

To complete the analysis on the significance of the sector on the salary for different occupational groups in Sweden I will in this post examine the correlation between salary and sector using statistics for education.

The F-value from the Anova table is used as the single value to discriminate how much the region and salary correlates. For exploratory analysis, the Anova value seems good enough.

First, define libraries and functions.

```
library (tidyverse)

## -- Attaching packages -----
tidyverse 1.3.0 --

## v ggplot2 3.2.1      v purrr  0.3.3
## v tibble  2.1.3      v dplyr  0.8.3
## v tidyr   1.0.2      v stringr 1.4.0
## v readr   1.3.1      v forcats 0.4.0

## -- Conflicts -----
tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()

library (broom)
library (car)

## Loading required package: carData

##
## Attaching package: 'car'

## The following object is masked from 'package:dplyr':
##
##      recode

## The following object is masked from 'package:purrr':
##
##      some

library (sjPlot)

## Registered S3 methods overwritten by 'lme4':
##   method                                  from
##   cooks.distance.influence.merMod         car
##   influence.merMod                        car
##   dfbeta.influence.merMod                 car
##   dfbetas.influence.merMod                car

## Learn more about sjPlot with 'browseVignettes("sjPlot")'.

readfile <- function (file1){read_csv (file1, col_types = cols(), locale =
readr::locale (encoding = "latin1"), na = c("..", "NA")) %>%
  gather (starts_with("19"), starts_with("20"), key = "year", value = salary)
%>%
  drop_na() %>%
  mutate (year_n = parse_number (year))
}
```

The data table is downloaded from Statistics Sweden. It is saved as a comma-delimited file without heading, 000000CY.csv, <http://www.statistikdatabasen.scb.se/pxweb/en/ssd/>.

I have renamed the file to 000000CY_sector.csv because the filename 000000CY.csv was used in a previous post.

The table: Average basic salary, monthly salary and women's salary as a percentage of men's salary by sector, occupational group (SSYK 2012), sex and educational level (SUN). Year 2014 – 2018 Monthly salary 1-3 public sector 4-5 private sector

In the plot and tables, you can also find information on how the increase in salaries per year for each occupational group is affected when the interactions are taken into account.

```
tb <- readfile("000000CY_sector.csv") %>%
  mutate(edulevel = `level of education`)

numedulevel <- read.csv("edulevel.csv")

numedulevel %>%
  knitr::kable(
    booktabs = TRUE,
    caption = 'Initial approach, length of education')
```

Table 1: Initial approach, length of education

level.of.education	edueyears
primary and secondary education 9-10 years (ISCED97 2)	9
upper secondary education, 2 years or less (ISCED97 3C)	11
upper secondary education 3 years (ISCED97 3A)	12
post-secondary education, less than 3 years (ISCED97 4+5B)	14
post-secondary education 3 years or more (ISCED97 5A)	15
post-graduate education (ISCED97 6)	19
no information about level of educational attainment	NA

```
tbnum <- tb %>%
  right_join(numedulevel, by = c("level of education" = "level.of.education"))
%>%
  filter(!is.na(edueyears)) %>%
  mutate(edueyears = factor(edueyears))

## Warning: Column `level of education`/`level.of.education` joining character
## vector and factor, coercing into character vector

summary_table = vector()
anova_table = vector()

for (i in unique(tbnum$`occupational (SSYK 2012)`)){
  temp <- filter(tbnum, `occupational (SSYK 2012)` == i)
  if (dim(temp)[1] > 90){
    model <- lm(log(salary) ~ edulevel + sex + year_n + sector, data = temp)
    summary_table <- rbind(summary_table, mutate(tidy(summary(model)), ssyk
= i, interaction = "none"))
    anova_table <- rbind(anova_table, mutate(tidy(Anova(model, type = 2)),
ssyk = i, interaction = "none"))

    model <- lm(log(salary) ~ edulevel * sector + sex + year_n, data = temp)
    summary_table <- rbind(summary_table, mutate(tidy(summary(model)), ssyk
= i, interaction = "sector and edulevel"))
    anova_table <- rbind(anova_table, mutate(tidy(Anova(model, type = 2)),
ssyk = i, interaction = "sector and edulevel"))

    model <- lm(log(salary) ~ edulevel + sector * sex + year_n, data = temp)
```

[illegible]

[illegible]

```
## Note: model has aliased coefficients  
## sums of squares computed by model comparison  
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## sums of squares computed by model comparison  
## Note: model has aliased coefficients  
## sums of squares computed by model comparison
```

```
anova_table <- anova_table %>% rowwise() %>% mutate(contcol = str_count(term,  
":"))  
  
summary_table <- summary_table %>% rowwise() %>% mutate(contcol =  
str_count(term, ":"))  
  
merge(summary_table, anova_table, by = c("ssyk", "interaction"), all = TRUE) %>%  
  filter (term.x == "year_n") %>%  
  filter (term.y == "sector") %>%  
  filter (interaction == "none") %>%  
  
mutate (estimate = (exp(estimate) - 1) * 100) %>%  
ggplot () +  
  geom_point (mapping = aes(x = estimate, y = statistic.y, colour =  
interaction)) +  
  labs(  
    x = "Increase in salaries (% / year)",  
    y = "F-value for sector"  
  )
```

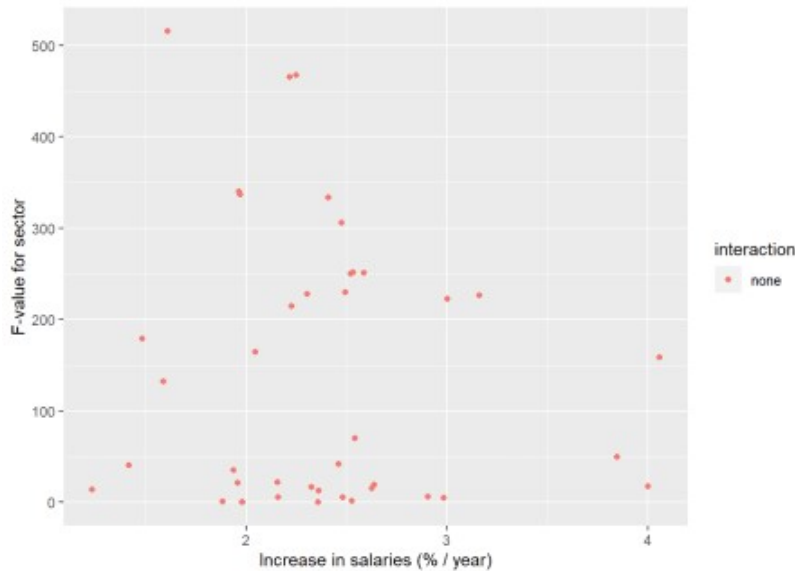


Figure 1: The significance of the sector on the salary in Sweden, a comparison between different occupational groups, Year 2014 – 2018

```
merge(summary_table, anova_table, by = c("ssyk", "interaction"), all = TRUE) %>%
  filter (term.x == "year_n") %>%
  filter (contcol.y > 0) %>%
  # only look at the interactions between all four variables in the case with
  interaction sector, year, edulevel and sex
  filter (!(contcol.y < 3 & interaction == "sector, year, edulevel and sex"))
%>%

mutate (estimate = (exp(estimate) - 1) * 100) %>%
ggplot () +
  geom_point (mapping = aes(x = estimate, y = statistic.y, colour =
interaction)) +
  labs(
    x = "Increase in salaries (% / year)",
    y = "F-value for interaction"
  )
)
```

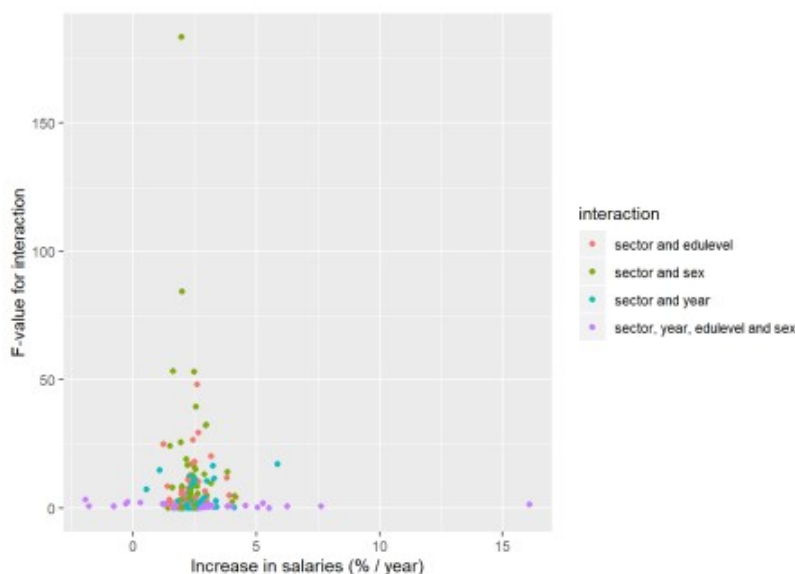


Figure 2: The significance of the interaction between sector, edulevel, year and sex on the salary in Sweden, a comparison between different occupational groups, Year 2014 – 2018

The tables with all occupational groups sorted by F-value in descending order.

```
merge(summary_table, anova_table, c("ssyk", "interaction"), all = TRUE) %>%
  filter (term.x == "year_n") %>%
  filter (term.y == "sector") %>%
  filter (interaction == "none") %>%
  mutate (estimate = (exp(estimate) - 1) * 100) %>%
  select (ssyk, estimate, statistic.y, interaction) %>%
  rename (`F-value` = statistic.y) %>%
  rename (`Increase in salary` = estimate) %>%
  arrange (desc (`F-value`)) %>%
  knitr::kable(
    booktabs = TRUE,
    caption = 'Correlation for F-value (sector) and the yearly increase in
salaries')
```

Table 2: Correlation for F-value (sector) and the yearly increase in salaries

ssyk	Increase in salary	F-value interaction
242 Organisation analysts, policy administrators and human resource specialists	1.609869	515.5748558 none
819 Process control technicians	2.250895	467.4732796 none
251 ICT architects, systems analysts and test managers	2.217446	465.2253589 none
331 Financial and accounting associate professionals	1.964825	340.2901702 none
962 Newspaper distributors, janitors and other service workers	1.971413	336.7676606 none
334 Administrative and specialized secretaries	2.410127	333.7196510 none
351 ICT operations and user support technicians	2.474549	305.6052807 none
241 Accountants, financial analysts and fund managers	2.534461	251.4058600 none
335 Tax and related government associate professionals	2.586686	250.8147705 none
515 Building caretakers and related workers	2.522386	250.0742967 none
321 Medical and pharmaceutical technicians	2.493038	230.0064060 none
213 Biologists, pharmacologists and specialists in agriculture and forestry	2.303600	228.0668837 none
134 Architectural and engineering managers	3.161068	226.5669850 none
333 Business services agents	3.001597	222.9774594 none
411 Office assistants and other secretaries	2.227235	214.6750980 none
243 Marketing and public relations professionals	1.481519	179.3099186 none
264 Authors, journalists and linguists	2.046538	164.8394018 none
129 Administration and service managers not elsewhere classified	4.059900	158.7687951 none
342 Athletes, fitness instructors and recreational workers	1.586943	132.1816646 none
159 Other social services managers	2.541205	69.9268014 none
123 Administration and planning managers	3.849200	50.0164438 none
541 Other surveillance and security workers	2.460130	41.9287342 none
235 Teaching professionals not elsewhere classified	1.415591	40.1919620 none
911 Cleaners and helpers	1.938366	35.3850213 none
533 Health care assistants	2.157379	22.0488822 none
534 Attendants, personal assistants and related workers	1.959595	21.6985964 none
332 Insurance advisers, sales and purchasing agents	2.637486	19.1041252 none
131 Information and communications technology service managers	4.000609	17.0841502 none
311 Physical and engineering science technicians	2.325958	16.5471030 none
214 Engineering professionals	2.626260	15.6152029 none

ssyk	Increase in salary	F-value interaction
432 Stores and transport clerks	1.231854	13.9155189 none
723 Machinery mechanics and fitters	2.362984	12.5847785 none
532 Personal care workers in health services	2.906578	6.3336230 none
512 Cooks and cold-buffet managers	2.483280	5.4612144 none
732 Printing trades workers	2.158854	5.2405535 none
234 Primary- and pre-school teachers	2.985653	4.6801860 none
422 Client information clerks	2.527801	1.7881181 none
531 Child care workers and teachers aides	1.881615	0.8334164 none
611 Market gardeners and crop growers	1.980288	0.3732826 none
341 Social work and religious associate professionals	2.357787	0.0276157 none
941 Fast-food workers, food preparation assistants	1.981512	0.0046670 none

```
merge(summary_table, anova_table, c("ssyk", "interaction"), all = TRUE) %>%
  filter (term.x == "year_n") %>%
  filter (contcol.y > 0) %>%
  filter (interaction == "sector and sex") %>%
  mutate (estimate = (exp(estimate) - 1) * 100) %>%
  select (ssyk, estimate, statistic.y, interaction) %>%
  rename (`F-value` = statistic.y) %>%
  rename (`Increase in salary` = estimate) %>%
  arrange (desc (`F-value`)) %>%
  knitr::kable(
    booktabs = TRUE,
    caption = 'Correlation for F-value (sector and sex) and the yearly increase
in salaries')
```

Table 3: Correlation for F-value (sector and sex) and the yearly increase in salaries

ssyk	Increase in salary	F-value interaction
911 Cleaners and helpers	1.966955	183.3539258 sector and sex
331 Financial and accounting associate professionals	1.988628	84.3723061 sector and sex
342 Athletes, fitness instructors and recreational workers	1.609407	53.2856268 sector and sex
351 ICT operations and user support technicians	2.474549	53.1541368 sector and sex
241 Accountants, financial analysts and fund managers	2.549161	39.5233707 sector and sex
333 Business services agents	2.952973	32.5926396 sector and sex
611 Market gardeners and crop growers	1.936338	25.7248443 sector and sex
243 Marketing and public relations professionals	1.489860	24.3260135 sector and sex
533 Health care assistants	2.157379	19.0714901 sector and sex
732 Printing trades workers	2.207617	16.8065594 sector and sex
512 Cooks and cold-buffet managers	2.497408	15.7408059 sector and sex

ssyk	Increase in salary	F-value interaction	
159 Other social services managers	2.511558	15.1529257	sector and sex
123 Administration and planning managers	3.819995	14.2436097	sector and sex
532 Personal care workers in health services	2.899482	13.1974037	sector and sex
334 Administrative and specialized secretaries	2.416957	12.8317750	sector and sex
213 Biologists, pharmacologists and specialists in agriculture and forestry	2.317893	10.2339741	sector and sex
134 Architectural and engineering managers	3.161068	9.7816667	sector and sex
321 Medical and pharmaceutical technicians	2.493038	8.6670096	sector and sex
941 Fast-food workers, food preparation assistants	1.989465	8.6486138	sector and sex
335 Tax and related government associate professionals	2.586686	8.4427211	sector and sex
242 Organisation analysts, policy administrators and human resource specialists	1.594999	8.1271264	sector and sex
723 Machinery mechanics and fitters	2.337983	6.4299201	sector and sex
332 Insurance advisers, sales and purchasing agents	2.627736	5.7400150	sector and sex
311 Physical and engineering science technicians	2.316138	5.3473607	sector and sex
234 Primary- and pre-school teachers	2.999161	5.0012138	sector and sex
129 Administration and service managers not elsewhere classified	4.121066	4.6687219	sector and sex
819 Process control technicians	2.250895	3.7631281	sector and sex
534 Attendants, personal assistants and related workers	1.959595	3.5292601	sector and sex
131 Information and communications technology service managers	4.029303	2.5233240	sector and sex
264 Authors, journalists and linguists	2.033203	2.5032667	sector and sex
341 Social work and religious associate professionals	2.357787	2.2988889	sector and sex
251 ICT architects, systems analysts and test managers	2.217446	2.1823519	sector and sex
422 Client information clerks	2.519631	2.1300830	sector and sex
432 Stores and transport clerks	1.231854	1.5040767	sector and sex
541 Other surveillance and security workers	2.457007	1.3945913	sector and sex
214 Engineering professionals	2.629057	1.3225970	sector and sex

ssyk	Increase in salary	F-value interaction
962 Newspaper distributors, janitors and other service workers	1.971413	0.3480210 sector and sex
531 Child care workers and teachers aides	1.879581	0.1432868 sector and sex
515 Building caretakers and related workers	2.522844	0.1379141 sector and sex
235 Teaching professionals not elsewhere classified	1.424488	0.0670314 sector and sex
411 Office assistants and other secretaries	2.227235	0.0001653 sector and sex

```
merge(summary_table, anova_table, c("ssyk", "interaction"), all = TRUE) %>%
  filter (term.x == "year_n") %>%
  filter (contcol.y > 0) %>%
  filter (interaction == "sector and edulevel") %>%
  mutate (estimate = (exp(estimate) - 1) * 100) %>%
  select (ssyk, estimate, statistic.y, interaction) %>%
  rename (`F-value` = statistic.y) %>%
  rename (`Increase in salary` = estimate) %>%
  arrange (desc (`F-value`)) %>%
  knitr::kable(
    booktabs = TRUE,
    caption = 'Correlation for F-value (sector and edulevel) and the yearly
increase in salaries')
```

Table 4: Correlation for F-value (sector and edulevel) and the yearly increase in salaries

ssyk	Increase in salary	F-value interaction
335 Tax and related government associate professionals	2.586686	48.2902588 sector and edulevel
234 Primary- and pre-school teachers	2.936162	32.3560802 sector and edulevel
214 Engineering professionals	2.636843	29.4462376 sector and edulevel
332 Insurance advisers, sales and purchasing agents	2.420632	26.7105578 sector and edulevel
432 Stores and transport clerks	1.231854	24.9194979 sector and edulevel
134 Architectural and engineering managers	3.161068	20.3665858 sector and edulevel
321 Medical and pharmaceutical technicians	2.493038	18.1556092 sector and edulevel
723 Machinery mechanics and fitters	2.358171	17.3272819 sector and edulevel
311 Physical and engineering science technicians	2.330300	12.9686992 sector and edulevel
123 Administration and planning managers	3.809019	11.7436022 sector and edulevel
732 Printing trades workers	2.220728	11.0453452 sector and edulevel
241 Accountants, financial analysts and fund managers	2.647068	10.5100504 sector and edulevel

ssyk	Increase in salary	F-value interaction	
235 Teaching professionals not elsewhere classified	1.396076	8.6264575	sector and edulevel
213 Biologists, pharmacologists and specialists in agriculture and forestry	2.264110	7.7952190	sector and edulevel
941 Fast-food workers, food preparation assistants	1.981512	7.5766373	sector and edulevel
331 Financial and accounting associate professionals	1.980338	6.9758948	sector and edulevel
532 Personal care workers in health services	2.919933	6.6231457	sector and edulevel
534 Attendants, personal assistants and related workers	1.959595	5.7464596	sector and edulevel
962 Newspaper distributors, janitors and other service workers	1.971413	5.4435379	sector and edulevel
131 Information and communications technology service managers	3.908111	4.9661376	sector and edulevel
159 Other social services managers	2.565523	4.7197836	sector and edulevel
129 Administration and service managers not elsewhere classified	4.160995	4.3062655	sector and edulevel
251 ICT architects, systems analysts and test managers	2.209131	3.5539841	sector and edulevel
512 Cooks and cold-buffet managers	2.435903	3.4242806	sector and edulevel
333 Business services agents	2.955970	3.3635706	sector and edulevel
243 Marketing and public relations professionals	1.473064	3.2639790	sector and edulevel
264 Authors, journalists and linguists	2.043677	3.0449469	sector and edulevel
334 Administrative and specialized secretaries	2.387467	2.8528940	sector and edulevel
422 Client information clerks	2.527801	2.3007696	sector and edulevel
242 Organisation analysts, policy administrators and human resource specialists	1.612900	1.9599904	sector and edulevel
351 ICT operations and user support technicians	2.474549	1.5903279	sector and edulevel
819 Process control technicians	2.250895	1.5586112	sector and edulevel
341 Social work and religious associate professionals	2.357787	1.3263497	sector and edulevel
611 Market gardeners and crop growers	2.016345	1.2719035	sector and edulevel
541 Other surveillance and security workers	2.460130	1.0672924	sector and edulevel
411 Office assistants and other secretaries	2.227235	1.0114046	sector and edulevel
515 Building caretakers and related workers	2.526100	0.8254389	sector and edulevel

ssyk	Increase in salary	F-value interaction	
342 Athletes, fitness instructors and recreational workers	1.540952	0.8230839	sector and edulevel
531 Child care workers and teachers aides	1.897863	0.7969406	sector and edulevel
533 Health care assistants	2.157379	0.5425248	sector and edulevel
911 Cleaners and helpers	1.938366	0.0965584	sector and edulevel

```

merge(summary_table, anova_table, c("ssyk", "interaction"), all = TRUE) %>%
  filter (term.x == "year_n") %>%
  filter (contcol.y > 0) %>%
  filter (interaction == "sector and year") %>%
  mutate (estimate = (exp(estimate) - 1) * 100) %>%
  select (ssyk, estimate, statistic.y, interaction) %>%
  rename (`F-value` = statistic.y) %>%
  rename (`Increase in salary` = estimate) %>%
  arrange (desc (`F-value`)) %>%
  knitr::kable(
    booktabs = TRUE,
    caption = 'Correlation for F-value (sector and year) and the yearly increase
in salaries')

```

Table 5: Correlation for F-value (sector and year) and the yearly increase in salaries

ssyk	Increase in salary	F-value interaction	
129 Administration and service managers not elsewhere classified	5.8528187	17.1667457	sector and year
351 ICT operations and user support technicians	3.2455362	16.6101284	sector and year
334 Administrative and specialized secretaries	1.0672775	14.9508269	sector and year
534 Attendants, personal assistants and related workers	2.2769477	12.4036331	sector and year
422 Client information clerks	3.2733483	11.6812523	sector and year
962 Newspaper distributors, janitors and other service workers	2.4907346	11.5673142	sector and year
264 Authors, journalists and linguists	2.9905121	10.5945994	sector and year
531 Child care workers and teachers aides	2.4510286	9.5936100	sector and year
242 Organisation analysts, policy administrators and human resource specialists	2.3355826	7.7816291	sector and year
432 Stores and transport clerks	0.5332567	7.4196762	sector and year
243 Marketing and public relations professionals	2.1828057	5.5660180	sector and year
732 Printing trades workers	2.8825380	4.3716553	sector and year
213 Biologists, pharmacologists and specialists in agriculture and forestry	2.8099783	3.6786224	sector and year

ssyk	Increase in salary	F-value interaction
611 Market gardeners and crop growers	2.3161238	3.3017939 sector and year
131 Information and communications technology service managers	3.3504930	2.8750373 sector and year
532 Personal care workers in health services	2.7411030	2.8290655 sector and year
235 Teaching professionals not elsewhere classified	1.8047571	2.7841902 sector and year
311 Physical and engineering science technicians	2.8608741	2.6173373 sector and year
533 Health care assistants	1.9920113	2.2486864 sector and year
214 Engineering professionals	3.0209963	2.0446973 sector and year
723 Machinery mechanics and fitters	2.6258864	1.4272778 sector and year
515 Building caretakers and related workers	2.3423357	1.3492650 sector and year
321 Medical and pharmaceutical technicians	2.1376334	1.2494762 sector and year
941 Fast-food workers, food preparation assistants	2.1906312	1.1458297 sector and year
234 Primary- and pre-school teachers	3.1522849	0.8075167 sector and year
411 Office assistants and other secretaries	2.4217447	0.7799156 sector and year
241 Accountants, financial analysts and fund managers	2.2625663	0.7751592 sector and year
541 Other surveillance and security workers	2.3018747	0.6646888 sector and year
134 Architectural and engineering managers	3.3811821	0.5852232 sector and year
333 Business services agents	3.2520012	0.5424390 sector and year
335 Tax and related government associate professionals	2.3986233	0.3139375 sector and year
123 Administration and planning managers	4.0945884	0.2682143 sector and year
911 Cleaners and helpers	2.0082873	0.2021948 sector and year
341 Social work and religious associate professionals	2.3994292	0.0754320 sector and year
342 Athletes, fitness instructors and recreational workers	1.6673896	0.0633281 sector and year
512 Cooks and cold-buffet managers	2.4249631	0.0494622 sector and year
819 Process control technicians	2.2225873	0.0378303 sector and year
331 Financial and accounting associate professionals	2.0557505	0.0377336 sector and year

ssyk	Increase in salary	F-value interaction
251 ICT architects, systems analysts and test managers	2.2536138	0.0294035 sector and year
332 Insurance advisers, sales and purchasing agents	2.6015664	0.0125275 sector and year
159 Other social services managers	2.5487758	0.0013436 sector and year

```

merge(summary_table, anova_table, c("ssyk", "interaction"), all = TRUE) %>%
  filter (term.x == "year_n") %>%
  filter (contcol.y > 1) %>%
  filter (interaction == "sector, year, edulevel and sex") %>%
  filter (!(contcol.y < 3 & interaction == "sector, year, edulevel and sex"))
%>%
  mutate (estimate = (exp(estimate) - 1) * 100) %>%
  select (ssyk, estimate, statistic.y, interaction) %>%
  rename (`F-value` = statistic.y) %>%
  rename (`Increase in salary` = estimate) %>%
  arrange (desc (`F-value`)) %>%
  knitr::kable(
    booktabs = TRUE,
    caption = 'Correlation for F-value (sector, year, edulevel and sex) and the
yearly increase in salaries')

```

Table 6: Correlation for F-value (sector, year, edulevel and sex) and the yearly increase in salaries

ssyk	Increase in salary	F-value interaction
264 Authors, journalists and linguists	2.0717871	5.0646298 sector, year, edulevel and sex
311 Physical and engineering science technicians	-1.9358596	3.3593399 sector, year, edulevel and sex
159 Other social services managers	2.1339049	2.5206357 sector, year, edulevel and sex
134 Architectural and engineering managers	-0.2221716	2.4150753 sector, year, edulevel and sex
331 Financial and accounting associate professionals	0.2989757	2.2892768 sector, year, edulevel and sex
342 Athletes, fitness instructors and recreational workers	2.7799167	2.1976399 sector, year, edulevel and sex
214 Engineering professionals	5.2732904	1.9988132 sector, year, edulevel and sex
723 Machinery mechanics and fitters	2.1334983	1.8843643 sector, year, edulevel and sex
432 Stores and transport clerks	-0.2883737	1.8215339 sector, year, edulevel and sex
241 Accountants, financial analysts and fund managers	2.6268377	1.8184489 sector, year, edulevel and sex
533 Health care assistants	1.3176280	1.6357939 sector, year, edulevel and sex
911 Cleaners and helpers	1.1875630	1.6319874 sector, year, edulevel and sex
129 Administration and service managers not elsewhere classified	16.0932403	1.5716145 sector, year, edulevel and sex

ssyk	Increase in salary	F-value interaction	
512 Cooks and cold-buffet managers	2.2335677	1.4882138	sector, year, edulevel and sex
242 Organisation analysts, policy administrators and human resource specialists	1.9377802	1.4494844	sector, year, edulevel and sex
234 Primary- and pre-school teachers	2.6286211	1.4408203	sector, year, edulevel and sex
235 Teaching professionals not elsewhere classified	1.4806649	1.4162230	sector, year, edulevel and sex
532 Personal care workers in health services	3.0809717	1.3439893	sector, year, edulevel and sex
962 Newspaper distributors, janitors and other service workers	1.7217534	1.3344044	sector, year, edulevel and sex
332 Insurance advisers, sales and purchasing agents	4.5515134	0.9604905	sector, year, edulevel and sex
123 Administration and planning managers	1.6860436	0.9155189	sector, year, edulevel and sex
541 Other surveillance and security workers	3.1372549	0.9113280	sector, year, edulevel and sex
213 Biologists, pharmacologists and specialists in agriculture and forestry	2.0956711	0.9044780	sector, year, edulevel and sex
422 Client information clerks	7.6231100	0.8611877	sector, year, edulevel and sex
515 Building caretakers and related workers	3.8284291	0.8343329	sector, year, edulevel and sex
334 Administrative and specialized secretaries	-1.8021942	0.7940149	sector, year, edulevel and sex
531 Child care workers and teachers aides	2.9556278	0.7580341	sector, year, edulevel and sex
131 Information and communications technology service managers	6.2536436	0.7429188	sector, year, edulevel and sex
243 Marketing and public relations professionals	-0.7939038	0.7338409	sector, year, edulevel and sex
351 ICT operations and user support technicians	3.2312302	0.7188959	sector, year, edulevel and sex
732 Printing trades workers	3.9993823	0.6905319	sector, year, edulevel and sex
321 Medical and pharmaceutical technicians	2.2164674	0.6326293	sector, year, edulevel and sex
611 Market gardeners and crop growers	2.2753348	0.6157880	sector, year, edulevel and sex
341 Social work and religious associate professionals	3.0666620	0.5266982	sector, year, edulevel and sex
941 Fast-food workers, food preparation assistants	2.7940568	0.4253642	sector, year, edulevel and sex
335 Tax and related government associate professionals	5.0470456	0.3217115	sector, year, edulevel and sex
251 ICT architects, systems analysts and test managers	2.9031256	0.2684425	sector, year, edulevel and sex
819 Process control technicians	1.6741717	0.2603997	sector, year, edulevel and sex

ssyk	Increase in salary	F-value interaction
333 Business services agents	1.8143344	0.1540308 sector, year, edulevel and sex
411 Office assistants and other secretaries	5.5231019	0.0911334 sector, year, edulevel and sex
534 Attendants, personal assistants and related workers	2.6927719	0.0899580 sector, year, edulevel and sex

Let's check what we have found.

```
temp <- tbnum %>%
  filter(`occupational` (SSYK 2012) == "242 Organisation analysts, policy
administrators and human resource specialists")

model <- lm (log(salary) ~ year_n + edueyears + sector + sex, data = temp)

plot_model(model, type = "pred", terms = c("edueyears", "sector"))

## Model has log-transformed response. Back-transforming predictions to original
response scale. Standard errors are still on the log-scale.
```

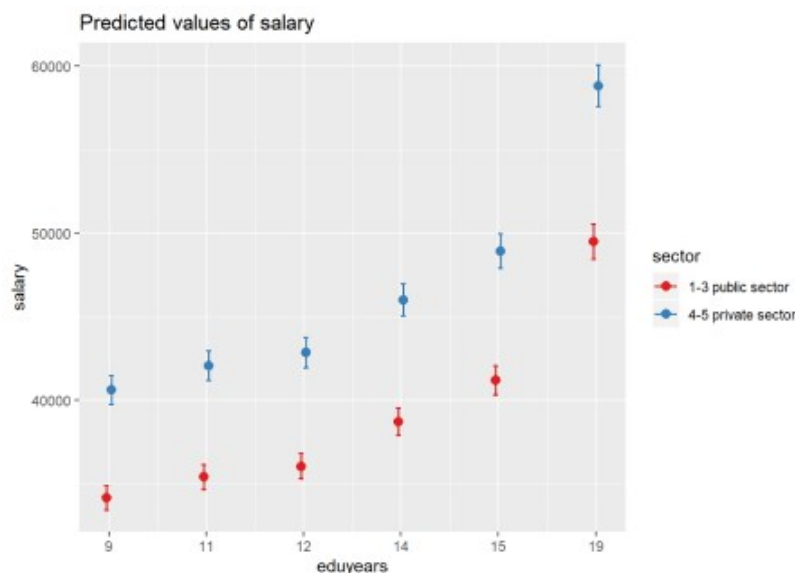


Figure 3: Highest F-value sector, Organisation analysts, policy administrators and human resource specialists

```
temp <- tbnum %>%
  filter(`occupational` (SSYK 2012) == "941 Fast-food workers, food preparation
assistants")

model <-lm (log(salary) ~ year_n + edueyears + sector + sex, data = temp)

plot_model(model, type = "pred", terms = c("edueyears", "sector"))

## Model has log-transformed response. Back-transforming predictions to original
response scale. Standard errors are still on the log-scale.
```

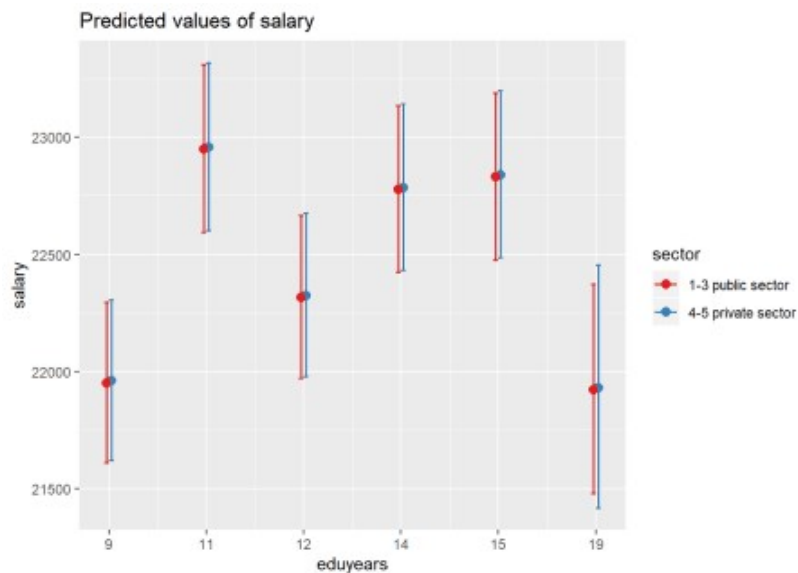



Figure 4: Lowest F-value sector, Fast-food workers, food preparation assistants

```
temp <- tbnum %>%
  filter(`occupational` (SSYK 2012) == "911 Cleaners and helpers")

model <- lm (log(salary) ~ year_n + edueyears + sector * sex, data = temp)

plot_model(model, type = "pred", terms = c("edueyears", "sex", "sector"))

## Model has log-transformed response. Back-transforming predictions to original
response scale. Standard errors are still on the log-scale.
```

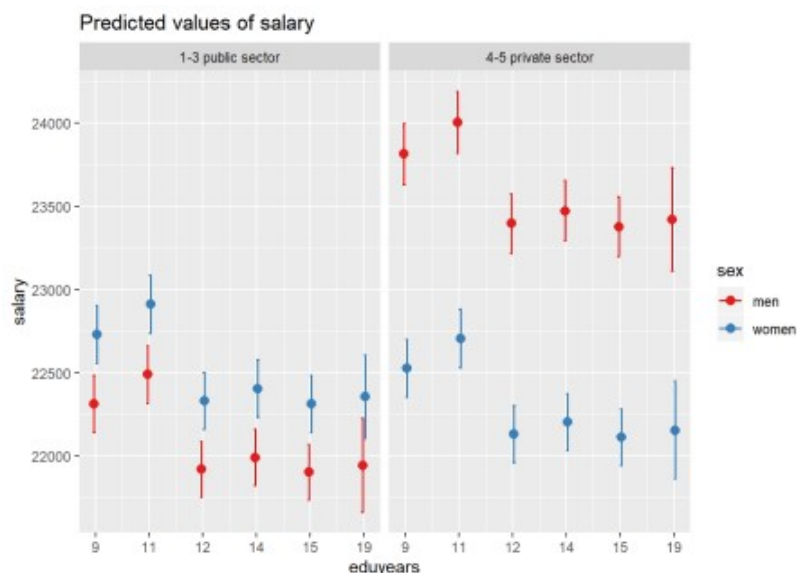


Figure 5: Highest F-value interaction sector and gender, Cleaners and helpers

```
temp <- tbnum %>%
  filter(`occupational` (SSYK 2012) == "411 Office assistants and other
secretaries")

model <- lm (log(salary) ~ year_n + edueyears + sector * sex, data = temp)

plot_model(model, type = "pred", terms = c("edueyears", "sex", "sector"))

## Model has log-transformed response. Back-transforming predictions to original
```

response scale. Standard errors are still on the log-scale.

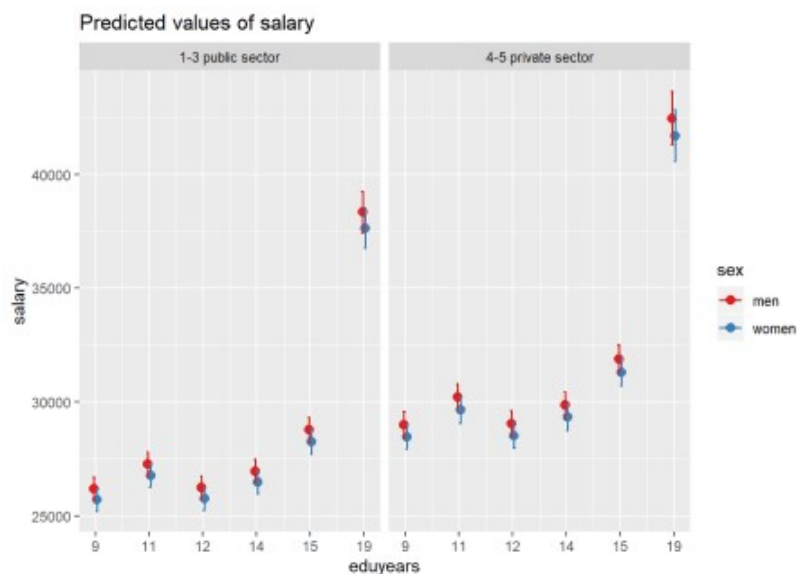


Figure 6: Lowest F-value interaction sector and gender, Office assistants and other secretaries

```
temp <- tbnum %>%
  filter(`occupational` (SSYK 2012) == "335 Tax and related government associate
professionals")

model <- lm (log(salary) ~ year_n + edueyears * sector + sex, data = temp)

plot_model(model, type = "pred", terms = c("edueyears", "sector"))

## Warning in predict.lm(model, newdata = fitfram, type = "response", se.fit =
## se, : prediction from a rank-deficient fit may be misleading

## Model has log-transformed response. Back-transforming predictions to original
response scale. Standard errors are still on the log-scale.
```

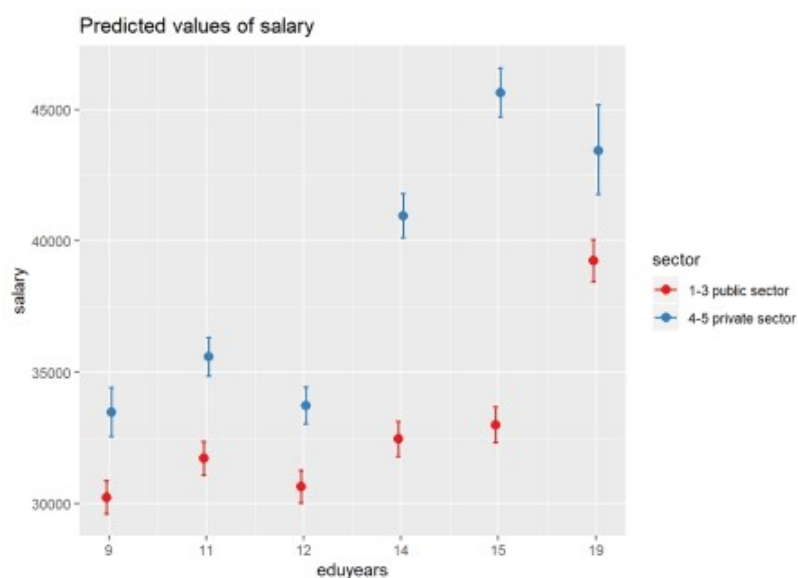


Figure 7: Highest F-value interaction sector and edulevel, Tax and related government associate professionals

```
temp <- tbnum %>%
  filter(`occupational` (SSYK 2012) == "911 Cleaners and helpers")
```

```

model <- lm (log(salary) ~ year_n + edueyears * sector + sex, data = temp)

plot_model(model, type = "pred", terms = c("edueyears", "sector"))

## Warning in predict.lm(model, newdata = fitfram, type = "response", se.fit =
## se, : prediction from a rank-deficient fit may be misleading

## Model has log-transformed response. Back-transforming predictions to original
response scale. Standard errors are still on the log-scale.

```

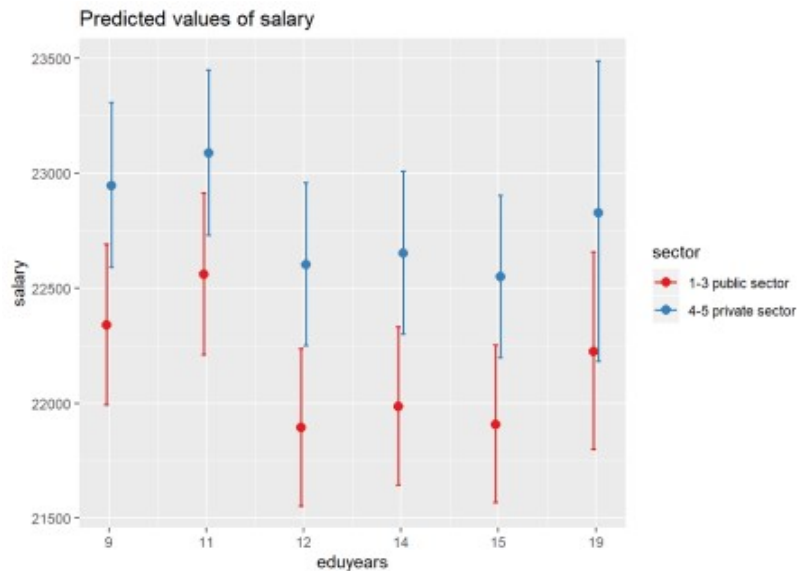


Figure 8: Lowest F-value interaction sector and edulevel, Cleaners and helpers

```

temp <- tbnum %>%
  filter(`occupational` (SSYK 2012) == "129 Administration and service managers
not elsewhere classified")

model <- lm (log(salary) ~ year_n * sector + edueyears + sex, data = temp)

plot_model(model, type = "pred", terms = c("edueyears", "year_n", "sector"))

## Model has log-transformed response. Back-transforming predictions to original
response scale. Standard errors are still on the log-scale.

```

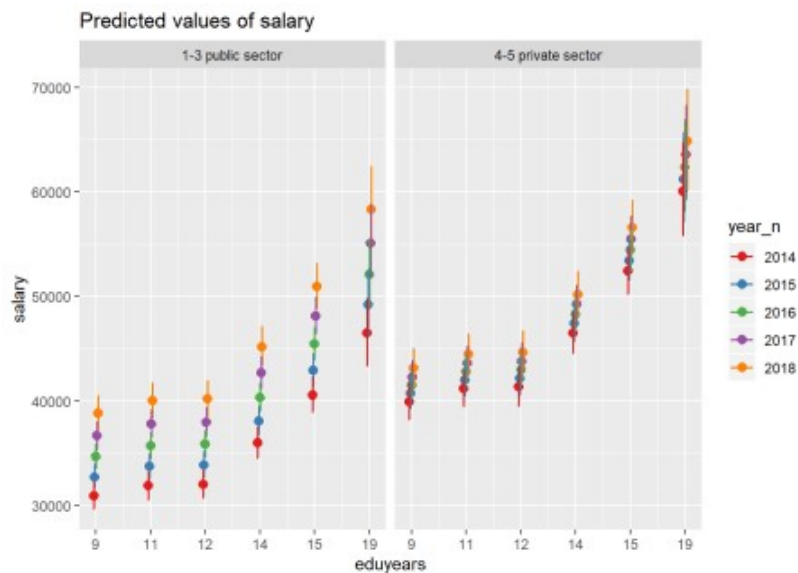


Figure 9: Highest F-value interaction sector and year, Administration and service managers not elsewhere classified

```
temp <- tbnum %>%
  filter(`occupational` (SSYK 2012) == "159 Other social services managers")

model <- lm (log(salary) ~ year_n * sector + edueyears + sex, data = temp)

plot_model(model, type = "pred", terms = c("edueyears", "year_n", "sector"))

## Model has log-transformed response. Back-transforming predictions to original
response scale. Standard errors are still on the log-scale.
```

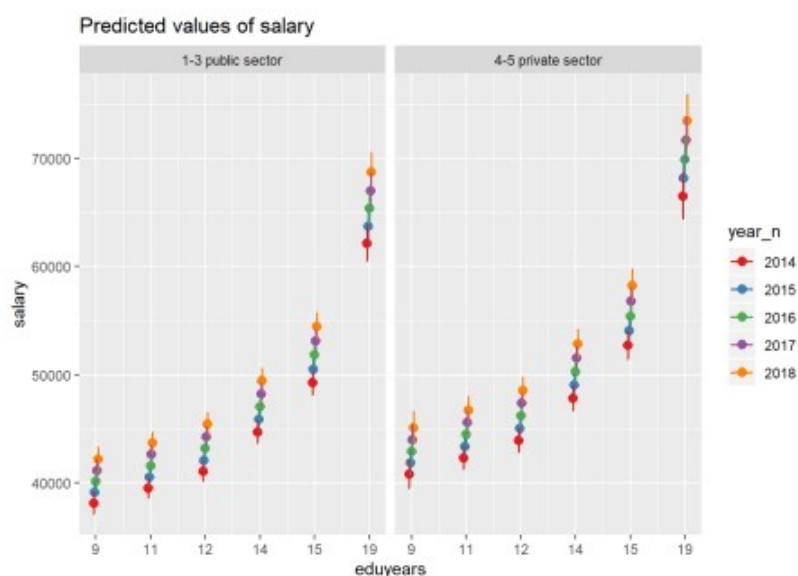


Figure 10: Lowest F-value interaction sector and year, Other social services managers

```
temp <- tbnum %>%
  filter(`occupational` (SSYK 2012) == "264 Authors, journalists and linguists")

model <- lm (log(salary) ~ year_n * edueyears * sector * sex, data = temp)

plot_model(model, type = "pred", terms = c("edueyears", "year_n", "sex",
"sector"))
```

```
## Warning in predict.lm(model, newdata = fitfram, type = "response", se.fit =
## se, : prediction from a rank-deficient fit may be misleading

## Model has log-transformed response. Back-transforming predictions to original
response scale. Standard errors are still on the log-scale.
```

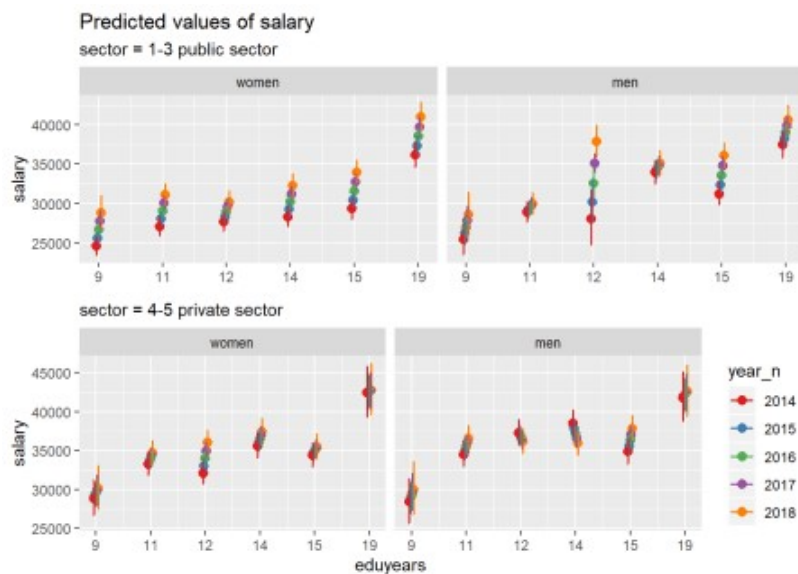


Figure 11: Highest F-value interaction sector, edulevel, year and gender, Authors, journalists and linguists

```
## TableGrob (2 x 1) "arrange": 2 grobs
##      z      cells      name      grob
## 1 1 (1-1,1-1) arrange gtable[layout]
## 2 2 (2-2,1-1) arrange gtable[layout]

temp <- tbnum %>%
  filter(`occupational` (SSYK 2012) == "534 Attendants, personal assistants and
related workers")

model <- lm (log(salary) ~ year_n * edueyears * sector * sex, data = temp)

plot_model(model, type = "pred", terms = c("edueyears", "year_n", "sex",
"sector"))

## Warning in predict.lm(model, newdata = fitfram, type = "response", se.fit =
## se, : prediction from a rank-deficient fit may be misleading

## Model has log-transformed response. Back-transforming predictions to original
response scale. Standard errors are still on the log-scale.
```

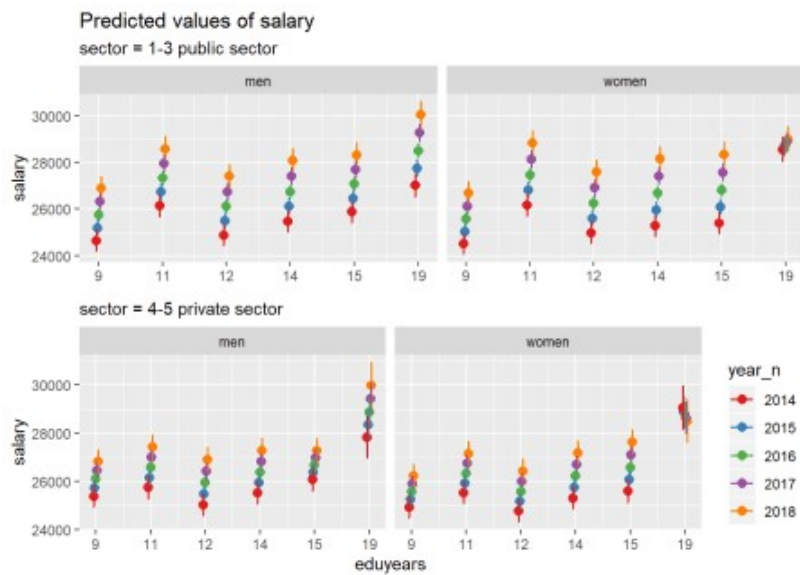


Figure 12: Lowest F-value interaction sector, edulevel, year and gender, Attendants, personal assistants and related workers

```
## TableGrob (2 x 1) "arrange": 2 grobs
##      z      cells      name      grob
## 1 1 (1-1,1-1) arrange gtable[layout]
## 2 2 (2-2,1-1) arrange gtable[layout]
```
