

Solution code to postponed exam ECON3170/4170 Fall 2021

I. Trust and confidence

```
library(haven)
library(tidyverse)

# 1)
gss <- read_dta("D:/dok/temp/gss21/GSS2018.dta")

nrow(gss)

gss %>%
  drop_na(conlegis) %>%
  nrow()

gss %>%
  drop_na(conlegis) %>%
  group_by(conlegis) %>%
  summarise(n=n())

# 2)

gss %>%
  drop_na(conlegis) %>%
  mutate(noconlegis = ifelse(conlegis==3,1,0)) %>%
  ggplot(aes(x=age,y=noconlegis)) +
  geom_smooth(method='loess')

# 3)
gss %>%
  drop_na(trust) %>%
  group_by(trust) %>%
  summarise(n=n())

trust <- gss %>%
  drop_na(conlegis) %>%
  mutate(noconlegis = ifelse(conlegis==3,1,0),
         notrust    = ifelse(trust    ==2,1,0))
```

```

table(trust$notrust , trust$noconlegis)

trust %>%
  drop_na(notrust) %>%
  ggplot(aes(x=age , y=noconlegis , color=as.factor(notrust))) +
  geom_smooth(method='loess')

# 4)

doses <- read_csv("D:/dok/temp/gss21/doses.csv")

doses_div <- doses %>%
  group_by(division) %>%
  summarise(pop=sum(population) , doses=sum(doses)) %>%
  mutate(doses_cap <- doses/pop)

trust %>%
  drop_na(noconlegis) %>%
  group_by(region) %>%
  summarise(noc = mean(noconlegis))

gss2021 <- read_dta("D:/dok/temp/gss21/gss2021.dta")
View(gss2021)

gss <- GSS2018 %>%
  mutate(reg=as.factor(region) ,
         noconlegis=1*(conlegis==3),
         notrust=1*(trust==2))

gss %>%
  ggplot(aes(x=age , y=notrust)) +
  geom_smooth(method='loess')

gss %>%
  ggplot(aes(x=age , y=noconlegis)) +
  geom_smooth()

gss %>%
  ggplot(aes(y=trresrch , x=trust)) +
  geom_boxplot()

gss %>%
  ggplot(aes(y=trlegis , x=trust)) +
  geom_boxplot()

```

```
GSS2018 %>%
  ggplot(aes(y=conlegis ,x=as.factor(region))) +
  geom_boxplot()
```

II. Market equilibrium

```
library(tidyverse)
```

```
# 1)
```

```
D <- function(p) {
  return(7-p-log(p))
}
```

```
S <- 3
```

```
tibble(
  x = seq(from = 0.1, to = 5, by = .1),
  y = D(x)
) %>%
  ggplot(aes(x=x,y=y)) +
  geom_line() +
  geom_vline(xintercept = S, color = 'red')
```

```
# 2)
a<-1
b<-5
eps<-1e-8 # Error tolerance
N<-1000 # Now total allowed iterations
iter<-0
```

```
f <- function(x) { ## Objective
  return(D(x)-S)
}
```

```
while ((b-a)/2>eps & iter<N) {
  m<-(a+b)/2
  if (f(a)*f(m)<0) {
    b<-m
  } else {
```

```

    a<-m
  }
  iter<-iter+1
}

```

```

# 3)
price <- function(S) {
  a<-1
  b<-5
  eps<-1e-8 # Error tolerance
  N<-1000 # Now total allowed iterations
  iter<-0

```

```

  f <- function(x) { ## Objective
    return(D(x)-S)
  }

```

```

  while ((b-a)/2>eps & iter<N) {
    m<-(a+b)/2
    if (f(a)*f(m)<0) {
      b<-m
    } else {
      a<-m
    }
    iter<-iter+1
  }

```

```

  return((a+b)/2)
}

```

```

price(3)

```