

# Arbeidskrav\_3\_Koder

Kandidatnr:21

2022-10-04

```
##### UTFORDRING 3.1 #####
```

```
# Laster inn data fra ssb gjennom "oppskrift" fra ssb.
```

```
url<-"https://data.ssb.no/api/v0/no/table/11155/"
```

```
SSB_DATA <- '{
  "query": [
    {
      "code": "Kjonn",
      "selection": {
        "filter": "item",
        "values": [
          "0"
        ]
      }
    },
    {
      "code": "Alder",
      "selection": {
        "filter": "item",
        "values": [
          "20-64",
          "15-24"
        ]
      }
    },
    {
      "code": "UtdNivaa",
      "selection": {
        "filter": "item",
        "values": [
          "TOT"
        ]
      }
    },
    {
      "code": "ContentsCode",
      "selection": {
        "filter": "item",
        "values": [
          "ArbLedigProsent"
        ]
      }
    }
  ]
}
```

```

    ]
  }
},
{
  "code": "Tid",
  "selection": {
    "filter": "item",
    "values": [
      "2020"
    ]
  }
}
],
"response": {
  "format": "json-stat2"
}
}'

```

```
ssb_data <- POST(url , body = SSB_DATA, encode = "json", verbose())
```

```
#str(ssb_data)
```

```
ssb_df <- fromJSONstat(content(ssb_data, "text"))
as_tibble(ssb_df)
```

```
## # A tibble: 2 x 6
##   kjønn      alder      utdanningsnivå      statistikkvariabel      år      value
##   <chr>      <chr>      <chr>      <chr>      <chr>      <dbl>
## 1 Begge kjønn 20-64 år Utdanningsnivå i alt Arbeidsledige (prosent) 2020      4.1
## 2 Begge kjønn 15-24 år Utdanningsnivå i alt Arbeidsledige (prosent) 2020     11.5
```

```
#view(ssb_df)
```

```
# Lager plot som illustrerer arbeidsledigheten mellom aldersgruppene.
```

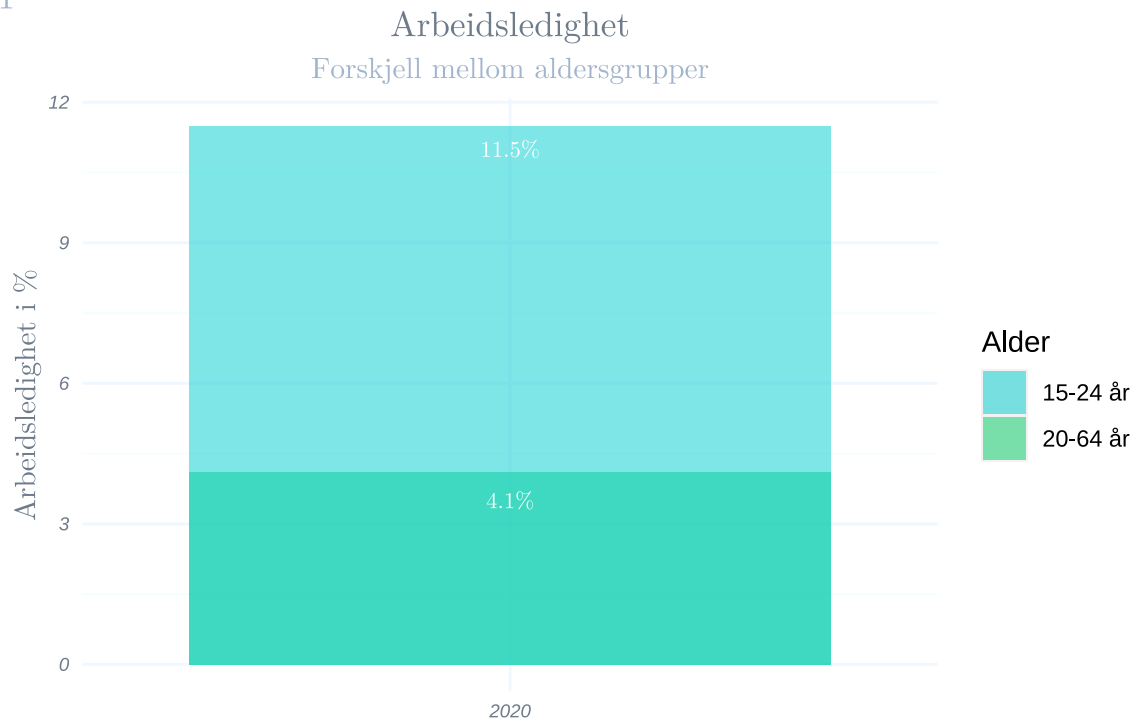
```
ggplot(ssb_df, aes(år, value, group=alder)) +
  geom_col(position="identity", aes(fill=alder), alpha=.5)+
  scale_fill_manual(values = c("darkturquoise", "springgreen3"))+
  annotate(geom="text", x= 1, y= 3.5, label="4.1%",
           color="white", size = 3.0, family = "LM Roman 10")+
  annotate(geom="text", x= 1, y= 11, label="11.5%",
           color="white", size = 3.0, family = "LM Roman 10")+
  labs(x = "",
       y = "Arbeidsledighet i %",
       title = "Arbeidsledighet",
       subtitle = "Forskjell mellom aldersgrupper",
       caption = "Kilde: SSB\https://data.ssb.no/api/v0/no/table/11155/",
       fill="Alder",
       tag = "Fig. 1")+
  theme(plot.title = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),
        plot.subtitle = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue3"),
        plot.caption = element_text(family = "LM Roman 10", color = "lightsteelblue3"),
```

```

axis.ticks = element_blank(),
plot.tag = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue3"),
axis.title.y = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),
axis.text.x = element_text(angle = 0, size = 7, face = "italic", color = "lightsteelblue4"),
axis.text.y = element_text(size = 7, face = "italic", color = "lightsteelblue4"),
panel.background = element_rect(fill = "white", colour = "white"),
panel.grid.major = element_line(colour = "aliceblue"),
panel.grid.minor = element_line(colour = "azure"))

```

Fig. 1



Kilde: SSB  
<https://data.ssb.no/api/v0/no/table/11155/>

##### OPPGAVE 2 #####

#i denne delen kopierte jeg koden som var gitt. Men for å forstå den, valgte  
 #jeg gå igjennom den å gi nye navn på ting for å ha mer oversikt selv.

#Script for Utf 3

# We will use the following packages for the assignment:

```

library(OECD) #The OECD package
library(ggplot2) # the ggplot package
library(tidyverse) # the tidyverse package
library(dplyr) # The DPLYR package
library(ggrepel) # The ggrepel package

```

#We want to create a graph that shows the correlation between minimum wages and unemployment. We need to  
 #Search data set for minimum wages and unemployment statistics

```

dsets<-get_datasets()
search_dataset("wage",dsets)

## # A tibble: 10 x 2
##   id                title
##   <chr>             <chr>
## 1 MIN2AVE           Minimum relative to average wages of full-time workers
## 2 MW_CURP           Minimum wages at current prices in NCU
## 3 AV_AN_WAGE        Average annual wages
## 4 AWCOMP            Taxing Wages - Comparative tables
## 5 AEO2012_CH6_FIG3  Figure 3: Time Use by Country Income Level: In middle income
## 6 AEO2012_CH6_FIG31 Figure 31: Probability of being waged employed by education
## 7 RMW              Real minimum wages
## 8 TABLE_I6         Table I.6. All-in average personal income tax rates at average
## 9 AGE_GAP           Wage gap by age
## 10 IMW              Incomes of minimum wage earners

search_dataset("unemployment",dsets)

## # A tibble: 12 x 2
##   id                title
##   <chr>             <chr>
## 1 DUR_I             Incidence of unemployment by duration
## 2 DUR_D             Unemployment by duration
## 3 AVD_DUR           Average duration of unemployment
## 4 AEO2012_CH6_FIG4  Figure 4: Youth and adult unemployment
## 5 AEO2012_CH6_FIG29 Figure 29: Youth employment and unemployment by education
## 6 AEO2012_CH6_FIG19 Figure 19: The trade off between vulnerable employment and
## 7 EAG_NEAC_DURUNE   Distribution of unemployed adults by duration of unemployment
## 8 PTRUB             PTR for families claiming Unemployment Benefits
## 9 MIG_NUP_RATES_GENDER Employment, unemployment, and participation rates by place
## 10 NRR              Net replacement rate in unemployment
## 11 PTRCCUB          PTR for parents claiming Unemployment Benefits and using
## 12 EAG_TRANS_DURUNEMP Percentage of young adults not in education and unemployment

#Data on minimum wages is available in "MIN2AVE"
#Data on unemployment is available in "MIG_NUP_RATES_GENDER"

#MinWage
minstelønn <- get_dataset("MIN2AVE",
                        filter = "USA+CAN+FRA+GBR+DEU+NZL",
                        pre_formatted = TRUE)

#Selecting years and the min wage as a share of median wage
minstelønn19 <- subset(minstelønn, Time < 2019 & Time >2007 & SERIES=="MEDIAN")
minstelønn07_19 <- subset(minstelønn19, Time>2007)
#view(minstelønn07_19)

#UnEmpl
Arbeidsledig <- get_dataset("MIG_NUP_RATES_GENDER",
                          filter = "USA+CAN+FRA+GBR+DEU+NZL",
                          pre_formatted = TRUE)

#Selecting years, the unemployment rate of people born in the country, and both sexes

```

```

Arbeidsledig19 <- subset(Arbeidsledig, Time<2019 & RATE=="U_RATE" & BIRTH=="NB" & GENDER=="TOT")
Arbeidsledig07_19 <- subset(Arbeidsledig19, Time>2007)

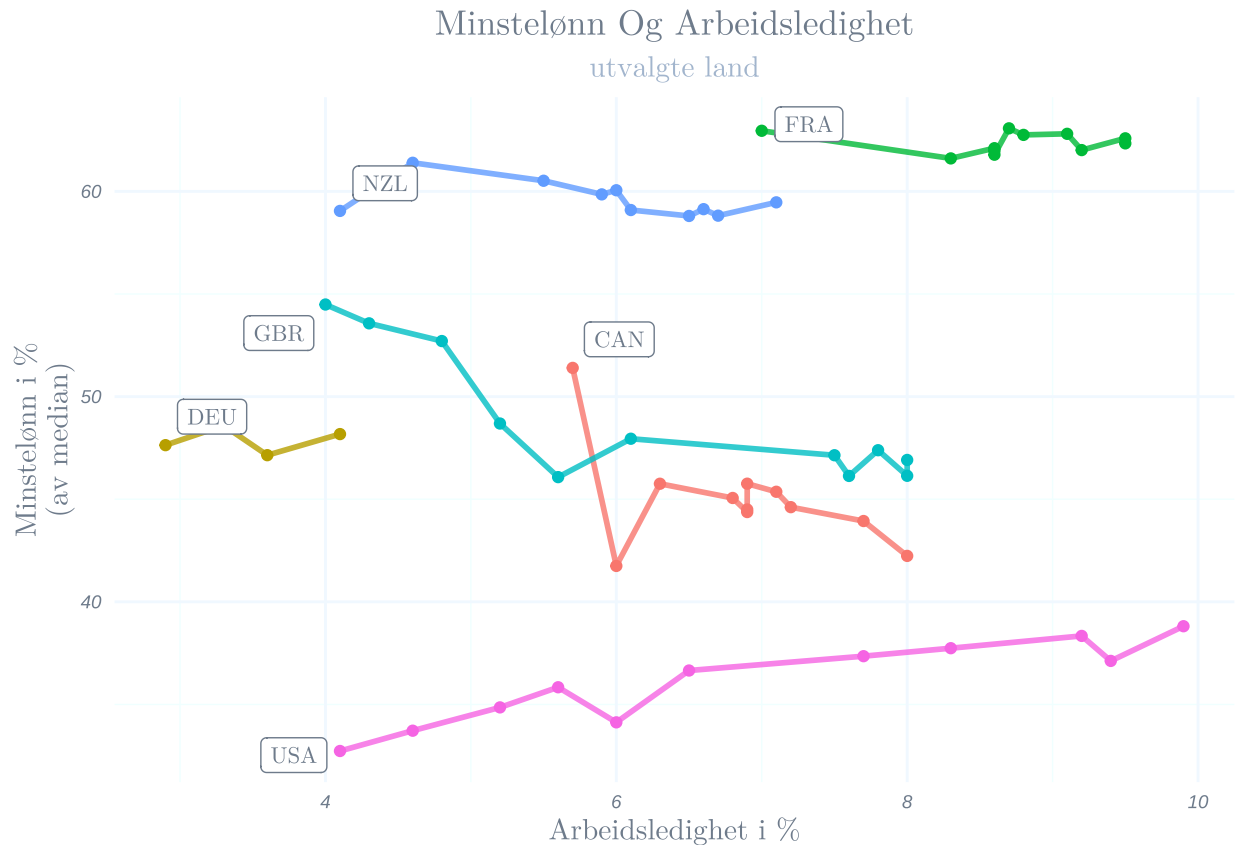
#Combining datasets - we need to merge by both country and year to get the right number in the right place
minstelø_arb <-left_join(minstelønn07_19, Arbeidsledig07_19, by=c("COUNTRY","Time"))

#removing countries with missing data
ny_minstelø_arb <- na.omit(minstelø_arb)

#transforming the minimum wage and unemployment rate to numeric variables
ny_minstelø_arb$minstelønn_0 <-as.numeric(ny_minstelø_arb$ObsValue.x) #MinWage is between 0 and 1, I want it as percent
ny_minstelø_arb$arb_ledig <-as.numeric(ny_minstelø_arb$ObsValue.y)
#view(ny_minstelø_arb)
#Transforming Minimum wage to percent
ny_minstelø_arb$minstelønn_pros <- ny_minstelø_arb$minstelønn_0 * 100

##### Plot som gitt i script.(Med estetiske endringer) #####
ny_minstelø_arb %>%
  ggplot(aes(arb_ledig,minstelønn_pros, group=COUNTRY, color=COUNTRY)) + # Put unemployment in percent on x-axis
  geom_line(aes(color=COUNTRY), size=1,alpha =0.8) +
  geom_point(aes(color=COUNTRY), size=1.5) +
  labs(x = "Arbeidsledighet i %",
       y = "Minstelønn i %\n(av median)",
       title = "Minstelønn Og Arbeidsledighet",
       subtitle = "utvalgte land") + #Insert names for x and y-axis.
  theme(legend.position="none") +
  geom_label_repel(data = ny_minstelø_arb %>%
                  group_by(COUNTRY) %>%
                  filter(arb_ledig == min(arb_ledig)),
                 aes(arb_ledig, minstelønn_pros, fill=COUNTRY, label=COUNTRY),
                 color = "lightsteelblue4",
                 fill = "white",
                 family = "LM Roman 10",size=3)+
  theme(plot.title = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),
        plot.subtitle = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue3"),
        plot.caption = element_text(family = "LM Roman 10", color = "lightsteelblue3"),
        axis.ticks = element_blank(),
        plot.tag = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue3"),
        axis.title.x = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),
        axis.title.y = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),
        axis.text.x = element_text(angle = 0, size = 7, face = "italic",color = "lightsteelblue4"),
        axis.text.y = element_text(size = 7, face = "italic",color = "lightsteelblue4"),
        panel.background = element_rect(fill = "white", colour = "white"),
        panel.grid.major = element_line(colour = "aliceblue"),
        panel.grid.minor = element_line(colour = "azure"))

```



#####Plot som viser årene i tillegg #####

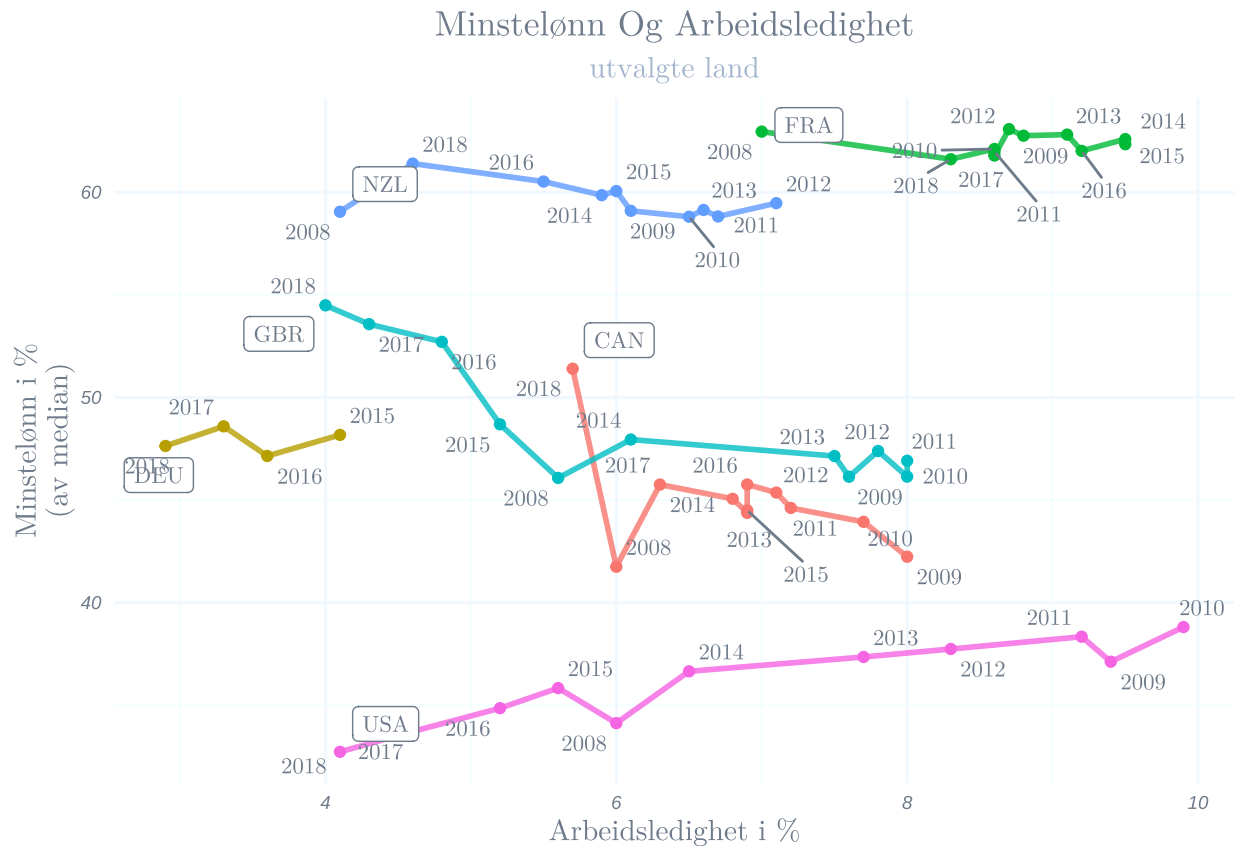
ny\_minstelø\_arb %>%

```
ggplot(aes(arb_ledig,minstelønn_pros, group=COUNTRY, color=COUNTRY)) + # Put unemployment in percent
  geom_line(aes(color=COUNTRY), size=1,alpha =0.8) +
  geom_point(aes(color=COUNTRY), size=1.5) +
  labs(x = "Arbeidsledighet i %",
       y = "Minstelønn i %\n(av median)",
       title = "Minstelønn Og Arbeidsledighet",
       subtitle = "utvalgte land") + #Insert names for x and y-axis.
  theme(legend.position="none") +
  geom_label_repel(data = ny_minstelø_arb %>%
    group_by(COUNTRY) %>%
    filter(arb_ledig == min(arb_ledig)),
    aes(arb_ledig, minstelønn_pros, fill=COUNTRY, label=COUNTRY),
    color = "lightsteelblue4",
    fill = "white",
    family = "LM Roman 10",size=3)+
  geom_text_repel(data = ny_minstelø_arb,
    aes(label=Time),
    color = "lightsteelblue4",
    fill = "white",
    family = "LM Roman 10",size=3, b= NULL) +
  theme(plot.title = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),
        plot.subtitle = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue3"),
        plot.caption = element_text(family = "LM Roman 10", color = "lightsteelblue3"),
        axis.ticks = element_blank(),
```

```

plot.tag = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue3"),
axis.title.x = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),
axis.title.y = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),
axis.text.x = element_text(angle = 0, size = 7, face = "italic", color = "lightsteelblue4"),
axis.text.y = element_text(size = 7, face = "italic", color = "lightsteelblue4"),
panel.background = element_rect(fill = "white", colour = "white"),
panel.grid.major = element_line(colour = "aliceblue"),
panel.grid.minor = element_line(colour = "azure"))

```



```
##### Plot uten år og geom_line() #####
```

```
ny_minstelø_arb %>%
```

```

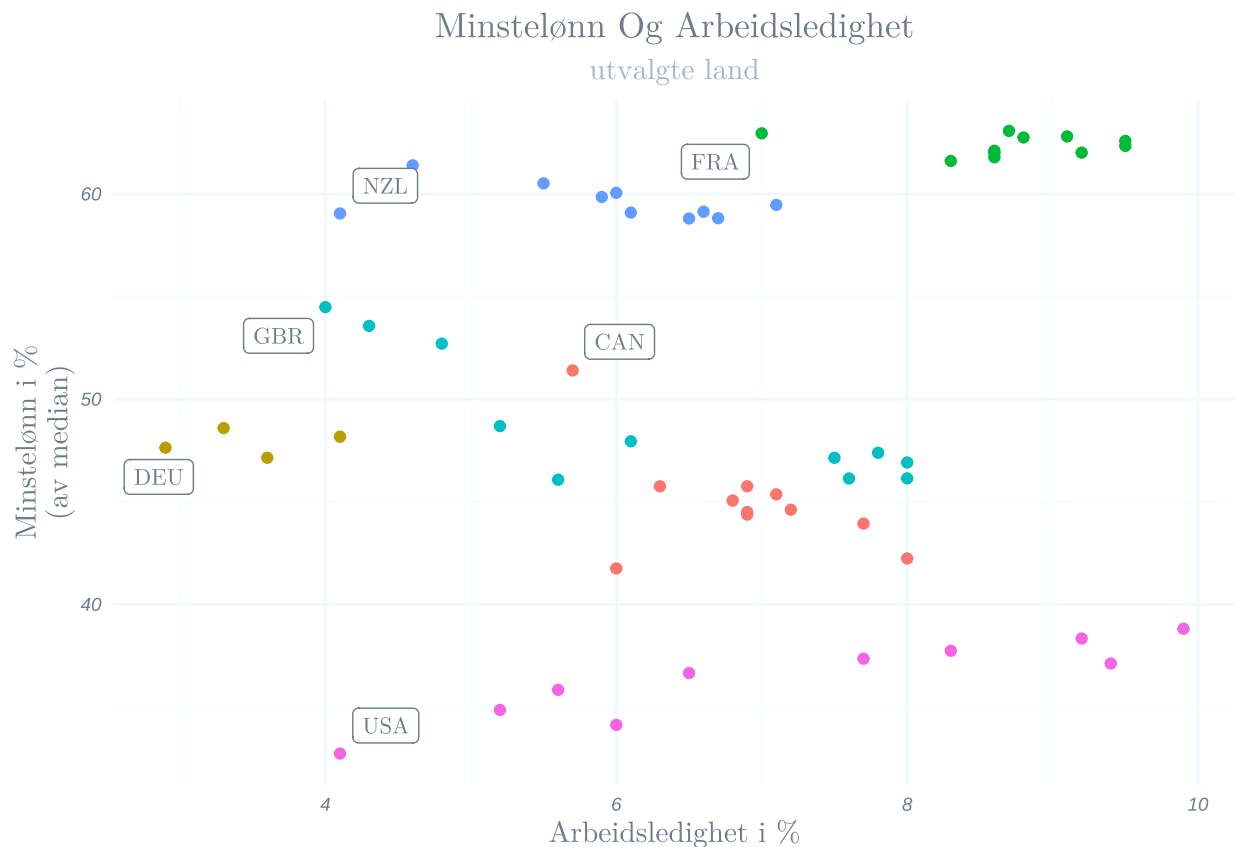
ggplot(aes(arb_ledig,minstelønn_pros, group=COUNTRY, color=COUNTRY)) + # Put unemployment in percent
geom_point(aes(color=COUNTRY), size=1.5) +
labs(x = "Arbeidsledighet i %",
     y = "Minstelønn i %\n(av median)",
     title = "Minstelønn Og Arbeidsledighet",
     subtitle = "utvalgte land") + #Insert names for x and y-axis.
scale_fill_manual(values = c("darkturquoise", "springgreen3",
                             "plum", "hotpink4", "aquamarine3", "gray50"))+
theme(legend.position="none") +
geom_label_repel(data = ny_minstelø_arb %>%
                 group_by(COUNTRY) %>%
                 filter(arb_ledig == min(arb_ledig)),
                 aes(arb_ledig, minstelønn_pros, fill=COUNTRY, label=COUNTRY),

```

```

        color = "lightsteelblue4",
        fill = "white",
        family = "LM Roman 10",size=3)+
theme(plot.title = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),
      plot.subtitle = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue3"),
      plot.caption = element_text(family = "LM Roman 10", color = "lightsteelblue3"),
      axis.ticks = element_blank(),
      plot.tag = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue3"),
      axis.title.x = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),
      axis.title.y = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),
      axis.text.x = element_text(angle = 0, size = 7, face = "italic",color = "lightsteelblue4"),
      axis.text.y = element_text(size = 7, face = "italic",color = "lightsteelblue4"),
      panel.background = element_rect(fill = "white", colour = "white"),
      panel.grid.major = element_line(colour = "aliceblue"),
      panel.grid.minor = element_line(colour = "azure"))

```



##### OPPGAVE 4 #####

# For å vise eksempel på difference-indifference

#Henter ut data fra storbritania fra 2016

```

GRB<-ny_minstelø_arb %>%
  filter(!Time<2016 & COUNTRY=="GBR")

```

#Henter ut data fra usa fra 2016



```

USA<-ny_minstelø_arb %>%
  filter(!Time<2016 & COUNTRY=="USA")

#binder de sammen ved rbind()
GRB_vs_USA<-rbind(GRB,USA)

# Regner ut differansen mellom årene innad i landet
GRB_vs_USA<-GRB_vs_USA %>%
  group_by(COUNTRY) %>% #For at det er utregningen skjer innad
  mutate(Diff = arb_ledig - lag(arb_ledig))#bruker lag()

#regner ut differansen mellom landene basert på år, altså time.
GRB_vs_USA<-GRB_vs_USA %>%
  group_by(Time) %>%
  mutate(Diff_in_Diff = arb_ledig - lag(arb_ledig))# Dette er ikke diff-in-diff, men har kalt det for d

#Plotter eksempelet

ggplot(GRB_vs_USA, aes(Time, arb_ledig, group=COUNTRY))+
  geom_point(color="aquamarine3")+
  geom_path(color="springgreen3")+
  labs(x = "Målepunkter, År",
       y = "Arbeidsledighet",
       title = "Eksempel på\nDifference in Difference",
       subtitle = "USA vs. GRB") +
  geom_label_repel(data = GRB_vs_USA %>%
    group_by(COUNTRY) %>%
    filter(arb_ledig == max(arb_ledig)),
    aes(Time, arb_ledig, fill=COUNTRY, label=COUNTRY),
    color = "lightsteelblue4",
    fill = "white",
    family = "LM Roman 10",size=3)+
  geom_text_repel(data = GRB_vs_USA,
    aes(label= Diff),
    color = "lightsteelblue4",
    fill = "white",
    family = "LM Roman 10",size=3, b= NULL)+
  geom_text_repel(data = GRB_vs_USA,
    aes(label= Diff_in_Diff),
    nudge_x = ifelse(GRB_vs_USA$arb_ledig == 4, 3,-0.0),
    nudge_y = ifelse(GRB_vs_USA$arb_ledig == 4, 1,0.4),
    color = "lightsteelblue4",
    fill = "white",
    family = "LM Roman 10",size=3, b= NULL)+
  scale_y_continuous(limits = c(3, 6),
    breaks = c(3,4,5,6))+
  theme(plot.title = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),
    plot.subtitle = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue3"),
    plot.caption = element_text(family = "LM Roman 10", color = "lightsteelblue3"),
    axis.ticks = element_blank(),
    plot.tag = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue3"),
    axis.title.x = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),
    axis.title.y = element_text(hjust = 0.5, family = "LM Roman 10", color = "lightsteelblue4"),

```

```
axis.text.x = element_text(angle = 0, size = 7, face = "italic", color = "lightsteelblue4"),
axis.text.y = element_text(size = 7, face = "italic", color = "lightsteelblue4"),
panel.background = element_rect(fill = "white", colour = "white"),
panel.grid.major = element_line(colour = "aliceblue"),
panel.grid.minor = element_line(colour = "azure"))
```

