
## working_dependents
## other_HHM ***
## other_working ***
## wave ***
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for gaussian family taken to be 0.2007313)
##
## Null deviance: 4749.3 on 19565 degrees of freedom
## Residual deviance: 3922.9 on 19543 degrees of freedom
## AIC: 24132
##
## Number of Fisher Scoring iterations: 2
anova2 <- anova(log2, log2b, test = "LRT")
anova2

## Analysis of Deviance Table
##
## Model 1: employed2 ~ job_cat_H + jl_year_fired + age + age_sq + d106 +
## dependents_young + dependents_old + working_dependents +
## other_HHM + other_working + sc_code + wave
## Model 2: employed2 ~ (job_cat_H + jl_year_fired + age + age_sq + d106 +
## dependents_young + dependents_old + working_dependents +
## other_HHM + other_working + sc_code + wave) - sc_code
##   Resid. Df Resid. Dev Df Deviance Pr(>Chi)
## 1      19520    3866.4
## 2      19543    3922.9 -23   -56.484 < 2.2e-16 ***
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
coeff_jl_1 <- exp(log2$coefficients["jl_year_fired1"])-1
coeff_jl_2 <- exp(log2$coefficients["jl_year_fired2"])-1
coeff_jl_3 <- exp(log2$coefficients["jl_year_fired3"])-1
coeff_jl_4 <- exp(log2$coefficients["jl_year_fired4"])-1
coeff_jl_5 <- exp(log2$coefficients["jl_year_fired5"])-1

```

```

#confidence intervals

qt(.025, 12607)

## [1] -1.960152

se_jl_1 <- coef(summary(log2))[, "Std. Error"]["jl_year_fired1"]
se_jl_2 <- coef(summary(log2))[, "Std. Error"]["jl_year_fired2"]
se_jl_3 <- coef(summary(log2))[, "Std. Error"]["jl_year_fired3"]
se_jl_4 <- coef(summary(log2))[, "Std. Error"]["jl_year_fired4"]
se_jl_5 <- coef(summary(log2))[, "Std. Error"]["jl_year_fired5"]

#pred_y1 <- predict(log2, newdata = list(jl_year_fired = seq(1,5, len = 300)), type = "link", se.fit =

lower_jl_1 <- exp(coeff_jl_1 + qt(.025, 12607)*se_jl_1)-1
upper_jl_1 <- exp(coeff_jl_1 + qt(.975, 12607)*se_jl_1)-1
lower_jl_2 <- exp(coeff_jl_2 + qt(.025, 12607)*se_jl_2)-1
upper_jl_2 <- exp(coeff_jl_2 + qt(.975, 12607)*se_jl_2)-1
lower_jl_3 <- exp(coeff_jl_3 + qt(.025, 12607)*se_jl_3)-1
upper_jl_3 <- exp(coeff_jl_3 + qt(.975, 12607)*se_jl_3)-1
lower_jl_4 <- exp(coeff_jl_4 + qt(.025, 12607)*se_jl_4)-1
upper_jl_4 <- exp(coeff_jl_4 + qt(.975, 12607)*se_jl_4)-1
lower_jl_5 <- exp(coeff_jl_5 + qt(.025, 12607)*se_jl_5)-1
upper_jl_5 <- exp(coeff_jl_5 + qt(.975, 12607)*se_jl_5)-1

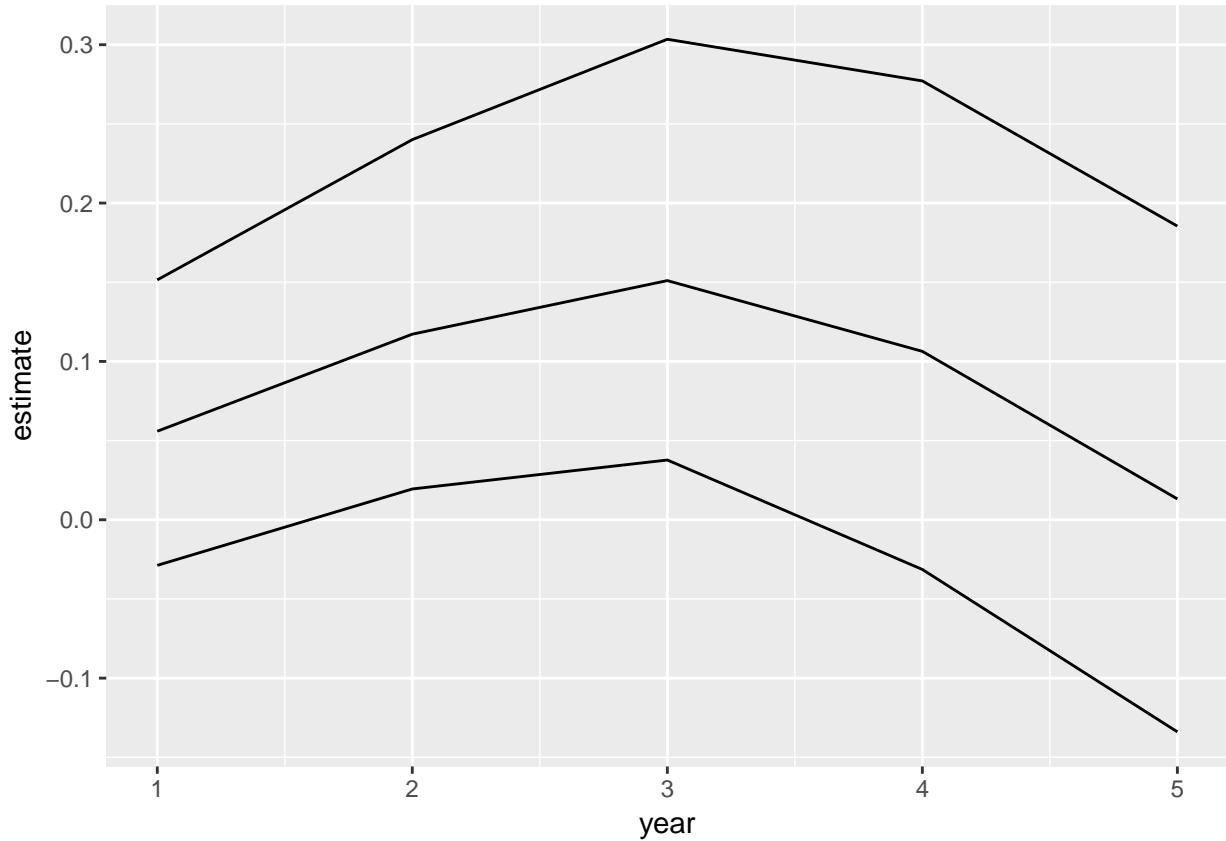
all_upper <- c(upper_jl_1, upper_jl_2, upper_jl_3, upper_jl_4, upper_jl_5)
all_lower <- c(lower_jl_1, lower_jl_2, lower_jl_3, lower_jl_4, lower_jl_5)
all_mid <- c(coeff_jl_1, coeff_jl_2, coeff_jl_3, coeff_jl_4, coeff_jl_5)
year <- 1:5

all_estimates <- data.frame(all_upper, all_lower, all_mid, year)

all_estimates <- all_estimates %>%
  gather(value = "estimate", key = "key", -year)

ggplot(all_estimates, aes(x = year, y = estimate, group = key)) +
  geom_line()

```



```

#geom_area()
#geom_density()

#hours not corrected for selection bias

data_hours <- clean %>%
  select( tk23a2y, jl_2, jl_year_fired, age, age_sq, job_cat, d106, dependents_young, depo
drop_na(- c(wage_prof, tk22a, job_cat, tk23a2y, wage_rate))

hours1 <- lm(tk22a ~ . - jl_year_fired -wage_rate, data = data_hours)
summary(hours1)

##
## Call:
## lm(formula = tk22a ~ . - jl_year_fired - wage_rate, data = data_hours)
##
## Residuals:
##    Min     1Q   Median     3Q    Max 
## -48.800 -15.871  -0.694  12.152  91.105 
## 
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)    
## (Intercept) 3.523e+01  4.551e+00  7.741 1.11e-14  
## tk23a2y     -3.265e-02  3.288e-02 -0.993 0.320733  
## jl_2        -1.395e-01  1.456e+00 -0.096 0.923646  

```

```

## age                         4.929e-01  1.752e-01  2.813  0.004926
## age_sq                      -8.133e-03 2.107e-03 -3.860  0.000114
## job_cat3:informal business owner 9.390e-01  1.948e+00  0.482  0.629730
## job_cat4:government          -7.298e+00  1.125e+00 -6.486  9.35e-11
## job_cat5:private              -4.990e+00  6.419e-01 -7.774  8.56e-15
## job_cat6:casual              -1.262e+01  9.410e-01 -13.407 < 2e-16
## d1062:elementary             3.679e+00  1.341e+00  2.743  0.006096
## d1063:juniorH                4.589e+00  1.459e+00  3.145  0.001665
## d1064:seniorH                4.005e+00  1.452e+00  2.759  0.005817
## d1065:higher                 -1.596e+00  1.573e+00 -1.014  0.310553
## dependents_young               -4.977e-01  5.126e-01 -0.971  0.331561
## dependents_old                -3.370e-01  3.648e-01 -0.924  0.355564
## working_dependents            5.428e+00  2.229e+00  2.436  0.014893
## other_HHM                     -3.298e-01  1.571e-01 -2.100  0.035777
## other_working                  1.043e+00  2.774e-01  3.759  0.000172
## sc_code13                     1.238e+00  1.563e+00  0.792  0.428376
## sc_code14                     6.280e+00  3.687e+00  1.703  0.088546
## sc_code15                     3.309e+00  1.343e+01  0.246  0.805364
## sc_code16                     -5.872e+00  1.789e+00 -3.283  0.001032
## sc_code18                     2.777e+00  1.756e+00  1.581  0.113879
## sc_code19                     5.791e+00  3.513e+00  1.648  0.099364
## sc_code21                     6.633e+00  5.901e+00  1.124  0.260980
## sc_code31                     5.162e+00  1.459e+00  3.537  0.000407
## sc_code32                     1.488e+00  1.273e+00  1.168  0.242715
## sc_code33                     1.527e+00  1.262e+00  1.210  0.226417
## sc_code34                     1.803e+00  1.465e+00  1.231  0.218439
## sc_code35                     3.531e+00  1.268e+00  2.784  0.005381
## sc_code36                     4.235e+00  1.719e+00  2.463  0.013783
## sc_code51                     3.217e-01  1.433e+00  0.225  0.822334
## sc_code52                     3.209e+00  1.514e+00  2.119  0.034086
## sc_code61                     1.894e+00  1.644e+01  0.115  0.908268
## sc_code62                     2.984e+00  6.528e+00  0.457  0.647601
## sc_code63                     -3.857e+00  1.686e+00 -2.288  0.022149
## sc_code64                     4.028e+00  4.761e+00  0.846  0.397578
## sc_code73                     4.394e-01  1.680e+00  0.262  0.793703
## sc_code76                     -2.897e-01  6.078e+00 -0.048  0.961976
## sc_code91                     2.394e+01  2.321e+01  1.031  0.302519
## wave                          -3.848e-01  5.431e-01 -0.708  0.478671
## wage_prof                     -1.499e-08  1.984e-08 -0.755  0.449983
##
## (Intercept)                   ***
## tk23a2y
## jl_2
## age                         **
## age_sq                       ***
## job_cat3:informal business owner ***
## job_cat4:government          ***
## job_cat5:private              ***
## job_cat6:casual              ***
## d1062:elementary             **
## d1063:juniorH                **
## d1064:seniorH                **
## d1065:higher                 **
## dependents_young

```

```

## dependents_old
## working_dependents          *
## other_HHM                   *
## other_working                ***
## sc_code13
## sc_code14                   .
## sc_code15
## sc_code16                   **
## sc_code18
## sc_code19                   .
## sc_code21
## sc_code31                   ***
## sc_code32
## sc_code33
## sc_code34
## sc_code35                   **
## sc_code36                   *
## sc_code51
## sc_code52                   *
## sc_code61
## sc_code62
## sc_code63                   *
## sc_code64
## sc_code73
## sc_code76
## sc_code91
## wave
## wage_prof
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 23.17 on 7871 degrees of freedom
##   (11706 observations deleted due to missingness)
## Multiple R-squared:  0.05911,    Adjusted R-squared:  0.05421
## F-statistic: 12.06 on 41 and 7871 DF,  p-value: < 2.2e-16
hours2 <- lm(tk22a ~ . - jl_year_fired - wage_rate, data = data_hours)
summary(hours2)

##
## Call:
## lm(formula = tk22a ~ . - jl_year_fired - wage_rate, data = data_hours)
##
## Residuals:
##      Min       1Q     Median       3Q      Max
## -48.800 -15.871  -0.694  12.152  91.105
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)               3.523e+01  4.551e+00  7.741 1.11e-14
## tk23a2y                  -3.265e-02  3.288e-02 -0.993 0.320733
## jl_2                      -1.395e-01  1.456e+00 -0.096 0.923646
## age                       4.929e-01  1.752e-01  2.813 0.004926
## age_sq                    -8.133e-03  2.107e-03 -3.860 0.000114
## job_cat3:informal business owner 9.390e-01  1.948e+00  0.482 0.629730

```

```

## job_cat4:government -7.298e+00 1.125e+00 -6.486 9.35e-11
## job_cat5:private -4.990e+00 6.419e-01 -7.774 8.56e-15
## job_cat6:casual -1.262e+01 9.410e-01 -13.407 < 2e-16
## dl062:elementary 3.679e+00 1.341e+00 2.743 0.006096
## dl063:juniorH 4.589e+00 1.459e+00 3.145 0.001665
## dl064:seniorH 4.005e+00 1.452e+00 2.759 0.005817
## dl065:higher -1.596e+00 1.573e+00 -1.014 0.310553
## dependents_young -4.977e-01 5.126e-01 -0.971 0.331561
## dependents_old -3.370e-01 3.648e-01 -0.924 0.355564
## working_dependents 5.428e+00 2.229e+00 2.436 0.014893
## other_HHM -3.298e-01 1.571e-01 -2.100 0.035777
## other_working 1.043e+00 2.774e-01 3.759 0.000172
## sc_code13 1.238e+00 1.563e+00 0.792 0.428376
## sc_code14 6.280e+00 3.687e+00 1.703 0.088546
## sc_code15 3.309e+00 1.343e+01 0.246 0.805364
## sc_code16 -5.872e+00 1.789e+00 -3.283 0.001032
## sc_code18 2.777e+00 1.756e+00 1.581 0.113879
## sc_code19 5.791e+00 3.513e+00 1.648 0.099364
## sc_code21 6.633e+00 5.901e+00 1.124 0.260980
## sc_code31 5.162e+00 1.459e+00 3.537 0.000407
## sc_code32 1.488e+00 1.273e+00 1.168 0.242715
## sc_code33 1.527e+00 1.262e+00 1.210 0.226417
## sc_code34 1.803e+00 1.465e+00 1.231 0.218439
## sc_code35 3.531e+00 1.268e+00 2.784 0.005381
## sc_code36 4.235e+00 1.719e+00 2.463 0.013783
## sc_code51 3.217e-01 1.433e+00 0.225 0.822334
## sc_code52 3.209e+00 1.514e+00 2.119 0.034086
## sc_code61 1.894e+00 1.644e+01 0.115 0.908268
## sc_code62 2.984e+00 6.528e+00 0.457 0.647601
## sc_code63 -3.857e+00 1.686e+00 -2.288 0.022149
## sc_code64 4.028e+00 4.761e+00 0.846 0.397578
## sc_code73 4.394e-01 1.680e+00 0.262 0.793703
## sc_code76 -2.897e-01 6.078e+00 -0.048 0.961976
## sc_code91 2.394e+01 2.321e+01 1.031 0.302519
## wave -3.848e-01 5.431e-01 -0.708 0.478671
## wage_prof -1.499e-08 1.984e-08 -0.755 0.449983
##
## (Intercept) ***
## tk23a2y
## jl_2
## age **
## age_sq ***
## job_cat3:informal business owner
## job_cat4:government ***
## job_cat5:private ***
## job_cat6:casual ***
## dl062:elementary **
## dl063:juniorH **
## dl064:seniorH **
## dl065:higher
## dependents_young
## dependents_old
## working_dependents *
## other_HHM *

```

```

## other_working
## sc_code13
## sc_code14
## sc_code15
## sc_code16
## sc_code18
## sc_code19
## sc_code21
## sc_code31
## sc_code32
## sc_code33
## sc_code34
## sc_code35
## sc_code36
## sc_code51
## sc_code52
## sc_code61
## sc_code62
## sc_code63
## sc_code64
## sc_code73
## sc_code76
## sc_code91
## wave
## wage_prof
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 23.17 on 7871 degrees of freedom
##   (11706 observations deleted due to missingness)
## Multiple R-squared:  0.05911,   Adjusted R-squared:  0.05421
## F-statistic: 12.06 on 41 and 7871 DF,  p-value: < 2.2e-16

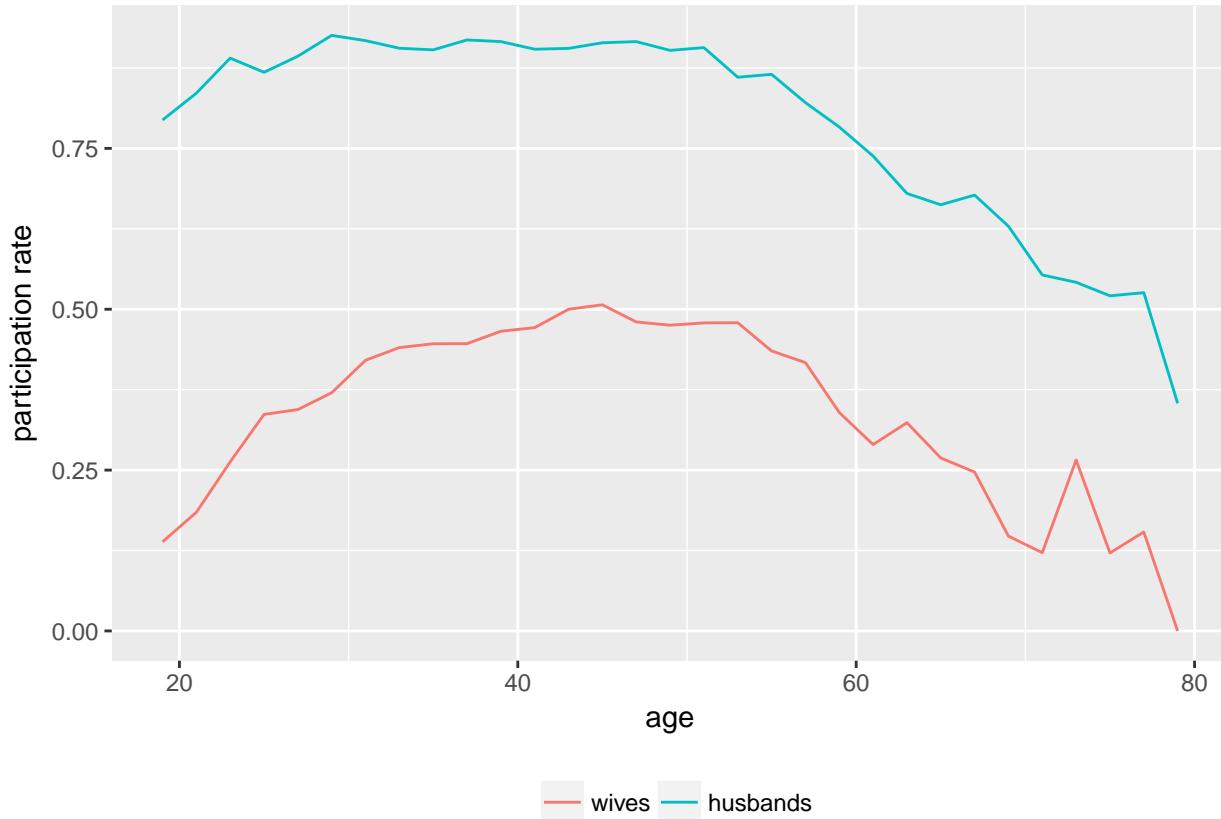
participation_plot <- clean %>%
  select(employed2, employed2_H, age, age_H) %>%
  gather(key = "gender", value = "work_status", cols = 1:2) %>%
  mutate(age_edit = ifelse(gender == "employed2_H", age_H, age))%>%
  select(-c(age, age_H)) %>%
  mutate(age = age_edit) %>%
  select(-c(age_edit)) %>%
  mutate(age_bin = floor(age/2)*2+1) %>%
  group_by(age_bin, gender) %>%
  summarize(emp_rate = mean(work_status, na.rm = TRUE))

## Warning: package 'bindrcpp' was built under R version 3.4.3

age_participation_plot <- ggplot(participation_plot, aes(x = age_bin, y = emp_rate, color = gender)) +
  geom_line()+
  xlab("age")+
  ylab("participation rate")+
  scale_color_discrete(name="", breaks=c("employed2", "employed2_H"), labels=c("employed2", "employed2_H"))
  theme(legend.position = "bottom")

```

age_participation_plot



```

work_plot <- clean %>%
  select(tk22a, tk22a_H, job_cat, job_cat_H, wage_rate, wage_rate_H, wave) %>%
  gather(key = "gender", value = "hours", cols = 1:2) %>%
  mutate(wage = ifelse(gender == "tk22a", wage_rate, wage_rate_H)) %>%
  mutate(job_type = ifelse(gender == "tk22a", job_cat, job_cat_H)) %>%
  mutate(gender = ifelse(gender == "tk22a", "wife", "husband")) %>%
  select(-c(wage_rate, wage_rate_H, job_cat, job_cat_H)) %>%
  filter(!is.na(job_type))

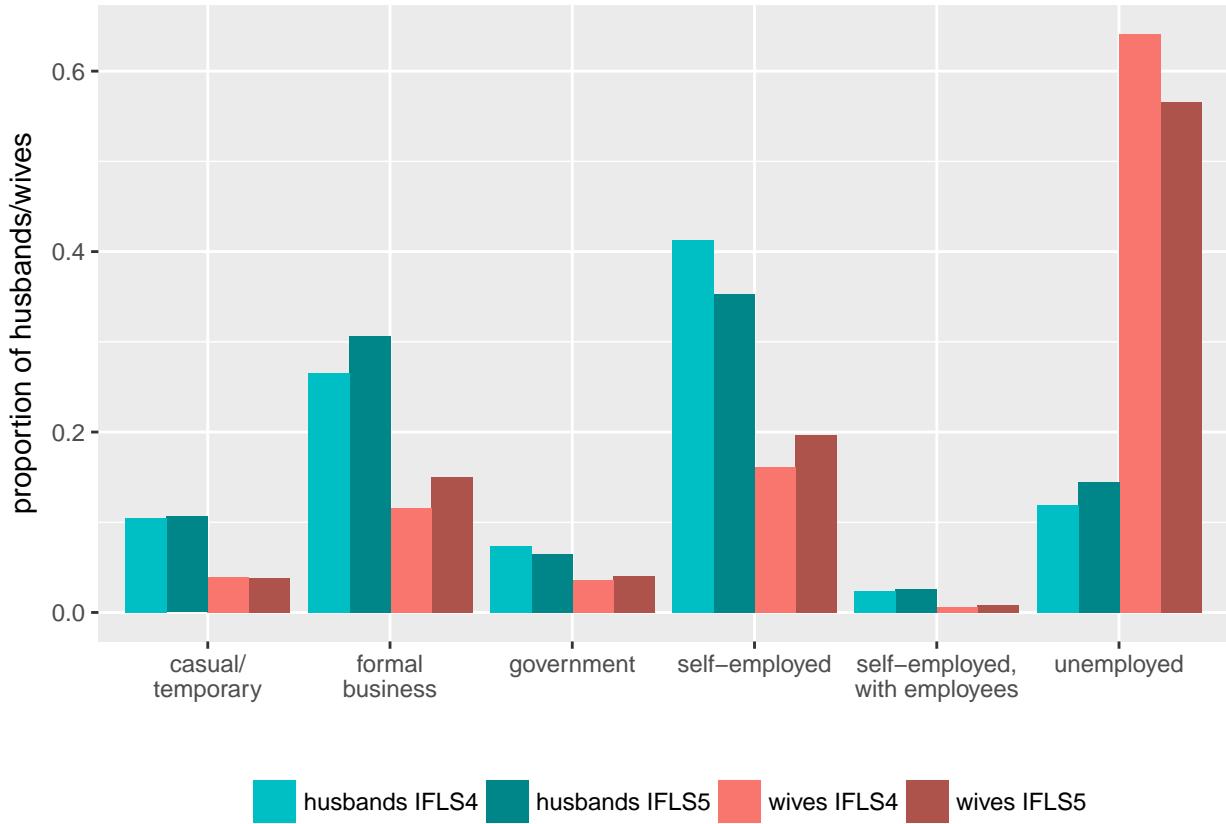
industries <- c("unemployed", "self-employed", "self-employed, with employees", "government", "formal b

work_plot$job_type <- industries[work_plot$job_type]

work_plot_2 <- work_plot %>%
  group_by(job_type, gender) %>%
  summarize(count = n()) %>%
  ungroup() %>%
  group_by(gender) %>%
  mutate(proportion = count/sum(count))

#distribution of men and women across industries
gender_industry <- ggplot(work_plot_2, aes(x = job_type, y = proportion, fill = gender)) +
  geom_bar(stat="identity", position="dodge")+
  scale_x_discrete(labels = function(job_type) str_wrap(job_type, width = 14))+
```





```

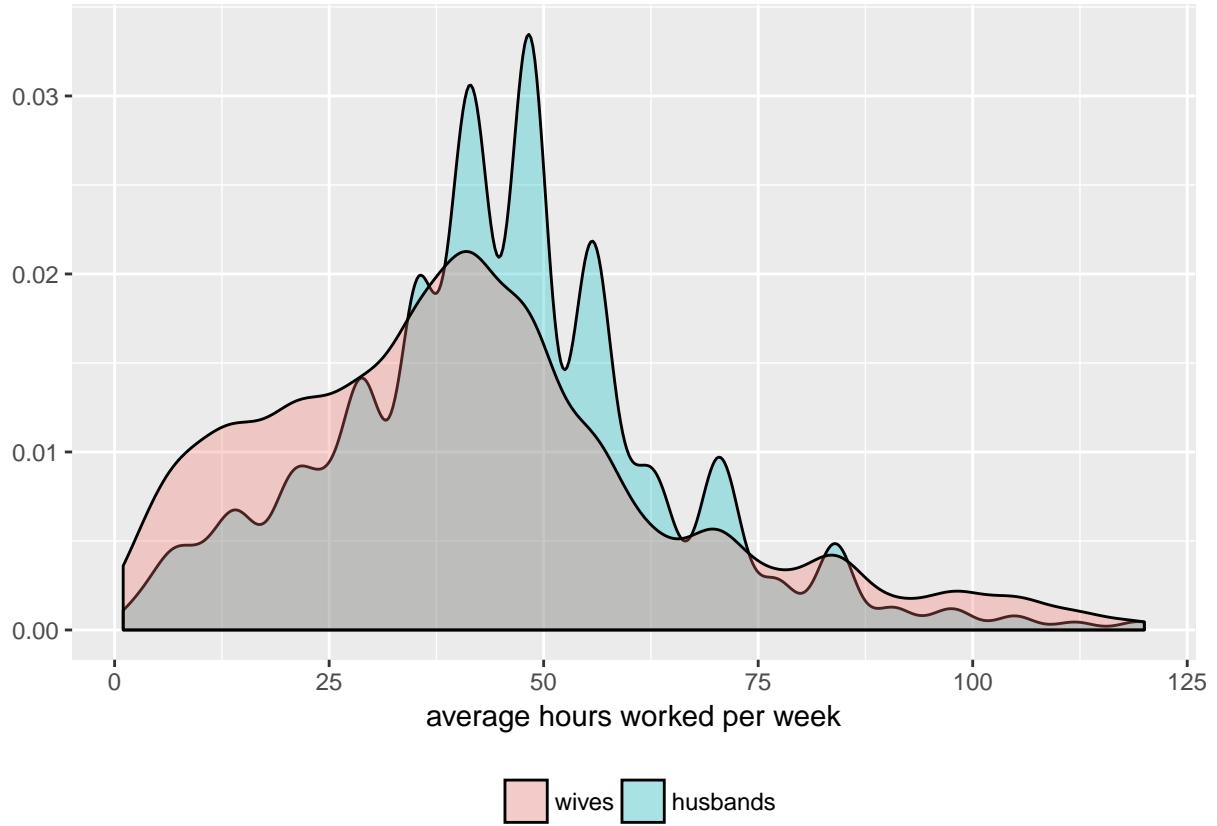
work_plot <- work_plot %>%
  filter(wage != 0, hours != 0)

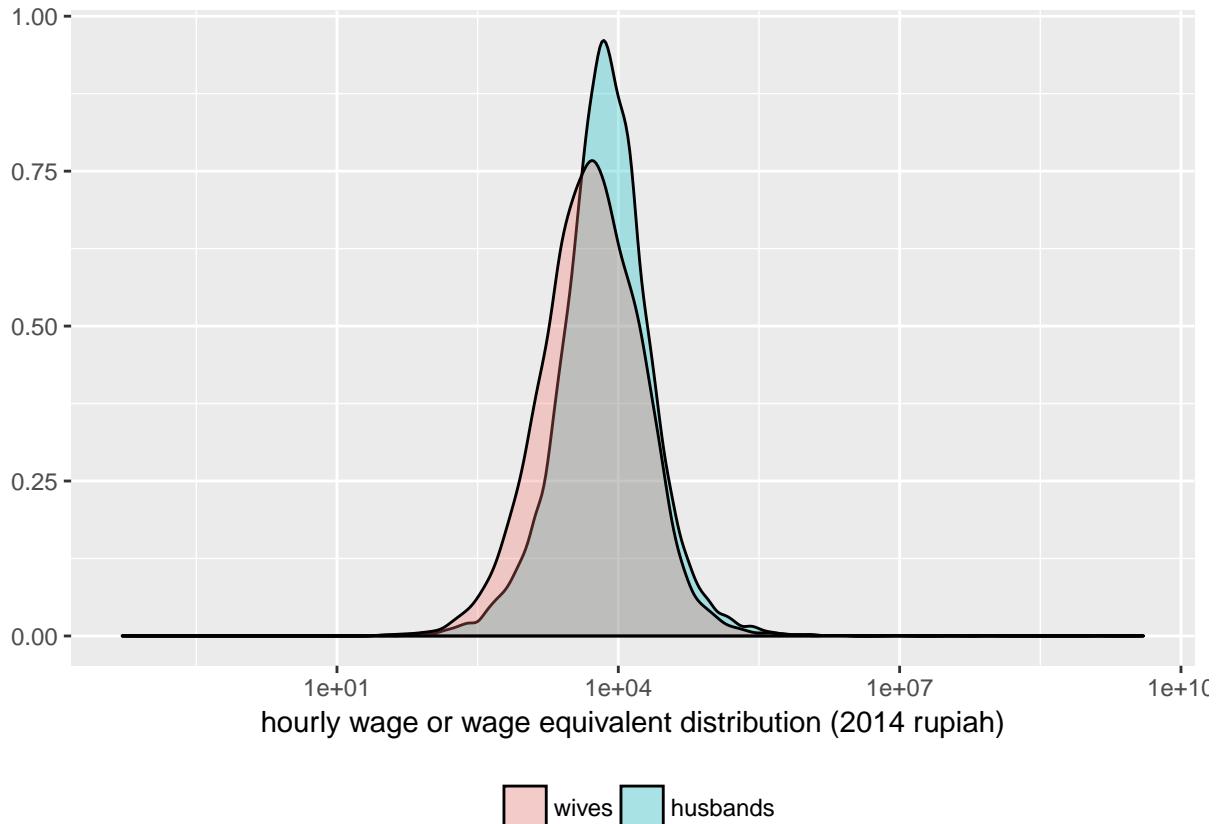
hours_dist <- ggplot(work_plot, aes(x = hours)) +
  geom_density(aes(fill = gender), alpha = .3) +
  scale_fill_manual(name = "", breaks=c("wife", "husband"), labels=c("wives", "husbands"))
  xlab("average hours worked per week")+
  ylab("")+
  theme(legend.position = "bottom")

#add log scale
wage_dist <- ggplot(work_plot, aes(x = wage)) +
  geom_density(aes(fill = gender), alpha = .3) +
  scale_fill_manual(name = "", breaks=c("wife", "husband"), labels=c("wives", "husbands"))
  scale_x_log10()+
  xlab("hourly wage or wage equivalent distribution (2014 rupiah)")+
  ylab("")+
  theme(legend.position = "bottom")

```

hours_dist

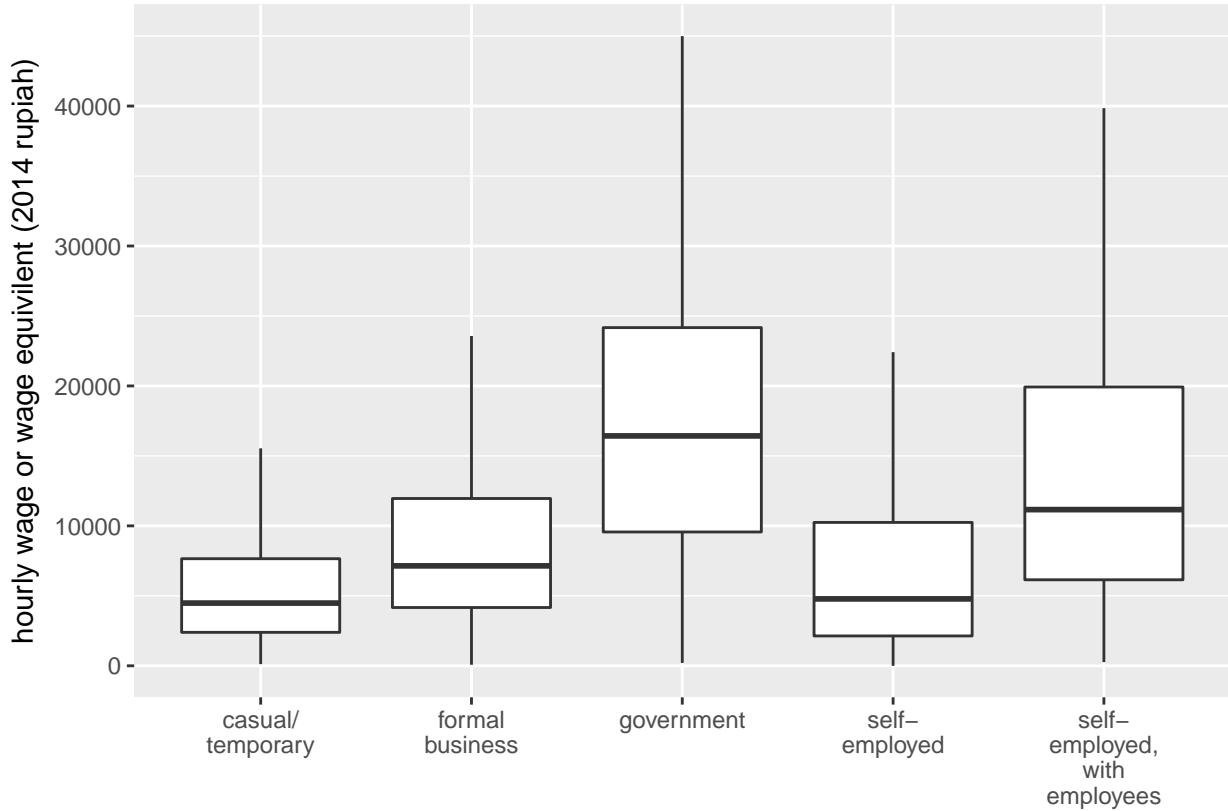




```
#wages by industry
wage_industry <- ggplot(work_plot, aes(y=wage, x = job_type, group = job_type)) +
  geom_boxplot(outlier.shape = NA) +
  ylim(0, 45000) +
  scale_x_discrete(labels = function(job_type) str_wrap(job_type, width = 10)) +
  xlab("") +
  ylab("hourly wage or wage equivalent (2014 rupiah)") #+
  #facet_wrap(~gender)

wage_industry

## Warning: Removed 975 rows containing non-finite values (stat_boxplot).
```



```

summary(work_plot$wage)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 0.000e+00 3.202e+03 6.668e+03 2.486e+05 1.345e+04 3.968e+09

summary(work_plot$hours[which(work_plot$gender == "wife" & work_plot$wave == 4)]) 

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 1.00    26.00    42.00    41.72    54.00   120.00

summary(work_plot$hours[which(work_plot$gender == "wife" & work_plot$wave == 5)]) 

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 1.00    24.00    40.00    41.34    54.00   119.00

summary(work_plot$hours[which(work_plot$gender == "husband" & work_plot$wave == 4)]) 

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 1.00    35.00    45.00    45.36    56.00   120.00

summary(work_plot$hours[which(work_plot$gender == "husband" & work_plot$wave == 5)]) 

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 1.00    35.00    42.00    44.63    56.00   120.00

data_heck <- clean %>%
  select(employed2, job_cat_H, tk23a2y, jl_2, jl_year_fired, age, age_sq, job_cat, dl06,
  drop_na(- c(wage_prof, wage_rate, tk22a, job_cat, tk23a2y))

data_prob <- data_heck %>%

```

```

    select(-c(wage_prof, wage_rate, tk22a, job_cat, tk23a2y))

probit1 <- glm(employed2 ~ . - jl_year_fired, family = binomial(link = "probit"), data = data_prob)
summary(probit1)

##
## Call:
## glm(formula = employed2 ~ . - jl_year_fired, family = binomial(link = "probit"),
##      data = data_prob)
##
## Deviance Residuals:
##    Min      1Q  Median      3Q     Max 
## -4.1709 -0.9247 -0.5528  1.0375  3.3558 
##
## Coefficients:
##                               Estimate Std. Error z value Pr(>|z|)    
## (Intercept)                 -3.762e+00  1.558e-01 -24.151 < 2e-16  
## job_cat_H2:self-employed    -4.885e-01  3.411e-02 -14.321 < 2e-16  
## job_cat_H3:informal business owner -5.362e-01  6.966e-02 -7.698 1.39e-14  
## job_cat_H4:government       -7.694e-02  4.842e-02 -1.589  0.11203  
## job_cat_H5:private          -4.252e-02  3.545e-02 -1.199  0.23037  
## job_cat_H6:casual           -7.716e-02  4.226e-02 -1.826  0.06785  
## jl_2                         2.598e-01  5.926e-02  4.385  1.16e-05  
## age                          1.285e-01  5.875e-03 21.882 < 2e-16  
## age_sq                       -1.495e-03 7.083e-05 -21.102 < 2e-16  
## d1062:elementary             1.225e-01  4.635e-02  2.642  0.00823  
## d1063:juniorH                1.522e-01  5.061e-02  3.008  0.00263  
## d1064:seniorH                2.332e-01  5.053e-02  4.615  3.94e-06  
## d1065:higher                  9.355e-01  5.691e-02 16.439 < 2e-16  
## dependents_young              -2.184e-01 1.815e-02 -12.030 < 2e-16  
## dependents_old                 -1.000e-02 1.376e-02 -0.727  0.46720  
## working_dependents            8.300e-02  8.613e-02  0.964  0.33519  
## other_HHM                     -1.804e-01 5.979e-03 -30.175 < 2e-16  
## other_working                  3.716e-01  1.002e-02 37.093 < 2e-16  
## sc_code13                      1.766e-01  5.829e-02  3.031  0.00244  
## sc_code14                      -1.987e-01 1.210e-01 -1.642  0.10050  
## sc_code15                      -5.568e-01 4.183e-01 -1.331  0.18312  
## sc_code16                      -2.518e-01 5.935e-02 -4.243  2.20e-05  
## sc_code18                      -1.645e-01 5.945e-02 -2.766  0.00567  
## sc_code19                      -1.032e-01 1.275e-01 -0.809  0.41855  
## sc_code21                      1.679e-01  2.501e-01  0.671  0.50211  
## sc_code31                      7.788e-02  5.341e-02  1.458  0.14482  
## sc_code32                      1.884e-02  4.556e-02  0.414  0.67920  
## sc_code33                      2.485e-01  4.650e-02  5.343  9.12e-08  
## sc_code34                      2.491e-01  5.644e-02  4.413  1.02e-05  
## sc_code35                      1.154e-01  4.556e-02  2.532  0.01133  
## sc_code36                      1.698e-01  6.226e-02  2.728  0.00637  
## sc_code51                      4.453e-01  5.670e-02  7.853  4.06e-15  
## sc_code52                      -3.419e-02 5.347e-02 -0.639  0.52262  
## sc_code61                      3.865e+00  2.583e+01  0.150  0.88104  
## sc_code62                      1.874e-01  2.812e-01  0.667  0.50508  
## sc_code63                      -1.303e-01 5.856e-02 -2.224  0.02612  
## sc_code64                      3.099e-01  1.945e-01  1.593  0.11113  
## sc_code71                      -2.714e+00 3.657e+01 -0.074  0.94084

```

```

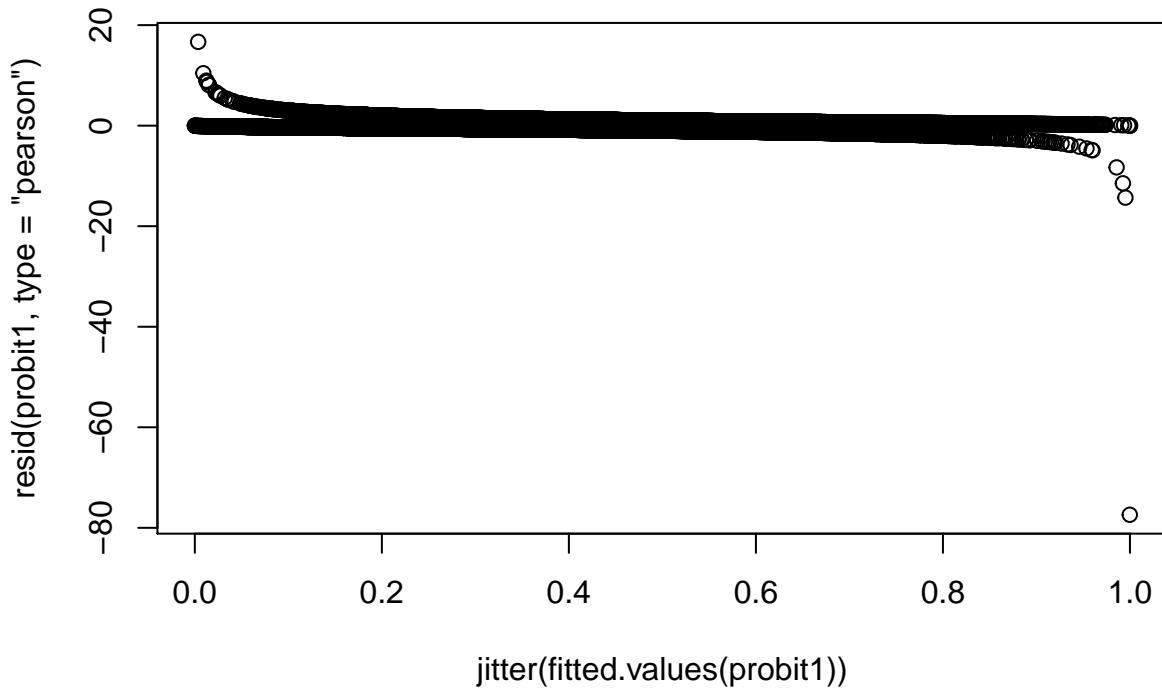
## sc_code73          1.661e-02  5.900e-02  0.282  0.77832
## sc_code76          8.174e-02  2.179e-01  0.375  0.70759
## sc_code91          4.015e+00  3.657e+01  0.110  0.91259
## wave              1.823e-01  1.987e-02  9.179  < 2e-16
##
## (Intercept)      ***
## job_cat_H2:self-employed ***
## job_cat_H3:informal business owner ***
## job_cat_H4:government
## job_cat_H5:private
## job_cat_H6:casual
## jl_2               ***
## age                ***
## age_sq             ***
## d1062:elementary   **
## d1063:juniorH     **
## d1064:seniorH     ***
## d1065:higher       ***
## dependents_young   ***
## dependents_old     ***
## working_dependents
## other_HHM          ***
## other_working       ***
## sc_code13          **
## sc_code14
## sc_code15
## sc_code16          ***
## sc_code18          **
## sc_code19
## sc_code21
## sc_code31
## sc_code32
## sc_code33          ***
## sc_code34          ***
## sc_code35          *
## sc_code36          **
## sc_code51          ***
## sc_code52
## sc_code61
## sc_code62
## sc_code63          *
## sc_code64
## sc_code71
## sc_code73
## sc_code76
## sc_code91
## wave              ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
## Null deviance: 26553  on 19565  degrees of freedom
## Residual deviance: 22532  on 19524  degrees of freedom

```

```

## AIC: 22616
##
## Number of Fisher Scoring iterations: 9
#one extreme outlier??
plot(resid(probit1, type = "pearson") ~ jitter(fitted.values(probit1)))

```



```

probit2 <- glm(employed2 ~ . - jl_2, family = binomial(link = "probit"), data = data_prob)
summary(probit2)

```

```

##
## Call:
## glm(formula = employed2 ~ . - jl_2, family = binomial(link = "probit"),
##      data = data_prob)
##
## Deviance Residuals:
##      Min        1Q     Median        3Q       Max
## -4.1702   -0.9246   -0.5541    1.0378    3.3490
##
## Coefficients:
##                               Estimate Std. Error z value Pr(>|z|)
## (Intercept)                 -3.749e+00  1.557e-01 -24.081 < 2e-16
## job_cat_H2:self-employed    -4.894e-01  3.412e-02 -14.345 < 2e-16
## job_cat_H3:informal business owner -5.384e-01  6.967e-02 -7.729 1.09e-14
## job_cat_H4:government       -7.877e-02  4.841e-02 -1.627  0.10376
## job_cat_H5:private           -3.973e-02  3.543e-02 -1.121  0.26217
## job_cat_H6:civil servant    -7.731e-02  4.226e-02 -1.829  0.06735

```

```

## jl_year_fired1      1.691e-01  1.303e-01  1.298  0.19435
## jl_year_fired2      3.209e-01  1.510e-01  2.125  0.03358
## jl_year_fired3      4.196e-01  1.781e-01  2.356  0.01849
## jl_year_fired4      2.901e-01  2.120e-01  1.368  0.17118
## jl_year_fired5      5.987e-02  2.417e-01  0.248  0.80433
## age                  1.286e-01  5.874e-03  21.889 < 2e-16
## age_sq                -1.495e-03 7.082e-05 -21.114 < 2e-16
## dl062:elementary    1.223e-01  4.634e-02  2.639  0.00832
## dl063:juniorH        1.528e-01  5.061e-02  3.020  0.00253
## dl064:seniorH        2.329e-01  5.053e-02  4.610  4.02e-06
## dl065:higher         9.345e-01  5.690e-02  16.423 < 2e-16
## dependents_young     -2.177e-01 1.815e-02 -11.994 < 2e-16
## dependents_old        -1.017e-02 1.376e-02 -0.739  0.45985
## working_dependents   8.364e-02  8.617e-02  0.971  0.33169
## other_HHM             -1.803e-01 5.979e-03 -30.162 < 2e-16
## other_working          3.715e-01 1.002e-02  37.084 < 2e-16
## sc_code13              1.765e-01  5.828e-02  3.028  0.00247
## sc_code14              -1.968e-01 1.209e-01 -1.627  0.10371
## sc_code15              -5.585e-01 4.182e-01 -1.335  0.18177
## sc_code16              -2.507e-01 5.934e-02 -4.224  2.40e-05
## sc_code18              -1.646e-01 5.945e-02 -2.769  0.00562
## sc_code19              -1.012e-01 1.275e-01 -0.793  0.42756
## sc_code21              1.636e-01  2.501e-01  0.654  0.51307
## sc_code31              8.102e-02  5.340e-02  1.517  0.12921
## sc_code32              2.080e-02  4.555e-02  0.457  0.64787
## sc_code33              2.504e-01  4.649e-02  5.385  7.25e-08
## sc_code34              2.525e-01  5.643e-02  4.475  7.66e-06
## sc_code35              1.170e-01  4.555e-02  2.569  0.01021
## sc_code36              1.702e-01  6.226e-02  2.734  0.00627
## sc_code51              4.465e-01  5.670e-02  7.876  3.39e-15
## sc_code52              -3.396e-02 5.347e-02 -0.635  0.52540
## sc_code61              3.862e+00  2.583e+01  0.150  0.88111
## sc_code62              1.960e-01  2.818e-01  0.696  0.48672
## sc_code63              -1.281e-01 5.856e-02 -2.188  0.02866
## sc_code64              3.110e-01  1.945e-01  1.599  0.10982
## sc_code71              -2.717e+00 3.657e+01 -0.074  0.94079
## sc_code73              1.836e-02  5.901e-02  0.311  0.75573
## sc_code76              8.014e-02  2.179e-01  0.368  0.71304
## sc_code91              4.015e+00  3.657e+01  0.110  0.91258
## wave                  1.797e-01  1.985e-02  9.056 < 2e-16
##
## (Intercept)            ***
## job_cat_H2:self-employed ***
## job_cat_H3:informal business owner ***
## job_cat_H4:government
## job_cat_H5:private
## job_cat_H6:casual       .
## jl_year_fired1           *
## jl_year_fired2           *
## jl_year_fired3           *
## jl_year_fired4
## jl_year_fired5
## age                      ***
## age_sq                   ***

```

```

## d1062:elementary          **
## d1063:juniorH             **
## d1064:seniorH             ***
## d1065:higher               ***
## dependents_young           ***
## dependents_old              ***
## working_dependents         ***
## other_HHM                  ***
## other_working                **
## sc_code13                   **
## sc_code14                   ***
## sc_code15                   ***
## sc_code16                   ***
## sc_code18                   **
## sc_code19                   ***
## sc_code21                   ***
## sc_code31                   ***
## sc_code32                   ***
## sc_code33                   ***
## sc_code34                   ***
## sc_code35                   *
## sc_code36                   **
## sc_code51                   ***
## sc_code52                   ***
## sc_code61                   ***
## sc_code62                   ***
## sc_code63                   *
## sc_code64                   ***
## sc_code71                   ***
## sc_code73                   ***
## sc_code76                   ***
## sc_code91                   ***
## wave                         ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
## Null deviance: 26553  on 19565  degrees of freedom
## Residual deviance: 22538  on 19520  degrees of freedom
## AIC: 22630
##
## Number of Fisher Scoring iterations: 9
#add mills ratios to data
data_heck$mill$1 <- invMillsRatio(probit1)$IMR1
data_heck$mill$2 <- invMillsRatio(probit2)$IMR1

#filter to remove unemployed
data_heck <- data_heck %>%
    filter(as.numeric(job_cat) != 1)

heckit1 <- lm(tk22a ~ . - jl_year_fired - employed2 - job_cat_H - mill$2 - wage_prof, data = data_heck)
summary(heckit1)

```

```

## 
## Call:
## lm(formula = tk22a ~ . - jl_year_fired - employed2 - job_cat_H -
##      mills2 - wage_prof, data = data_heck)
##
## Residuals:
##    Min      1Q  Median      3Q     Max 
## -48.877 -15.860  -0.736  12.170  91.320 
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)    
## (Intercept)            3.957e+01  7.795e+00  5.076 3.94e-07  
## tk23a2y              -3.127e-02  3.287e-02 -0.951 0.341533  
## jl_2                  -3.809e-01  1.495e+00 -0.255 0.798967  
## age                  3.888e-01  2.327e-01  1.671 0.094836  
## age_sq               -6.901e-03  2.766e-03 -2.495 0.012608  
## job_cat3:informal business owner 9.839e-01  1.953e+00  0.504 0.614388  
## job_cat4:government       -7.400e+00  1.128e+00 -6.558 5.81e-11  
## job_cat5:private          -5.079e+00  6.483e-01 -7.834 5.35e-15  
## job_cat6:casual           -1.269e+01  9.432e-01 -13.458 < 2e-16  
## d1062:elementary         3.592e+00  1.351e+00  2.658 0.007881  
## d1063:juniorH            4.506e+00  1.479e+00  3.046 0.002329  
## d1064:seniorH            3.807e+00  1.496e+00  2.545 0.010954  
## d1065:higher             -2.274e+00  1.908e+00 -1.191 0.233549  
## dependents_young         -3.214e-01  5.757e-01 -0.558 0.576691  
## dependents_old            -3.219e-01  3.654e-01 -0.881 0.378242  
## working_dependents        5.345e+00  2.231e+00  2.396 0.016588  
## other_HHM                -1.788e-01  2.630e-01 -0.680 0.496788  
## other_working             7.462e-01  5.024e-01  1.485 0.137538  
## sc_code13                1.108e+00  1.575e+00  0.703 0.481780  
## sc_code14                6.451e+00  3.696e+00  1.746 0.080916  
## sc_code15                3.643e+00  1.343e+01  0.271 0.786248  
## sc_code16                -5.555e+00  1.819e+00 -3.054 0.002263  
## sc_code18                2.966e+00  1.777e+00  1.669 0.095233  
## sc_code19                5.816e+00  3.512e+00  1.656 0.097802  
## sc_code21                6.430e+00  5.904e+00  1.089 0.276211  
## sc_code31                5.033e+00  1.467e+00  3.430 0.000607  
## sc_code32                1.463e+00  1.275e+00  1.148 0.251020  
## sc_code33                1.337e+00  1.296e+00  1.032 0.302176  
## sc_code34                1.597e+00  1.498e+00  1.066 0.286454  
## sc_code35                3.443e+00  1.279e+00  2.692 0.007118  
## sc_code36                4.238e+00  1.735e+00  2.442 0.014610  
## sc_code51                -1.585e-02  1.523e+00 -0.010 0.991699  
## sc_code52                3.221e+00  1.514e+00  2.128 0.033398  
## sc_code61                1.029e+00  1.649e+01  0.062 0.950269  
## sc_code62                2.831e+00  6.532e+00  0.433 0.664720  
## sc_code63                -3.733e+00  1.694e+00 -2.203 0.027614  
## sc_code64                3.803e+00  4.774e+00  0.796 0.425776  
## sc_code73                4.509e-01  1.680e+00  0.268 0.788351  
## sc_code76                -3.709e-01  6.078e+00 -0.061 0.951335  
## sc_code91                2.318e+01  2.323e+01  0.998 0.318472  
## wave                   -5.632e-01  5.850e-01 -0.963 0.335729  
## wage_rate               -7.078e-07  2.398e-07 -2.951 0.003175  
## mills1                  -1.277e+00  1.929e+00 -0.662 0.508104

```

```

## 
## (Intercept) ***
## tk23a2y
## jl_2
## age .
## age_sq *
## job_cat3:informal business owner
## job_cat4:government ***
## job_cat5:private ***
## job_cat6:casual ***
## d1062:elementary **
## d1063:juniorH **
## d1064:seniorH *
## d1065:higher
## dependents_young
## dependents_old
## working_dependents *
## other_HHM
## other_working
## sc_code13
## sc_code14 .
## sc_code15
## sc_code16 **
## sc_code18 .
## sc_code19 .
## sc_code21
## sc_code31 ***
## sc_code32
## sc_code33
## sc_code34
## sc_code35 **
## sc_code36 *
## sc_code51
## sc_code52 *
## sc_code61
## sc_code62
## sc_code63 *
## sc_code64
## sc_code73
## sc_code76
## sc_code91
## wave
## wage_rate **
## mills1
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 23.17 on 7866 degrees of freedom
##   (206 observations deleted due to missingness)
## Multiple R-squared: 0.06019, Adjusted R-squared: 0.05517
## F-statistic: 11.99 on 42 and 7866 DF, p-value: < 2.2e-16
heckit1b <- lm(tk22a ~ . - sc_code - jl_year_fired - employed2 - job_cat_H - mills2 -wage_prof, data = c)
summary(heckit1b)

```

```

## 
## Call:
## lm(formula = tk22a ~ . - sc_code - jl_year_fired - employed2 -
##      job_cat_H - mills2 - wage_prof, data = data_heck)
##
## Residuals:
##    Min     1Q Median     3Q    Max 
## -47.007 -16.235 -0.689 11.998 89.865 
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)    
## (Intercept)               4.772e+01  6.629e+00   7.199 6.62e-13  
## tk23a2y                  -2.692e-02 3.280e-02  -0.821 0.41180  
## jl_2                      -7.129e-01 1.483e+00  -0.481 0.63068  
## age                      2.615e-01 2.154e-01   1.214 0.22463  
## age_sq                   -5.450e-03 2.565e-03  -2.125 0.03361  
## job_cat3:informal business owner 1.110e+00 1.954e+00   0.568 0.56996  
## job_cat4:government        -7.688e+00 1.118e+00  -6.874 6.72e-12  
## job_cat5:private           -4.639e+00 6.412e-01  -7.235 5.08e-13  
## job_cat6:casual            -1.234e+01 9.422e-01 -13.098 < 2e-16  
## dl062:elementary          3.265e+00 1.339e+00   2.439 0.01475  
## dl063:juniorH              4.329e+00 1.460e+00   2.964 0.00304  
## dl064:seniorH              3.255e+00 1.457e+00   2.234 0.02554  
## dl065:higher               -3.525e+00 1.770e+00  -1.991 0.04653  
## dependents_young           -2.275e-01 5.554e-01  -0.410 0.68218  
## dependents_old              -4.858e-01 3.642e-01  -1.334 0.18224  
## working_dependents         4.681e+00 2.233e+00   2.096 0.03608  
## other_HHM                  4.289e-02 2.349e-01   0.183 0.85511  
## other_working               2.589e-01 4.425e-01   0.585 0.55848  
## wave                      -8.740e-01 5.676e-01  -1.540 0.12364  
## wage_rate                  -7.128e-07 2.402e-07  -2.968 0.00301  
## mills1                     -3.334e+00 1.546e+00  -2.157 0.03107  
##
## (Intercept)                 ***
## tk23a2y                      *
## jl_2                          ***
## age                          ***
## age_sq                       ***
## job_cat3:informal business owner ***
## job_cat4:government          ***
## job_cat5:private              ***
## job_cat6:casual               *
## dl062:elementary             **
## dl063:juniorH                **
## dl064:seniorH                *
## dl065:higher                 *
## dependents_young              *
## dependents_old                *
## working_dependents            *
## other_HHM                     **
## other_working                 *
## wave                         *
## wage_rate                     **
## mills1                        *

```

```

## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 23.24 on 7888 degrees of freedom
##   (206 observations deleted due to missingness)
## Multiple R-squared: 0.05128, Adjusted R-squared: 0.04888
## F-statistic: 21.32 on 20 and 7888 DF, p-value: < 2.2e-16
anova_heck1 <- anova(heckit1, heckit1b, test = "LRT")

options(scipen = 999)
anova_heck_p1 <- as.character(round(anova_heck1$`Pr(>Chi)`[2], 6))
options(scipen = 0)

heckit2 <- lm(tk22a ~ . - jl_2 - employed2 - job_cat_H - mills1 -wage_prof, data = data_heck)
summary(heckit2)

##
## Call:
## lm(formula = tk22a ~ . - jl_2 - employed2 - job_cat_H - mills1 -
##      wage_prof, data = data_heck)
##
## Residuals:
##    Min      1Q Median      3Q     Max
## -48.94 -15.90  -0.75  12.16  91.34
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)               3.955e+01  7.759e+00  5.098 3.52e-07
## tk23a2y                  -3.042e-02  3.289e-02 -0.925 0.355171
## jl_year_fired1            -1.929e+00  3.277e+00 -0.589 0.556102
## jl_year_fired2             4.757e-01  3.572e+00  0.133 0.894051
## jl_year_fired3            -1.679e+00  4.082e+00 -0.411 0.680792
## jl_year_fired4            -9.202e-02  5.215e+00 -0.018 0.985924
## jl_year_fired5            -5.649e+00  6.455e+00 -0.875 0.381562
## age                       3.897e-01  2.324e-01  1.677 0.093645
## age_sq                     -6.917e-03  2.762e-03 -2.504 0.012306
## job_cat3:informal business owner 9.591e-01  1.953e+00  0.491 0.623385
## job_cat4:government        -7.418e+00  1.129e+00 -6.572 5.29e-11
## job_cat5:private           -5.089e+00  6.488e-01 -7.844 4.94e-15
## job_cat6:casual            -1.269e+01  9.435e-01 -13.453 < 2e-16
## dl062:elementary          3.596e+00  1.352e+00  2.660 0.007824
## dl063:juniorH              4.527e+00  1.480e+00  3.060 0.002223
## dl064:seniorH              3.845e+00  1.496e+00  2.569 0.010209
## dl065:higher               -2.239e+00  1.906e+00 -1.175 0.240152
## dependents_young           -3.253e-01  5.752e-01 -0.566 0.571709
## dependents_old              -3.283e-01  3.656e-01 -0.898 0.369209
## working_dependents         5.337e+00  2.232e+00  2.391 0.016805
## other_HHM                  -1.781e-01  2.625e-01 -0.679 0.497419
## other_working               7.444e-01  5.011e-01  1.485 0.137453
## sc_code13                  1.106e+00  1.575e+00  0.702 0.482821
## sc_code14                  6.511e+00  3.697e+00  1.761 0.078244
## sc_code15                  3.647e+00  1.344e+01  0.271 0.786053
## sc_code16                  -5.549e+00  1.819e+00 -3.050 0.002293
## sc_code18                  2.964e+00  1.778e+00  1.667 0.095636

```

## sc_code19	5.782e+00	3.515e+00	1.645	0.099979
## sc_code21	6.417e+00	5.905e+00	1.087	0.277192
## sc_code31	5.076e+00	1.468e+00	3.457	0.000548
## sc_code32	1.491e+00	1.275e+00	1.169	0.242397
## sc_code33	1.349e+00	1.297e+00	1.041	0.298124
## sc_code34	1.580e+00	1.499e+00	1.054	0.291710
## sc_code35	3.446e+00	1.280e+00	2.693	0.007095
## sc_code36	4.294e+00	1.737e+00	2.472	0.013451
## sc_code51	-3.104e-03	1.523e+00	-0.002	0.998374
## sc_code52	3.241e+00	1.514e+00	2.140	0.032385
## sc_code61	1.048e+00	1.649e+01	0.064	0.949325
## sc_code62	2.825e+00	6.533e+00	0.432	0.665423
## sc_code63	-3.729e+00	1.695e+00	-2.201	0.027797
## sc_code64	3.924e+00	4.781e+00	0.821	0.411823
## sc_code73	4.608e-01	1.681e+00	0.274	0.783936
## sc_code76	-3.708e-01	6.079e+00	-0.061	0.951363
## sc_code91	2.317e+01	2.324e+01	0.997	0.318742
## wave	-5.641e-01	5.828e-01	-0.968	0.333106
## wage_rate	-7.086e-07	2.399e-07	-2.954	0.003144
## mills2	-1.279e+00	1.922e+00	-0.665	0.505835
##				
## (Intercept)		***		
## tk23a2y				
## jl_year_fired1				
## jl_year_fired2				
## jl_year_fired3				
## jl_year_fired4				
## jl_year_fired5				
## age	.			
## age_sq	*			
## job_cat3:informal business owner				
## job_cat4:government	***			
## job_cat5:private	***			
## job_cat6:casual	***			
## dl062:elementary	**			
## dl063:juniorH	**			
## dl064:seniorH	*			
## dl065:higher				
## dependents_young				
## dependents_old				
## working_dependents	*			
## other_HHM				
## other_working				
## sc_code13	.			
## sc_code14	.			
## sc_code15	.			
## sc_code16	**			
## sc_code18	.			
## sc_code19	.			
## sc_code21	.			
## sc_code31	***			
## sc_code32				
## sc_code33				
## sc_code34				

```

## sc_code35                      **
## sc_code36                      *
## sc_code51
## sc_code52                      *
## sc_code61
## sc_code62
## sc_code63                      *
## sc_code64
## sc_code73
## sc_code76
## sc_code91
## wave
## wage_rate                      **
## mills2
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 23.17 on 7862 degrees of freedom
##   (206 observations deleted due to missingness)
## Multiple R-squared:  0.06033,    Adjusted R-squared:  0.05483
## F-statistic: 10.97 on 46 and 7862 DF,  p-value: < 2.2e-16
heckit2b <- lm(tk22a ~ . - sc_code - jl_2 - employed2 - job_cat_H - mills1 -wage_prof, data = data_heck
summary(heckit2b)

##
## Call:
## lm(formula = tk22a ~ . - sc_code - jl_2 - employed2 - job_cat_H -
##     mills1 - wage_prof, data = data_heck)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -47.003 -16.211  -0.703  11.970  89.871
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                4.770e+01  6.606e+00  7.221 5.66e-13
## tk23a2y                  -2.640e-02  3.282e-02 -0.804 0.42124
## jl_year_fired1            -2.248e+00  3.279e+00 -0.685 0.49313
## jl_year_fired2            -1.238e-01  3.573e+00 -0.035 0.97235
## jl_year_fired3            -2.148e+00  4.075e+00 -0.527 0.59812
## jl_year_fired4            -8.054e-01  5.219e+00 -0.154 0.87735
## jl_year_fired5            -4.208e+00  6.463e+00 -0.651 0.51499
## age                       2.627e-01  2.153e-01  1.220 0.22235
## age_sq                     -5.469e-03  2.564e-03 -2.133 0.03294
## job_cat3:informal business owner 1.089e+00  1.954e+00  0.557 0.57726
## job_cat4:government        -7.703e+00  1.119e+00 -6.885 6.21e-12
## job_cat5:private           -4.646e+00  6.416e-01 -7.241 4.88e-13
## job_cat6:casual            -1.234e+01  9.424e-01 -13.092 < 2e-16
## d1062:elementary          3.267e+00  1.339e+00  2.440 0.01471
## d1063:juniorH              4.346e+00  1.460e+00  2.976 0.00293
## d1064:seniorH              3.284e+00  1.458e+00  2.253 0.02428
## d1065:higher               -3.498e+00  1.770e+00 -1.976 0.04816
## dependents_young          -2.315e-01  5.553e-01 -0.417 0.67684
## dependents_old             -4.918e-01  3.643e-01 -1.350 0.17710

```

```

## working_dependents          4.678e+00  2.234e+00  2.094  0.03630
## other_HHM                  4.329e-02  2.346e-01  0.185  0.85361
## other_working               2.577e-01  4.418e-01  0.583  0.55969
## wave                         -8.713e-01 5.658e-01 -1.540  0.12363
## wage_rate                   -7.132e-07 2.402e-07 -2.969  0.00300
## mills2                      -3.334e+00 1.542e+00 -2.162  0.03065
##
## (Intercept)                 ***
## tk23a2y
## jl_year_fired1
## jl_year_fired2
## jl_year_fired3
## jl_year_fired4
## jl_year_fired5
## age
## age_sq                      *
## job_cat3:informal business owner
## job_cat4:government          ***
## job_cat5:private              ***
## job_cat6:casual              ***
## d1062:elementary             *
## d1063:juniorH                **
## d1064:seniorH                *
## d1065:higher                 *
## dependents_young
## dependents_old
## working_dependents           *
## other_HHM
## other_working
## wave
## wage_rate                   **
## mills2                        *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 23.25 on 7884 degrees of freedom
##   (206 observations deleted due to missingness)
## Multiple R-squared:  0.05138,    Adjusted R-squared:  0.04849
## F-statistic: 17.79 on 24 and 7884 DF,  p-value: < 2.2e-16
anova_heck2 <- anova(heckit2, heckit2b, test = "LRT")

options(scipen = 999)
anova_heck_p2 <- as.character(round(anova_heck2$`Pr(>Chi)`[2], 6))
options(scipen = 0)

heckit3 <- lm(tk22a ~ . - jl_year_fired - employed2 - job_cat_H - mills2 - wage_rate, data = data_heck)
summary(heckit3)

```

```

##
## Call:
## lm(formula = tk22a ~ . - jl_year_fired - employed2 - job_cat_H -
##     mills2 - wage_rate, data = data_heck)

```

```

##
## Residuals:
##      Min     1Q Median     3Q    Max
## -48.872 -15.856 -0.732 12.163 91.297
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                3.954e+01  7.800e+00  5.069 4.09e-07
## tk23a2y                  -3.225e-02  3.290e-02 -0.980 0.326926
## jl_2                      -3.700e-01  1.496e+00 -0.247 0.804704
## age                      3.881e-01  2.329e-01  1.666 0.095700
## age_sq                   -6.898e-03  2.767e-03 -2.493 0.012700
## job_cat3:informal business owner 1.036e+00  1.954e+00  0.530 0.596070
## job_cat4:government        -7.366e+00  1.129e+00 -6.524 7.26e-11
## job_cat5:private           -5.056e+00  6.487e-01 -7.795 7.26e-15
## job_cat6:casual            -1.268e+01  9.438e-01 -13.436 < 2e-16
## d1062:elementary          3.576e+00  1.352e+00  2.645 0.008191
## d1063:juniorH              4.436e+00  1.480e+00  2.997 0.002734
## d1064:seniorH              3.781e+00  1.497e+00  2.525 0.011580
## d1065:higher               -2.304e+00  1.910e+00 -1.207 0.227655
## dependents_young           -3.302e-01  5.760e-01 -0.573 0.566506
## dependents_old              -3.222e-01  3.655e-01 -0.882 0.378056
## working_dependents         5.357e+00  2.232e+00  2.400 0.016415
## other_HHM                 -1.858e-01  2.632e-01 -0.706 0.480148
## other_working              7.565e-01  5.027e-01  1.505 0.132371
## sc_code13                  1.106e+00  1.576e+00  0.702 0.482757
## sc_code14                  6.465e+00  3.698e+00  1.749 0.080405
## sc_code15                  3.623e+00  1.344e+01  0.270 0.787485
## sc_code16                  -5.648e+00  1.819e+00 -3.104 0.001915
## sc_code18                  2.967e+00  1.778e+00  1.669 0.095254
## sc_code19                  5.816e+00  3.514e+00  1.655 0.097982
## sc_code21                  6.458e+00  5.908e+00  1.093 0.274358
## sc_code31                  5.037e+00  1.468e+00  3.431 0.000605
## sc_code32                  1.458e+00  1.275e+00  1.143 0.252945
## sc_code33                  1.330e+00  1.296e+00  1.026 0.305034
## sc_code34                  1.585e+00  1.498e+00  1.058 0.290149
## sc_code35                  3.437e+00  1.280e+00  2.686 0.007246
## sc_code36                  4.078e+00  1.737e+00  2.348 0.018909
## sc_code51                  -2.580e-02  1.524e+00 -0.017 0.986491
## sc_code52                  3.218e+00  1.514e+00  2.125 0.033623
## sc_code61                  9.791e-01  1.650e+01  0.059 0.952689
## sc_code62                  2.808e+00  6.535e+00  0.430 0.667393
## sc_code63                  -3.737e+00  1.695e+00 -2.204 0.027536
## sc_code64                  3.783e+00  4.777e+00  0.792 0.428443
## sc_code73                  4.489e-01  1.681e+00  0.267 0.789398
## sc_code76                  -3.936e-01  6.081e+00 -0.065 0.948398
## sc_code91                  2.320e+01  2.325e+01  0.998 0.318297
## wave                      -5.382e-01  5.852e-01 -0.920 0.357761
## wage_prof                 -1.486e-08  1.985e-08 -0.749 0.453965
## mills1                     -1.295e+00  1.930e+00 -0.671 0.502219
##
## (Intercept)                 ***
## tk23a2y
## jl_2

```

```

## age
## age_sq *
## job_cat3:informal business owner
## job_cat4:government ***
## job_cat5:private ***
## job_cat6:casual ***
## d1062:elementary **
## d1063:juniorH **
## d1064:seniorH *
## d1065:higher
## dependents_young
## dependents_old
## working_dependents *
## other_HHM
## other_working
## sc_code13 .
## sc_code14 .
## sc_code15
## sc_code16 **
## sc_code18 .
## sc_code19 .
## sc_code21
## sc_code31 ***
## sc_code32
## sc_code33
## sc_code34
## sc_code35 **
## sc_code36 *
## sc_code51
## sc_code52 *
## sc_code61
## sc_code62
## sc_code63 *
## sc_code64
## sc_code73
## sc_code76
## sc_code91
## wave
## wage_prof
## mills1
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 23.18 on 7866 degrees of freedom
##   (206 observations deleted due to missingness)
## Multiple R-squared:  0.05921,   Adjusted R-squared:  0.05419
## F-statistic: 11.79 on 42 and 7866 DF,  p-value: < 2.2e-16
stargazer(log1, log2, title="Results", align=TRUE, no.space=TRUE, style = "aer", single.row = TRUE,
           add.lines = list(c("region fixed effects", "***", "***"), c("survey wave fixed effects", ")))

##
## % Table created by stargazer v.5.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
## % Date and time: Sat, Apr 28, 2018 - 9:16:53 PM
## % Requires LaTeX packages: dcolumn

```

```

## \begin{table} [!htbp] \centering
##   \caption{Results}
##   \label{}
## \begin{tabular}{@{\extracolsep{5pt}}lD{.}{.}{-3} D{.}{.}{-3} }
## \\[-1.8ex]\hline
## \hline \\[-1.8ex]
## \\[-1.8ex] & \multicolumn{2}{c}{employed2} \\
## \\[-1.8ex] & \multicolumn{1}{c}{(1)} & \multicolumn{1}{c}{(2)} \\
## \hline \\[-1.8ex]
## job\_cat\_H2:self-employed & -0.164^{***} \$ $(0.011) & -0.164^{***} \$ $(0.011) \\
## job\_cat\_H3:informal business owner & -0.173^{***} \$ $(0.023) & -0.173^{***} \$ $(0.023) \\
## job\_cat\_H4:government & -0.026\$ $(0.016) & -0.026\$ $(0.016) \\
## job\_cat\_H5:private & -0.014\$ $(0.012) & -0.013\$ $(0.012) \\
## job\_cat\_H6:casual & -0.026^{*} \$ $(0.014) & -0.026^{*} \$ $(0.014) \\
## jl\_2 & 0.087^{***} \$ $(0.020) & \\
## jl\_year\_fired1 & & 0.054\$ $(0.043) \\
## jl\_year\_fired2 & & 0.111^{**} \$ $(0.050) \\
## jl\_year\_fired3 & & 0.141^{**} \$ $(0.058) \\
## jl\_year\_fired4 & & 0.101\$ $(0.071) \\
## jl\_year\_fired5 & & 0.013\$ $(0.080) \\
## age & 0.040^{***} \$ $(0.002) & 0.040^{***} \$ $(0.002) \\
## age\_sq & -0.000^{***} \$ $(0.000) & -0.000^{***} \$ $(0.000) \\
## dl062:elementary & 0.039^{***} \$ $(0.015) & 0.039^{***} \$ $(0.015) \\
## dl063:juniorH & 0.048^{***} \$ $(0.016) & 0.048^{***} \$ $(0.016) \\
## dl064:seniorH & 0.074^{***} \$ $(0.016) & 0.074^{***} \$ $(0.017) \\
## dl065:higher & 0.315^{***} \$ $(0.018) & 0.315^{***} \$ $(0.018) \\
## dependents\_young & -0.071^{***} \$ $(0.006) & -0.071^{***} \$ $(0.006) \\
## dependents\_old & -0.001\$ $(0.005) & -0.002\$ $(0.005) \\
## working\_dependents & 0.028\$ $(0.029) & 0.028\$ $(0.029) \\
## other\_HHM & -0.058^{***} \$ $(0.002) & -0.058^{***} \$ $(0.002) \\
## other\_working & 0.122^{***} \$ $(0.003) & 0.122^{***} \$ $(0.003) \\
## sc\_code13 & 0.060^{***} \$ $(0.019) & 0.060^{***} \$ $(0.019) \\
## sc\_code14 & -0.066^{*} \$ $(0.038) & -0.065^{*} \$ $(0.038) \\
## sc\_code15 & -0.193\$ $(0.135) & -0.194\$ $(0.135) \\
## sc\_code16 & -0.073^{***} \$ $(0.019) & -0.073^{***} \$ $(0.019) \\
## sc\_code18 & -0.055^{***} \$ $(0.019) & -0.055^{***} \$ $(0.019) \\
## sc\_code19 & -0.025\$ $(0.041) & -0.024\$ $(0.041) \\
## sc\_code21 & 0.061\$ $(0.084) & 0.060\$ $(0.084) \\
## sc\_code31 & 0.027\$ $(0.018) & 0.028\$ $(0.018) \\
## sc\_code32 & 0.007\$ $(0.015) & 0.008\$ $(0.015) \\
## sc\_code33 & 0.085^{***} \$ $(0.015) & 0.086^{***} \$ $(0.015) \\
## sc\_code34 & 0.088^{***} \$ $(0.019) & 0.089^{***} \$ $(0.019) \\
## sc\_code35 & 0.040^{***} \$ $(0.015) & 0.041^{***} \$ $(0.015) \\
## sc\_code36 & 0.059^{***} \$ $(0.021) & 0.059^{***} \$ $(0.021) \\
## sc\_code51 & 0.154^{***} \$ $(0.019) & 0.155^{***} \$ $(0.019) \\
## sc\_code52 & -0.009\$ $(0.017) & -0.009\$ $(0.017) \\
## sc\_code61 & 0.410\$ $(0.315) & 0.409\$ $(0.315) \\
## sc\_code62 & 0.072\$ $(0.090) & 0.074\$ $(0.090) \\
## sc\_code63 & -0.044^{**} \$ $(0.019) & -0.043^{**} \$ $(0.019) \\
## sc\_code64 & 0.103\$ $(0.066) & 0.104\$ $(0.066) \\
## sc\_code71 & -0.015\$ $(0.445) & -0.016\$ $(0.445) \\
## sc\_code73 & 0.007\$ $(0.019) & 0.008\$ $(0.019) \\
## sc\_code76 & 0.031\$ $(0.072) & 0.030\$ $(0.072) \\
## sc\_code91 & 0.465\$ $(0.445) & 0.465\$ $(0.445)

```

```

##   wave & 0.060^{***} $(0.007) & 0.059^{***} $(0.007) \\
##   Constant & -0.703^{***} $(0.049) & -0.700^{***} $(0.049) \\
##   region fixed effects & *** & *** \\
## survey wave fixed effects & *** & *** \\
## Observations & \multicolumn{1}{c}{19,566} & \multicolumn{1}{c}{19,566} \\
## Log Likelihood & \multicolumn{1}{c}{-11,898.500} & \multicolumn{1}{c}{-11,901.140} \\
## Akaike Inf. Crit. & \multicolumn{1}{c}{23,881.000} & \multicolumn{1}{c}{23,894.270} \\
## \hline \\[-1.8ex]
## \textit{Notes:} & \multicolumn{2}{l}{$^{***}$Significant at the 1 percent level.} \\
## & \multicolumn{2}{l}{$^{**}$Significant at the 5 percent level.} \\
## & \multicolumn{2}{l}{$^{*}$Significant at the 10 percent level.} \\
## \end{tabular}
## \end{table}

stargazer(probit1, probit2, title="Probit Estimation for Selection into Employment", align=TRUE, no.space=TRUE)
add.lines = list(c("region fixed effects", "***", "***"), c("survey wave fixed effects", "***"))

##
## % Table created by stargazer v.5.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
## % Date and time: Sat, Apr 28, 2018 - 9:17:00 PM
## % Requires LaTeX packages: dcolumn
## \begin{table}[!htbp] \centering
##   \caption{Probit Estimation for Selection into Employment}
##   \label{}
## \begin{tabular}{@{\extracolsep{5pt}}lD{.}{.}{-3} D{.}{.}{-3} }
## \\[-1.8ex]\hline
## \hline \\[-1.8ex]
## \\[-1.8ex] & \multicolumn{2}{c}{employed2} \\
## \\[-1.8ex] & \multicolumn{1}{c}{(1)} & \multicolumn{1}{c}{(2)} \\
## \hline \\[-1.8ex]
## job\_cat\_H2:self-employed & -0.489^{***} $(0.034) & -0.489^{***} $(0.034) \\
## job\_cat\_H3:informal business owner & -0.536^{***} $(0.070) & -0.538^{***} $(0.070) \\
## job\_cat\_H4:government & -0.077 $(0.048) & -0.079 $(0.048) \\
## job\_cat\_H5:private & -0.043 $(0.035) & -0.040 $(0.035) \\
## job\_cat\_H6:casual & -0.077^{*} $(0.042) & -0.077^{*} $(0.042) \\
## jl\_2 & 0.260^{***} $(0.059) & \\
## jl\_year\_fired1 & & 0.169 $(0.130) \\
## jl\_year\_fired2 & & 0.321^{**} $(0.151) \\
## jl\_year\_fired3 & & 0.420^{**} $(0.178) \\
## jl\_year\_fired4 & & 0.290 $(0.212) \\
## jl\_year\_fired5 & & 0.060 $(0.242) \\
## age & 0.129^{***} $(0.006) & 0.129^{***} $(0.006) \\
## age\_sq & -0.001^{***} $(0.000) & -0.001^{***} $(0.000) \\
## dl062:elementary & 0.122^{***} $(0.046) & 0.122^{***} $(0.046) \\
## dl063:juniorH & 0.152^{***} $(0.051) & 0.153^{***} $(0.051) \\
## dl064:seniorH & 0.233^{***} $(0.051) & 0.233^{***} $(0.051) \\
## dl065:higher & 0.936^{***} $(0.057) & 0.935^{***} $(0.057) \\
## dependents\_young & -0.218^{***} $(0.018) & -0.218^{***} $(0.018) \\
## dependents\_old & -0.010 $(0.014) & -0.010 $(0.014) \\
## working\_dependents & 0.083 $(0.086) & 0.084 $(0.086) \\
## other\_HHM & -0.180^{***} $(0.006) & -0.180^{***} $(0.006) \\
## other\_working & 0.372^{***} $(0.010) & 0.372^{***} $(0.010) \\
## sc\_code13 & 0.177^{***} $(0.058) & 0.176^{***} $(0.058) \\
## sc\_code14 & -0.199 $(0.121) & -0.197 $(0.121) \\
## sc\_code15 & -0.557 $(0.418) & -0.558 $(0.418)

```

```

## sc\_code16 & -0.252^{***} $(0.059) & -0.251^{***} $(0.059) \\
## sc\_code18 & -0.164^{***} $(0.059) & -0.165^{***} $(0.059) \\
## sc\_code19 & -0.103 $(0.128) & -0.101 $(0.127) \\
## sc\_code21 & 0.168 $(0.250) & 0.164 $(0.250) \\
## sc\_code31 & 0.078 $(0.053) & 0.081 $(0.053) \\
## sc\_code32 & 0.019 $(0.046) & 0.021 $(0.046) \\
## sc\_code33 & 0.248^{***} $(0.046) & 0.250^{***} $(0.046) \\
## sc\_code34 & 0.249^{***} $(0.056) & 0.252^{***} $(0.056) \\
## sc\_code35 & 0.115^{**} $(0.046) & 0.117^{**} $(0.046) \\
## sc\_code36 & 0.170^{***} $(0.062) & 0.170^{***} $(0.062) \\
## sc\_code51 & 0.445^{***} $(0.057) & 0.447^{***} $(0.057) \\
## sc\_code52 & -0.034 $(0.053) & -0.034 $(0.053) \\
## sc\_code61 & 3.865 $(25.825) & 3.862 $(25.825) \\
## sc\_code62 & 0.187 $(0.281) & 0.196 $(0.282) \\
## sc\_code63 & -0.130^{**} $(0.059) & -0.128^{**} $(0.059) \\
## sc\_code64 & 0.310 $(0.195) & 0.311 $(0.194) \\
## sc\_code71 & -2.714 $(36.573) & -2.717 $(36.573) \\
## sc\_code73 & 0.017 $(0.059) & 0.018 $(0.059) \\
## sc\_code76 & 0.082 $(0.218) & 0.080 $(0.218) \\
## sc\_code91 & 4.015 $(36.573) & 4.015 $(36.573) \\
## wave & 0.182^{***} $(0.020) & 0.180^{***} $(0.020) \\
## Constant & -3.762^{***} $(0.156) & -3.749^{***} $(0.156) \\
## region fixed effects & *** & *** \\
## survey wave fixed effects & *** & *** \\
## Observations & \multicolumn{1}{c}{19,566} & \multicolumn{1}{c}{19,566} \\
## Log Likelihood & \multicolumn{1}{c}{-11,266.170} & \multicolumn{1}{c}{-11,268.880} \\
## Akaike Inf. Crit. & \multicolumn{1}{c}{22,616.350} & \multicolumn{1}{c}{22,629.760} \\
## \hline \\[-1.8ex]
## \textit{Notes:} & \multicolumn{1}{l}{$^{***}$Significant at the 1 percent level.} \\
## & \multicolumn{1}{l}{$^{**}$Significant at the 5 percent level.} \\
## & \multicolumn{1}{l}{$^{*}$Significant at the 10 percent level.} \\
## \end{tabular} \\
## \end{table}
#probit selection

stargazer(heckit1, heckit2, title="Estimation of Hours with Heckman Correction", align=TRUE, no.space=TRUE)

##
## % Table created by stargazer v.5.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
## % Date and time: Sat, Apr 28, 2018 - 9:17:00 PM
## % Requires LaTeX packages: dcolumn
## \begin{table}[!htbp] \centering
##   \caption{Estimation of Hours with Heckman Correction}
##   \label{}
##   \begin{tabular}{@{\extracolsep{5pt}}lD{.}{.}{-3} D{.}{.}{-3} }
##     \hline \\[-1.8ex]\hline
##     \hline \\[-1.8ex] & \multicolumn{2}{c}{tk22a} \\
##     \hline \\[-1.8ex] & \multicolumn{2}{c}{(1)} & \multicolumn{2}{c}{(2)} \\
##     \hline \\[-1.8ex]
##     tk23a2y & -0.031 $(0.033) & -0.030 $(0.033) \\
##     jl\_2 & -0.381 $(1.495) & \\
##     jl\_year\_fired1 & & -1.929 $(3.277) \\
##     jl\_year\_fired2 & & 0.476 $(3.572) \\
##   \end{tabular}

```

```

## jl\_year\_fired3 & -1.679$ $(4.082) \\
## jl\_year\_fired4 & -0.092$ $(5.215) \\
## jl\_year\_fired5 & -5.649$ $(6.455) \\
## age & 0.389^{\ast\ast}$(0.233) & 0.390^{\ast\ast}$(0.232) \\
## age\_sq & -0.007^{\ast\ast}$(0.003) & -0.007^{\ast\ast}$(0.003) \\
## job\_cat3:informal business owner & 0.984$ $(1.953) & 0.959$ $(1.953) \\
## job\_cat4:government & -7.400^{\ast\ast\ast}$(1.128) & -7.418^{\ast\ast\ast}$(1.129) \\
## job\_cat5:private & -5.079^{\ast\ast\ast}$(0.648) & -5.089^{\ast\ast\ast}$(0.649) \\
## job\_cat6:civil & -12.694^{\ast\ast\ast}$(0.943) & -12.693^{\ast\ast\ast}$(0.944) \\
## d1062:elementary & 3.592^{\ast\ast\ast}$(1.351) & 3.596^{\ast\ast\ast}$(1.352) \\
## d1063:juniorH & 4.506^{\ast\ast\ast}$(1.479) & 4.527^{\ast\ast\ast}$(1.480) \\
## d1064:seniorH & 3.807^{\ast\ast}$(1.496) & 3.845^{\ast\ast}$(1.496) \\
## d1065:higher & -2.274$ $(1.908) & -2.239$ $(1.906) \\
## dependents\_young & -0.321$ $(0.576) & -0.325$ $(0.575) \\
## dependents\_old & -0.322$ $(0.365) & -0.328$ $(0.366) \\
## working\_dependents & 5.345^{\ast\ast}$(2.231) & 5.337^{\ast\ast}$(2.232) \\
## other\_HJM & -0.179$ $(0.263) & -0.178$ $(0.262) \\
## other\_working & 0.746$ $(0.502) & 0.744$ $(0.501) \\
## sc\_code13 & 1.108$ $(1.575) & 1.106$ $(1.575) \\
## sc\_code14 & 6.451^{\ast\ast}$(3.696) & 6.511^{\ast\ast}$(3.697) \\
## sc\_code15 & 3.643$ $(13.433) & 3.647$ $(13.435) \\
## sc\_code16 & -5.555^{\ast\ast\ast}$(1.819) & -5.549^{\ast\ast\ast}$(1.819) \\
## sc\_code18 & 2.966^{\ast\ast}$(1.777) & 2.964^{\ast\ast}$(1.778) \\
## sc\_code19 & 5.816^{\ast\ast}$(3.512) & 5.782^{\ast\ast}$(3.515) \\
## sc\_code21 & 6.430$ $(5.904) & 6.417$ $(5.905) \\
## sc\_code31 & 5.033^{\ast\ast\ast}$(1.467) & 5.076^{\ast\ast\ast}$(1.468) \\
## sc\_code32 & 1.463$ $(1.275) & 1.491$ $(1.275) \\
## sc\_code33 & 1.337$ $(1.296) & 1.349$ $(1.297) \\
## sc\_code34 & 1.597$ $(1.498) & 1.580$ $(1.499) \\
## sc\_code35 & 3.443^{\ast\ast\ast}$(1.279) & 3.446^{\ast\ast\ast}$(1.280) \\
## sc\_code36 & 4.238^{\ast\ast}$(1.735) & 4.294^{\ast\ast}$(1.737) \\
## sc\_code51 & -0.016$ $(1.523) & -0.003$ $(1.523) \\
## sc\_code52 & 3.221^{\ast\ast}$(1.514) & 3.241^{\ast\ast}$(1.514) \\
## sc\_code61 & 1.029$ $(16.493) & 1.048$ $(16.495) \\
## sc\_code62 & 2.831$ $(6.532) & 2.825$ $(6.533) \\
## sc\_code63 & -3.733^{\ast\ast}$(1.694) & -3.729^{\ast\ast}$(1.695) \\
## sc\_code64 & 3.803$ $(4.774) & 3.924$ $(4.781) \\
## sc\_code73 & 0.451$ $(1.680) & 0.461$ $(1.681) \\
## sc\_code76 & -0.371$ $(6.078) & -0.371$ $(6.079) \\
## sc\_code91 & 23.179$ $(23.233) & 23.170$ $(23.237) \\
## wave & -0.563$ $(0.585) & -0.564$ $(0.583) \\
## wage\_rate & -0.000^{\ast\ast\ast}$(0.000) & -0.000^{\ast\ast\ast}$(0.000) \\
## mills1 & -1.277$ $(1.929) & \\
## mills2 & -1.279$ $(1.922) \\
## Constant & 39.568^{\ast\ast\ast}$(7.795) & 39.552^{\ast\ast\ast}$(7.759) \\
## Observations & \multicolumn{1}{c}{7,909} & \multicolumn{1}{c}{7,909} \\
## R$^2 & \multicolumn{1}{c}{0.060} & \multicolumn{1}{c}{0.060} \\
## Adjusted R$^2 & \multicolumn{1}{c}{0.055} & \multicolumn{1}{c}{0.055} \\
## Residual Std. Error & \multicolumn{1}{c}{23.166 (df = 7866)} & \multicolumn{1}{c}{23.170 (df = 7862)} \\
## F Statistic & \multicolumn{1}{c}{11.994^{\ast\ast\ast} (df = 42; 7866)} & \multicolumn{1}{c}{10.973^{\ast\ast\ast} (df = 41; 7862)} \\
## \hline \\[-1.8ex]
## \textit{Notes:} & \multicolumn{1}{l}{Significant at the 1 percent level.} \\
## & \multicolumn{1}{l}{Significant at the 5 percent level.} \\
## & \multicolumn{1}{l}{Significant at the 10 percent level.}

```

```

## \end{tabular}
## \end{table}
#summary of job losses

jl_data <- clean %>%
  select(wave, jl)%>%
  group_by(wave, jl) %>%
  summarize(count = n())

jl_data_2 <- clean %>%
  select(wave, jl_2)%>%
  group_by(wave, jl_2) %>%
  summarize(count = n())

jl_year_data <- clean %>%
  select(wave, jl_year, jl_year_fired)%>%
  group_by(wave, jl_year) %>%
  summarize(count = n(), fired = sum(jl_year_fired != 0)) %>%
  ungroup() %>%
  filter(jl_year != 0) %>%
  gather(key = stat, value = jobs, cols = 3:4) %>%
  mutate(wave_stat = paste0("wave", wave, " - ", stat))%>%
  select( -c(wave, stat))%>%
  spread(wave_stat, jobs)

jl_year_data <- jl_year_data %>%
  rbind(c("total", colSums(jl_year_data[,2:5])))

stargazer(jl_year_data, summary = FALSE, rownames = FALSE)

##
## % Table created by stargazer v.5.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
## % Date and time: Sat, Apr 28, 2018 - 9:17:01 PM
## \begin{table}![htbp] \centering
##   \caption{}
##   \label{}
##   \begin{tabular}{@{\extracolsep{5pt}} ccccc}
##     \hline
##     jl\_year & wave4 - count & wave4 - fired & wave5 - count & wave5 - fired \\
##     \hline
##     1 & 140 & 44 & 290 & 64 \\
##     2 & 117 & 40 & 207 & 40 \\
##     3 & 82 & 30 & 133 & 31 \\
##     4 & 79 & 23 & 109 & 18 \\
##     5 & 47 & 16 & 93 & 16 \\
##     total & 465 & 153 & 832 & 169 \\
##     \hline
##   \end{tabular}
##   \end{table}
## \end{table}

labor_stats <- clean %>%
  select(wave, employed2, employed2_H, tk22a, tk22a_H, wage_prof, wage_prof_H)%>%
  gather(key = var, value = value, cols = 2:7) %>%

```

```

        group_by(wave, var) %>%
        filter(!is.na(value))) %>%
        summarize(mean = round(as.numeric(value), 4), sd = round(sd(value), 4)) %>%
        gather(key = stat, value = value, cols = 3:4) %>%
        mutate(wave_stat = paste0("wave", wave, " - ", stat)) %>%
        ungroup() %>%
        select(-c(wave, stat)) %>%
        spread(wave_stat, value)

stargazer(labor_stats, summary = FALSE, rownames = FALSE)

##
## % Table created by stargazer v.5.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
## % Date and time: Sat, Apr 28, 2018 - 9:17:01 PM
## \begin{table}[!htbp] \centering
##   \caption{}
##   \label{}
## \begin{tabular}{@{\extracolsep{5pt}} ccccc}
## \hline
## \hline
## var & wave4 - mean & wave4 - sd & wave5 - mean & wave5 - sd \\
## \hline
## employed2 & 0.3583 & 0.4795 & 0.4345 & 0.4957 \\
## employed2\_H & 0.8814 & 0.3233 & 0.8558 & 0.3513 \\
## tk22a & 38.669 & 22.1986 & 38.8595 & 24.8547 \\
## tk22a\_H & 44.5452 & 18.6733 & 43.7957 & 19.8792 \\
## wage\_prof & 1556776.09 & 20750224.0948 & 1490902.581 & 2547310.3021 \\
## wage\_prof\_H & 29417876.4789 & 2449217790.6085 & 107170052.1299 & 10243600848.9821 \\
## \hline
## \end{tabular}
## \end{table}
## \end{table}

dependents_sum <- clean %>%
  select(dependents_young, dependents_old, working_dependents, other_HHM, other_w)

stargazer(dependents_sum, summary.stat = c("mean", "sd"))

##
## % Table created by stargazer v.5.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
## % Date and time: Sat, Apr 28, 2018 - 9:17:01 PM
## \begin{table}[!htbp] \centering
##   \caption{}
##   \label{}
## \begin{tabular}{@{\extracolsep{5pt}} lcc}
## \hline
## \hline
## Statistic & \multicolumn{1}{c}{Mean} & \multicolumn{1}{c}{St. Dev.} \\
## \hline
## \hline
## dependents\_young & 0.508 & 0.642 \\
## dependents\_old & 0.617 & 0.794 \\
## working\_dependents & 0.009 & 0.110 \\
## other\_HHM & 5.004 & 3.200 \\
## \hline
## \end{tabular}
## \end{table}

```

```
## other\_working & 2.962 & 1.838 \\
## \hline \\[-1.8ex]
## \end{tabular}
## \end{table}
```