

Gruppeoppgave

Kandidatnummer??

Høst 2025

Laste inn data

```
library(haven) # Lese inn data sett
library(dplyr) # Databehandling
library(fixest) # Regresjon
library(knitr)
library(tidytext)

df <- read_dta("data/Combined_allwaves_final.dta") # Leser data

df <- df |>
  mutate(miss_age_PAP = ifelse(is.na(age_med_BL), 1, 0)) |>
  mutate(age_med_BL_control = ifelse(is.na(age_med_BL), 0, 1)) |>
  mutate(miss_household_size = ifelse(is.na(household_size), 1, 0)) |>
  mutate(household_size_control = ifelse(is.na(household_size), 0, household_size)) |>
  mutate(miss_edu_category = ifelse(is.na(edu_nohs_BL), 1, 0)) |>
  mutate(edu_nohs_BL_control = ifelse(is.na(edu_nohs_BL), 0, edu_nohs_BL)) |>
  mutate(married_control = ifelse(is.na(married), 0, married)) |>
  mutate(divorced_separated_control = ifelse(is.na(divorced_separated), 0,
divorced_separated)) |>
  mutate(single_control = ifelse(is.na(single), 0, single)) |>
  mutate(widowed_control = ifelse(is.na(widowed), 0, widowed)) |>
  mutate(miss_relationship = ifelse(is.na(rel_status_BL), 1, 0)) |>
  mutate(miss_cars = ifelse(is.na(cars), 1, 0)) |>
  mutate(one_car_control = ifelse(is.na(one_car), 0, one_car)) |>
  mutate(mult_cars_control = ifelse(is.na(mult_cars), 0, mult_cars)) |>
  mutate(miss_LF_BL = ifelse(is.na(LF_BL), 1, 0)) |>
  mutate(LF_BL_control = ifelse(is.na(LF_BL), 0, LF_BL)) |>
  filter(endline_start_w3==1)
```

```
#kable("x") # Jeg må ha med denne for at ting skal fungere.
```

```
s_train <- feols(s_train_bi_w3~ treatment + age_med_BL_control + miss_age_PAP + edu_nohs_BL_control
+ miss_edu_category + married_control + single_control + widowed_control
+ miss_relationship + household_size_control + miss_household_size + one_car_control
+ miss_cars + LF_BL_control + miss_LF_BL | randomization_cohort2, cluster = c("file_nbr"), data = )

licence <- feols(license_w3~ treatment + age_med_BL_control + miss_age_PAP + edu_nohs_BL_control
+ miss_edu_category + married_control + single_control + widowed_control
```

```

+ miss_relationship + household_size_control + miss_household_size + one_car_control
+ miss_cars + LF_BL_control + miss_LF_BL |randomization_cohort2, cluster = c("file_nbr"), data = c

empl <- feols(employed_w3~ treatment +age_med_BL_control + miss_age_PAP + edu_nohs_BL_control
+ miss_edu_category + married_control + single_control + widowed_control
+ miss_relationship + household_size_control + miss_household_size + one_car_control
+ miss_cars + LF_BL_control + miss_LF_BL |randomization_cohort2, cluster = c("file_nbr"), data = c

not_empl <- feols(unemployed_w3~ treatment + age_med_BL_control + miss_age_PAP + edu_nohs_BL_control
+ miss_edu_category + married_control + single_control + widowed_control
+ miss_relationship + household_size_control + miss_household_size + one_car_control
+ miss_cars + LF_BL_control + miss_LF_BL |randomization_cohort2, cluster = c("file_nbr"), data = c

leave_house <- feols(G1_2_abovemed ~ treatment + age_med_BL_control + miss_age_PAP + edu_nohs_BL_control
+ miss_edu_category + married_control + single_control + widowed_control
+ miss_relationship + household_size_control + miss_household_size + one_car_control
+ miss_cars + LF_BL_control + miss_LF_BL |randomization_cohort2, cluster = c("file_nbr"), data = c

make_purchase <- feols(G1_3_abovemed ~ treatment + age_med_BL_control +
miss_age_PAP + edu_nohs_BL_control
+ miss_edu_category + married_control + single_control + widowed_control
+ miss_relationship + household_size_control + miss_household_size + one_car_control
+ miss_cars + LF_BL_control + miss_LF_BL |randomization_cohort2, cluster = c("file_nbr"), data = c

controls <- c("miss_age_PAP", "age_med_BL_control", "miss_edu_category", "married_control",
"widowed_control", "miss_relationship", "household_size_control", "miss_household_size",
"one_car_control", "mult_cars_control", "miss_cars", "LF_BL_control", "LF_BL_control",
"edu_nohs_BL_control", "single_control", "miss_LF_BL", "Constant", "randomization_cohort2

tit <- "Treatment Effects on Individual Outcomes and Intrahousehold Responses"

fitstat_register("control_mean", function(x) mean(x), "Control mean")

fitstat_register("mean", function(x) mean(x, na.rm = T), "control_m")

fitstat_register("pval", function(x) pvalue(x), "p-value b = 0")

fitstat_register("mean_c",
function(x){
name <- x$fml[2] |> as.character()
xer <- df |>
filter(treatment == 0) |>
select(name) |> pull()
mean(xer, na.rm = T)
},

```

```

        "Control mean"
    )

    fitstat_register("me",

        function(x){
            name <- x$fml[2] |> as.character()
            xer <- df |>
            filter(treatment == 0) |>
            select(name) |> pull()

            x$coefficients[1] / mean(xer, na.rm = T)
        },
        "b/Control mean"
    )

```

```

t1pa <- etable(s_train, licence,
    se.below=T,
    drop = controls,
    title = tit,
    digits = "r3", digits.stats = "r3",
    tex = T,
    signif.code = NA,
    dict=c(treatment = "Treatment",
        s_train_bi_w3 = "Started driver`s training",
        license_w3 = "Received license",
        randomization_cohort2 = ""),
    style.tex = style.tex("qje", ),
    fitstat = ~ n + mean_c + me + pval)

```

```

t1pb <- etable(empl, not_empl,
    se.below=T,
    drop = controls,
    title = tit,
    digits = "r3", digits.stats = "r3",
    tex = T,
    signif.code = NA,
    dict=c(treatment = "Treatment",
        employed_w3 = "Employed",
        unemployed_w3 = "Unemployed",
        randomization_cohort2 = ""),
    style.tex = style.tex("qje", ),
    fitstat = ~ n + mean_c + me + pval)

```

```

t1pc <- etable(leave_house, make_purchase,
    se.below=T,
    tex = T,
    drop = controls,
    title = tit,
    digits = "r3", digits.stats = "r3",
    signif.code = NA,
    dict=c(treatment = "Treatment",

```

```

G1_2_abovevmed = "Allowed to leave house w/o permission",
G1_3_abovevmed = "Allowed to make purchase w/o permission",
randomization_cohort2 = ""),
style.tex = style.tex("qje", ),
fitstat = ~ n + mean_c +me + pval)

```

t1pa;t1pb;t1pc

Table 1: Treatment Effects on Individual Outcomes and Intrahousehold Responses

	Started driver's training (1)	Received license (2)
Treatment	0.619 (0.040)	0.430 (0.039)
Observations	467	467
Control mean	0.192	0.102
b/Control mean	3.229	4.221
p-value b = 0	0.000	0.000
fixed effects	✓	✓

Table 2: Treatment Effects on Individual Outcomes and Intrahousehold Responses

	Employed (1)	Unemployed (2)
Treatment	0.085 (0.043)	-0.105 (0.049)
Observations	488	488
Control mean	0.210	0.569
b/Control mean	0.405	-0.185
p-value b = 0	0.049	0.032
fixed effects	✓	✓

Tabell 2

Table 3: Treatment Effects on Individual Outcomes and Intrahousehold Responses

	Allowed to leave house w/o permission (1)	Allowed to make purchase w/o permission (2)
Treatment	0.062 (0.046)	-0.090 (0.048)
Observations	488	486
Control mean	0.344	0.484
b/Control mean	0.179	-0.186
p-value b = 0	0.184	0.059
fixed effects	✓	✓

```

hte_var <- c("age_med_BL_control", "edu_nohs_BL_control", "LF_BL_control" )
panelb_controls <- c("miss_age_PAP", "miss_edu_category", "married_control",
                    "widowed_control", "miss_relationship", "household_size_control", "miss_household_size",
                    "one_car_control", "mult_cars_control", "miss_cars", "LF_BL_control", "single_control", "miss_married")

fitstat_register("samlet",
  function(x){
    antall_koeff <- length(x$coefficients)
    b_1 <- x$coefficients[1]
    b_3 <- x$coefficients[antall_koeff]

    round(b_1 + b_3, 3)
  },
  "B1 + B3"
)

fitstat_register("se",
  function(x){
    antall_koeff <- length(x$coefficients)

    v_b_1 <- x$se[1]**2
    v_b_3 <- x$se[antall_koeff]**2

    cov13 <- x$cov.unscaled[antall_koeff]

    se <- sqrt(v_b_1 + v_b_3 + 2*cov13)

    paste0("(", round(se, 3), ")")
  },
  " "
)

```

```

fitstat_register("median_age",
  function(x){

    name <- formula(x)[2] |> as.character()

    df |>
      filter(treatment == 0 & age_med_BL == 0) |>
      pull(name) |> mean(na.rm = T) |> round(3)

  }, "Mean: control, below median age")

fitstat_register("hs",
  function(x){

    name <- formula(x)[2] |> as.character()

    df |>
      filter(treatment == 0 & edu_nohs_BL == 0) |>
      pull(name) |> mean(na.rm = T) |> round(3)

  },
  "Mean: control, completed HS")
fitstat_register("mcd",
  function(x){

    name <- formula(x)[2] |> as.character()
    df |> filter(treatment == 0 & divorced_separated == 1) |>
      pull(name) |> mean(na.rm = T) |> round(3)

  }, "Mean: control, divorced")

fitstat_register("mcm",
  function(x){

    name <- formula(x)[2] |> as.character()
    df |> filter(treatment == 0 & married == 1) |>
      pull(name) |> mean(na.rm = T) |> round(3)

  }, "Mean: control, married")
fitstat_register("mcnm",
  function(x){

    name <- formula(x)[2] |> as.character()
    df |> filter(treatment == 0 & single == 1) |>
      pull(name) |> mean(na.rm = T) |> round(3)

  }, "Mean: control, never married")

fitstat_register("mcw",

```

```

function(x){

  name <- formula(x)[2] |> as.character()
  df |> filter(treatment == 0 & widowed == 1) |>
    pull(name) |> mean(na.rm = T) |> round(3)

  }, "Mean: control, widowed")

#### Panel A

rl2a <- feols(license_w3 ~ treatment + age_med_BL + treatment:age_med_BL
  + miss_age_PAP
  + miss_edu_category + married_control + single_control + widowed_control
  + miss_relationship + household_size_control + miss_household_size + one_car_control
  + miss_cars + miss_LF_BL |randomization_cohort2, cluster = c("file_nbr")
  ,data = df)

emp2a <- feols(employed_w3 ~ treatment +age_med_BL+ treatment:age_med_BL
  + miss_age_PAP
  + miss_edu_category + married_control + single_control + widowed_control
  + miss_relationship + household_size_control + miss_household_size + one_car_control
  + miss_cars + miss_LF_BL |randomization_cohort2, cluster = c("file_nbr")
  ,data = df)

make_purchase2a <- feols(G1_3_abovemed ~ treatment +age_med_BL + treatment:age_med_BL
  + miss_age_PAP
  + miss_edu_category + married_control + single_control + widowed_control
  + miss_relationship + household_size_control + miss_household_size + one_car_control
  + miss_cars + miss_LF_BL |randomization_cohort2, cluster = c("file_nbr")
  ,data = df)

#### Panel b

rl2b <- feols(license_w3 ~ treatment + edu_nohs_BL + treatment:edu_nohs_BL
  + miss_age_PAP
  + miss_edu_category + married_control + single_control + widowed_control
  + miss_relationship + household_size_control + miss_household_size + one_car_control
  + miss_cars + miss_LF_BL |randomization_cohort2, cluster = c("file_nbr")
  ,data = df)

emp2b <- feols(employed_w3 ~ treatment + edu_nohs_BL + treatment:edu_nohs_BL
  + miss_age_PAP
  + miss_edu_category + married_control + single_control + widowed_control
  + miss_relationship + household_size_control + miss_household_size + one_car_control

```

```

+ miss_cars + miss_LF_BL |randomization_cohort2, cluster = c("file_nbr")
,data = df)

make_purchase2b <- feols(G1_3_abovemed ~ treatment + edu_nohs_BL + treatment:edu_nohs_BL
+ miss_age_PAP
+ miss_edu_category + married_control + single_control + widowed_control
+ miss_relationship + household_size_control + miss_household_size + one_car_control
+ miss_cars + miss_LF_BL |randomization_cohort2, cluster = c("file_nbr")
,data = df)

##### Panel c

rl2c <- feols(license_w3 ~ treatment + single_control + married_control+ widowed_control
+ treatment:married + treatment:single + treatment:widowed
+ miss_age_PAP + miss_edu_category + miss_relationship
+ household_size_control + miss_household_size + one_car_control
+ miss_cars + miss_LF_BL
|randomization_cohort2, cluster = c("file_nbr")
,data = df)

emp2c <- feols(employed_w3 ~ treatment + single_control + married_control+ widowed_control
+ treatment:married + treatment:single + treatment:widowed
+ miss_age_PAP + miss_edu_category + miss_relationship
+ household_size_control + miss_household_size + one_car_control
+ miss_cars + miss_LF_BL
|randomization_cohort2, cluster = c("file_nbr")
,data = df)

make_purchase2c <- feols(G1_3_abovemed~ treatment + single_control + married_control+ widowed_control
+ treatment:married + treatment:single + treatment:widowed
+ miss_age_PAP + miss_edu_category + miss_relationship
+ household_size_control + miss_household_size + one_car_control
+ miss_cars + miss_LF_BL
|randomization_cohort2, cluster = c("file_nbr")
,data = df)

#####

panela <- etable(rl2a,emp2a,make_purchase2a, se.below = T,
tex = T, title = "Panel A",
drop = panelb_controls,
digits = "r3",digits.stats = "r3",
signif.code = NA,
dict=c(treatment = "Treatment",
license_w3 = "Received license",

```



```

        G1_3_abovemed = "Allowed to make purchase w/o permission",
        employed_w3 = "Employed",
        age_med_BL = "Above median age",
        randomization_cohort2 = ""),
    style.tex = style.tex("qje", ),
    fitstat = ~samlet+ se+ n + median_age);

panelb <- etable(rl2b, emp2b, make_purchase2b, se.below = T,
  tex = T, title = "panel B",
  drop = panelb_controls,
  digits = "r3", digits.stats = "r3",
  signif.code = NA,
  dict=c(treatment = "Treatment",
        license_w3 = "Received license",
        G1_3_abovemed = "Allowed to make purchase w/o permission",
        employed_w3 = "Employed",
        edu_nohs_BL = "Less than HS",
        randomization_cohort2 = ""),
  style.tex = style.tex("qje", ),
  fitstat = ~samlet+ se+ n + hs )

panelc <- etable(rl2c, emp2c, make_purchase2c, se.below = T,
  tex = T, title = "panel c",
  drop = panelb_controls,
  digits = "r3", digits.stats = "r3",
  signif.code = NA,
  dict=c(treatment = "Treatment",
        license_w3 = "Received license",
        G1_3_abovemed = "Allowed to make purchase w/o permission",
        employed_w3 = "Employed",
        single = "never married",
        randomization_cohort2 = ""),
  style.tex = style.tex("qje", ),
  fitstat = ~n+mcd + mcm + mcnm + mcw)

panela;panelb;panelc

```

Oppgave 2

```

library(GenericML)

kovariater <- c("age_med_BL_control", "miss_age_PAP", "edu_nohs_BL_control",
  "miss_edu_category", "married_control", "single_control", "widowed_control",
  "miss_relationship", "household_size_control", "miss_household_size", "one_car_control", "miss_cars",

```

Table 4: Panel A

	Received license (1)	Employed (2)	Allowed to make purchase w/o permission (3)
Treatment	0.526 (0.056)	0.139 (0.063)	0.038 (0.070)
Above median age	0.150 (0.062)	-0.041 (0.075)	0.274 (0.089)
Treatment \times Above median age	-0.189 (0.076)	-0.105 (0.082)	-0.246 (0.092)
B1 + B3	0.338 (0.033)	0.034 (0.057)	-0.208 (0.067)
Observations	467	488	486
Mean: control, below median age	0.092	0.247	0.329
fixed effects	✓	✓	✓

Table 5: panel B

	Received license (1)	Employed (2)	Allowed to make purchase w/o permission (3)
Treatment	0.507 (0.052)	0.078 (0.055)	-0.023 (0.059)
Less than HS	-0.001 (0.057)	-0.125 (0.060)	0.080 (0.079)
Treatment \times Less than HS	-0.230 (0.079)	0.029 (0.077)	-0.186 (0.093)
B1 + B3	0.277 (0.058)	0.107 (0.059)	-0.209 (0.074)
Observations	459	479	477
Mean: control, completed HS	0.129	0.265	0.451
fixed effects	✓	✓	✓

Table 6: panel c

	Received license (1)	Employed (2)	Allowed to make purchase w/o permission (3)
Treatment	0.433 (0.059)	-0.029 (0.072)	-0.221 (0.072)
Treatment \times married	-0.156 (0.101)	0.105 (0.111)	0.058 (0.131)
Treatment \times never married	0.161 (0.087)	0.175 (0.107)	0.344 (0.108)
Treatment \times widowed	-0.234 (0.145)	0.295 (0.135)	0.031 (0.159)
Observations	463	484	482
Mean: control, divorced	0.083	0.250	0.597
Mean: control, married	0.091	0.171	0.472
Mean: control, never married	0.080	0.246	0.293
Mean: control, widowed	0.208	0.080	0.654
fixed effects	✓	✓	✓

```

data <- df[,c(kovariater, "license_w3", "treatment")] |> na.omit()

Z <- as.matrix(data[, kovariater])

treat <- data$treatment |> as.numeric()

Y <- data$license_w3 |> as.numeric()

# Får feil med nnet
learners <- c(
  "mlr3::lrn('cv_glmnet')",
  "mlr3::lrn('ranger')",
  "mlr3::lrn('kknn')"
)

diff_clan <- setup_diff(subtract_from = "most", subtracted = 1)

num_splits <- 100 # Default

x <- GenericML(
  Z, treat, Y, learners,
  num_splits = num_splits,

```

```
diff_CLAN = diff_clan,
significance_level = 0.025,
parallel = TRUE)

x$best$overview; paste("Modell best egnet for CLAN:", x$best$CLAN)
```

```
##                                lambda lambda.bar
## mlr3::lrn('cv_glmnet') 0.002435645 0.1878844
## mlr3::lrn('ranger')    0.008369082 0.1932400
## mlr3::lrn('kkn')      0.001951463 0.1874126

## [1] "Modell best egnet for CLAN: mlr3::lrn('ranger')"
```

```
name <- c()
d1 <- c()
d2 <- c()
d3 <- c()
d4 <- c()
difference <- c()
c <- 1

for (i in kovariater)
{
  name[c] <- i
  svar <- get_CLAN(x, variable = i, plot = FALSE)[1]$estimate
  d1[c] <- svar[1]
  d2[c] <- svar[2]
  d3[c] <- svar[3]
  d4[c] <- svar[4]
  difference[c] <- svar[5]
  c <- c + 1
}

estimator <- data.frame(name,d1,d2,d3,d4,difference)

estimator <- data.frame(name,d1,d4,difference)

kable(estimator)
```

name	d1	d4	difference
age_med_BL_control	1.0000000	1.0000000	0.0000000
miss_age_PAP	0.0000000	0.0000000	0.0000000
edu_nohs_BL_control	0.7777615	0.0000000	-0.7796610
miss_edu_category	0.0000000	0.0330601	0.0327728
married_control	0.3793103	0.0000000	-0.3793103
single_control	0.0084746	0.7419355	0.7288020
widowed_control	0.2413793	0.0000000	-0.2456140
miss_relationship	0.0000000	0.0165301	0.0165301
household_size_control	5.6206897	5.8666667	0.2201149
miss_household_size	0.0258777	0.0000000	-0.0341905

name	d1	d4	difference
one_car_control	0.4826048	0.2786885	-0.2033898
miss_cars	0.0170953	0.0000000	-0.0170953
LF_BL_control	0.6379310	0.9663842	0.3220339
miss_LF_BL	0.0000000	0.0000000	-0.0084746