Trabalho Final

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#Importando bibliotecas

```
library(tidyverse)
```

```
## ── Attaching core tidyverse packages ──────────────────────── tidyverse 2.0.0
──
## ✓ dplyr     1.1.0     ✓ readr     2.1.4
## ✓ forcats   1.0.0     ✓ stringr   1.5.0
## ✓ ggplot2   3.4.1     ✓ tibble    3.2.0
## ✓ lubridate 1.9.2     ✓ tidyr     1.3.0
## ✓ purrr     1.0.1
## ── Conflicts ────────────────────────────────────────── tidyverse_conflicts()
──
## ✖ dplyr::filter() masks stats::filter()
## ✖ dplyr::lag()    masks stats::lag()
## ℹ Use the conflicted package (<http://conflicted.r-lib.org/>) to force all con
flicts to become errors
```

```
library(readxl)
library(dplyr)
library(clipr)
```

```
## Welcome to clipr. See ?write_clip for advisories on writing to the clipboard i
n R.
```

```
library(did)
library(ggplot2)
library(modelsummary)
```

```
## `modelsummary` 2.0.0 now uses `tinytable` as its default table-drawing
##   backend. Learn more at: https://vincentarelbundock.github.io/tinytable/
##
## Revert to `kableExtra` for one session:
##
##   options(modelsummary_factory_default = 'kableExtra')
##
## Change the default backend persistently:
##
##   config_modelsummary(factory_default = 'gt')
##
## Silence this message forever:
##
##   config_modelsummary(startup_message = FALSE)
```

```
setwd("C:/Users/Ana Flávia/OneDrive - Insper - Institudo de Ensino e Pesquisa/Eco
nomia/Quinto Semestre/Microeconomia IV/Trabalho Final")
```

1 Ajustando as bases de dados

1.1 Base: mortes por overdose por estado

```
mortes = read.csv("NCHS_-_Drug_Poisoning_Mortality_by_State__United_States_202404
17 (1).csv")

mortes = mortes %>%
  select(State, Year, Sex, Age.Group, Race.and.Hispanic.Origin, Deaths, Populatio
n) %>%
  mutate(Year = as.character(Year)) %>%
  filter(Sex == "Both Sexes", Age.Group == "All Ages",
         Race.and.Hispanic.Origin == "All Races-All Origins") %>%
  select(State, Year, Deaths, Population) %>%
  mutate(Overdoses = Deaths) %>%
  select(State, Year, Overdoses, Population)%>%
  rename(year = Year)

mortes <- mortes %>%
  filter(State != "United States",
         year != "1999",
         year != "2000",
         year != "2001",
         year != "2002")

view(mortes)
```

1.2 Base: IDH por estado

```
IDH = read.csv("GDL-Subnational-HDI-data.csv", sep = ";", quote = "",
               header = TRUE)

IDH = IDH %>%
  rename(State = Region) %>%
  select(State, X2003, X2004, X2005, X2006,X2007, X2008, X2009,
         X2010, X2011, X2012, X2013, X2014, X2015, X2016) %>%
  slice(-1) %>%
  pivot_longer(!State, names_to = "year", values_to = "IDH") %>%
  mutate(year = gsub("X","", year))

view(IDH)
```

1.3 Base: desemprego por estado

```
unemp = read_xls("emp-unemployment.xls", sheet = "States")
```

```
## New names:
## • `` -> `...2`
## • `` -> `...3`
## • `` -> `...4`
## • `` -> `...5`
## • `` -> `...6`
## • `` -> `...7`
## • `` -> `...8`
## • `` -> `...9`
## • `` -> `...10`
## • `` -> `...11`
## • `` -> `...12`
## • `` -> `...13`
## • `` -> `...14`
## • `` -> `...15`
## • `` -> `...16`
## • `` -> `...17`
## • `` -> `...18`
## • `` -> `...19`
## • `` -> `...20`
## • `` -> `...21`
## • `` -> `...22`
## • `` -> `...23`
## • `` -> `...24`
## • `` -> `...25`
## • `` -> `...26`
## • `` -> `...27`
## • `` -> `...28`
## • `` -> `...29`
## • `` -> `...30`
## • `` -> `...31`
## • `` -> `...32`
## • `` -> `...33`
## • `` -> `...34`
## • `` -> `...35`
## • `` -> `...36`
## • `` -> `...37`
## • `` -> `...38`
## • `` -> `...39`
## • `` -> `...40`
## • `` -> `...41`
```

```
unemp = unemp %>%
  slice(-(1:4)) %>%
  slice(-(54:62))

header = unemp %>%
  slice(1) %>%
  unlist()

unemp = unemp %>%
  slice(-1) %>%
  rename_with(~header) %>%
  slice(-1) %>%
  rename_with(
    ~ paste0("X", .)) %>%
  rename(State = XArea,
         Fips = XFips) %>%
  select(State, X2003, X2004, X2005, X2006, X2007, X2008,
         X2009, X2010, X2011, X2012, X2013, X2014, X2015, X2016) %>%
  pivot_longer(!State, names_to = "year", values_to = "Desemprego") %>%
  mutate(year = gsub("X","", year))

view(unemp)
```

1.4 Base: renda por estado

```
income = read_xlsx("h08.xlsx")
```

```
## New names:
## • `` -> `...2`
## • `` -> `...3`
## • `` -> `...4`
## • `` -> `...5`
## • `` -> `...6`
## • `` -> `...7`
## • `` -> `...8`
## • `` -> `...9`
## • `` -> `...10`
## • `` -> `...11`
## • `` -> `...12`
## • `` -> `...13`
## • `` -> `...14`
## • `` -> `...15`
## • `` -> `...16`
## • `` -> `...17`
## • `` -> `...18`
## • `` -> `...19`
## • `` -> `...20`
## • `` -> `...21`
## • `` -> `...22`
## • `` -> `...23`
## • `` -> `...24`
## • `` -> `...25`
## • `` -> `...26`
## • `` -> `...27`
## • `` -> `...28`
## • `` -> `...29`
## • `` -> `...30`
## • `` -> `...31`
## • `` -> `...32`
## • `` -> `...33`
## • `` -> `...34`
## • `` -> `...35`
## • `` -> `...36`
## • `` -> `...37`
## • `` -> `...38`
## • `` -> `...39`
## • `` -> `...40`
```

```
income = income %>%
  slice(-(1:60))

header = income %>%
  slice(1) %>%
  unlist()

income = income %>%
  slice(-1) %>%
  rename_with(~header) %>%
  slice(-1) %>%
  rename_with(
    ~ paste0("X", .)) %>%
  rename(State = XState) %>%
  select(State,X2003, X2004,X2005,X2006, X2007, X2008, X2009,
         X2010, X2011, X2012, X2013, X2014, X2015, X2016) %>%
  pivot_longer(!State, names_to = "year", values_to = "Income") %>%
  mutate(year = gsub("X","", year))

view(income)
```

1.5 Base: leis maconha por estado

```
leis  = read_xlsx("BASE_LEISMACONHA.xlsx", sheet = "RML")

leis = leis %>%
  select(-(2:32)) %>%
  select(-(16:23))

leis = leis %>%
  rename(State = "Estados/Anos") %>%
  pivot_longer(!State, names_to = "year", values_to = "Tratamento") %>%
  mutate(Tratamento = as.numeric(Tratamento))

view(leis)
```

1.6 Base: uso de drogas (maconha e cocaína) por estado

```
drug_users = read_xlsx("Drug users.xlsx")

drug_users <- drug_users %>%
  mutate(year = as.character(year))

view(drug_users)
```

1.7 Base unificada

```
base_TF = left_join(mortes, IDH, by = c("State", "year"))
base_TF = left_join(base_TF, unemp, by = c("State", "year"))
base_TF = left_join(base_TF, income, by = c("State", "year"))
base_TF = left_join(base_TF, leis, by = c("State", "year"))
base_TF = left_join(base_TF, drug_users, by = c("State", "year"))

base_TF <- base_TF %>%
  mutate(year = as.numeric(year),
         weed_users = as.numeric(weed_users))

base_TF <- base_TF %>%
  mutate(Fips = case_when(State == 'Alabama' ~ '01000',
                          State == 'Alaska' ~'02000',
                          State == 'Arizona' ~'04000',
                          State == 'Arkansas' ~'05000',
                          State == 'California' ~'06000',
                          State == 'Colorado' ~'08000',
                          State == 'Connecticut' ~'09000',
                          State == 'Delaware' ~'10000',
                          State == 'District of Columbia' ~'11000',
                          State == 'Florida' ~'12000',
                          State == 'Georgia' ~'13000',
                          State == 'Hawaii' ~'15000',
                          State == 'Idaho' ~'16000',
                          State == 'Illinois' ~'17000',
                          State == 'Indiana' ~'18000',
                          State == 'Iowa' ~'19000',
                          State == 'Kansas' ~'20000',
                          State == 'Kentucky' ~'21000',
                          State == 'Louisiana' ~'22000',
                          State == 'Maine' ~'23000',
                          State == 'Maryland' ~'24000',
                          State == 'Massachusetts' ~'25000',
                          State == 'Michigan' ~'26000',
                          State == 'Minnesota' ~'27000',
                          State == 'Mississippi' ~'28000',
                          State == 'Missouri' ~'29000',
                          State == 'Montana' ~'30000',
                          State == 'Nebraska' ~'31000',
                          State == 'Nevada' ~'32000',
                          State == 'New Hampshire' ~'33000',
                          State == 'New Jersey' ~'34000',
                          State == 'New Mexico' ~'35000',
                          State == 'New York' ~'36000',
                          State == 'North Carolina' ~'37000',
                          State == 'North Dakota' ~'38000',
                          State == 'Ohio' ~'39000',
                          State == 'Oklahoma' ~'40000',
                          State == 'Oregon' ~'41000',
```

```
                          State == 'Pennsylvania' ~'42000',
                          State == 'Rhode Island' ~'44000',
                          State == 'South Carolina' ~'45000',
                          State == 'South Dakota' ~'46000',
                          State == 'Tennessee' ~'47000',
                          State == 'Texas' ~'48000',
                          State == 'Utah' ~'49000',
                          State == 'Vermont' ~'50000',
                          State == 'Virginia' ~'51000',
                          State == 'Washington' ~'53000',
                          State == 'West Virginia' ~'54000',
                          State == 'Wisconsin' ~'55000',
                          State == 'Wyoming' ~'56000')) %>%
           mutate(Fips = as.numeric(Fips))

base_TF<-base_TF %>%
  mutate(taxa_overdose = (Overdoses/Population)*1000,
         taxa_weed = (weed_users/Population)*1000,
         taxa_cocain = (cocain_users/Population)*1000)

view(base_TF)
```

2 Descritivas

2.1 Tabelas

```
#pré tratamento (2012)
base_TF %>%
  filter(State %in% c("Colorado", "Washington")) %>%
  filter(year %in% c("2003":"2011")) %>%
  rename(Cocaina = cocain_users,
         Maconha = weed_users,
         Renda = Income,
         Habitantes = Population) %>%
  select(State, Overdoses, Habitantes, IDH, Desemprego, Renda,
         Cocaina, Maconha) %>%
  datasummary(formula = ~ Overdoses + Habitantes + IDH
                  + Desemprego + Renda + Cocaina + Maconha
                ~ State*(Mean + SD))
```

	Colorado		Washington	
	Mean	SD	Mean	SD
Overdoses	667.11	115.80	903.00	103.30
Habitantes	4807537.89	208834.96	6461848.89	253777.23
IDH	0.93	0.00	0.92	0.01

	Colorado		Washington	
	Mean	SD	Mean	SD
Desemprego	5.97	1.79	6.99	2.05
Renda	76971.11	3454.54	75002.22	2965.02
Cocaina	152024.49	19155.18	144738.98	12002.89
Maconha	713874.37	122214.88	855660.74	106884.84

```
#pré tratamento (2014)
base_TF %>%
  filter(State %in% c("Alaska", "Oregon")) %>%
  filter(year %in% c("2003":"2013")) %>%
  rename(Cocaina = cocain_users,
         Maconha = weed_users,
         Renda = Income,
         Habitantes = Population) %>%
  select(State, Overdoses, Habitantes, IDH, Desemprego, Renda,
         Cocaina, Maconha) %>%
  datasummary(formula = ~ Overdoses + Habitantes + IDH
                  + Desemprego + Renda + Cocaina + Maconha
                ~ State*(Mean + SD))
```

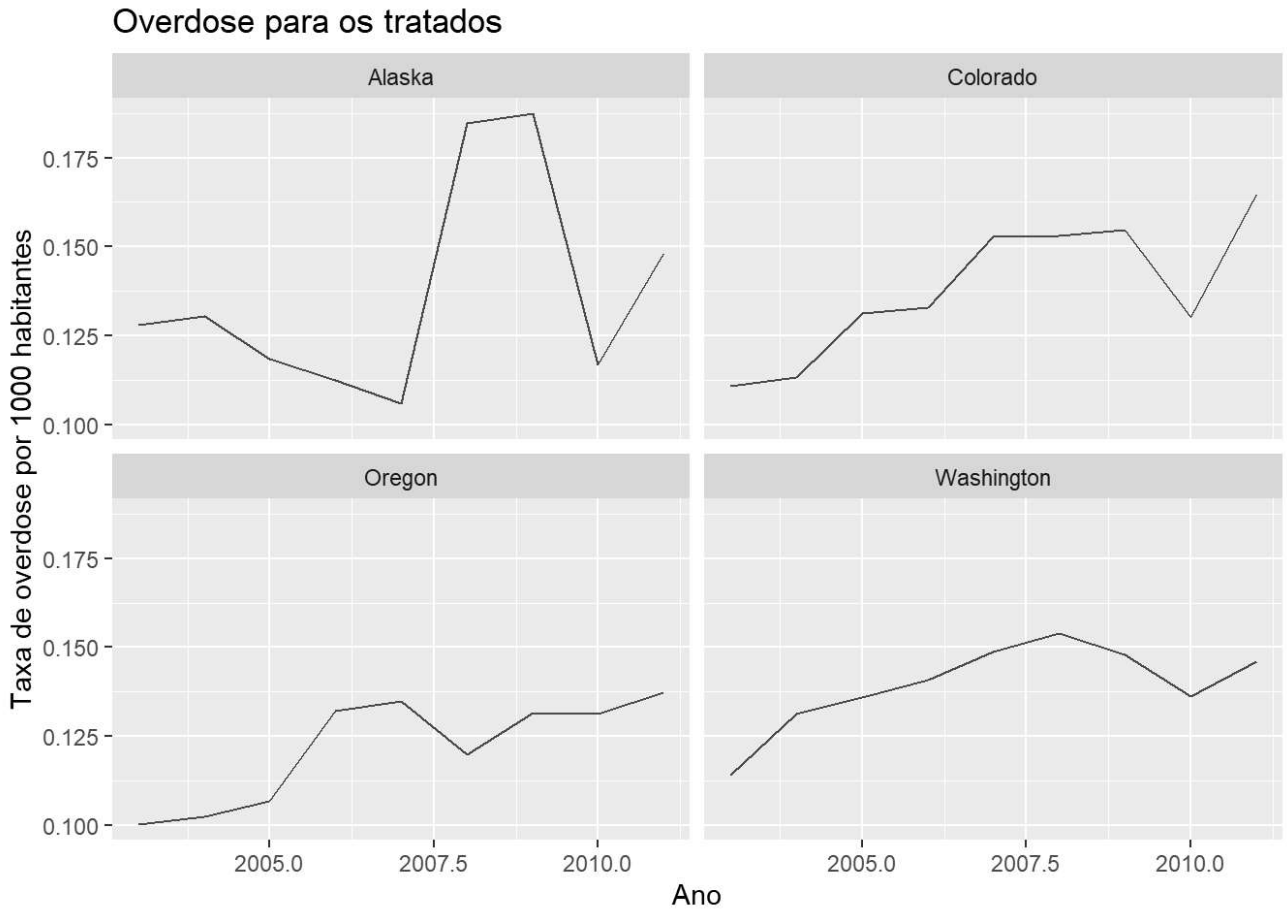
	Alaska		Oregon	
	Mean	SD	Mean	SD
Overdoses	98.00	22.66	456.91	61.25
Habitantes	692375.27	29618.52	3748458.18	133901.36
IDH	0.93	0.01	0.91	0.01
Desemprego	7.19	0.54	7.88	2.04
Renda	79466.36	3991.66	65460.91	2490.47
Cocaina	16466.17	3102.24	83763.70	15332.42
Maconha	121482.87	18702.32	594795.02	100268.74

```
#summary geral
base_TF %>%
  filter(!State %in% c("Alaska", "Oregon","Colorado", "Washington")) %>%
  rename(Cocaina = cocain_users,
         Maconha = weed_users,
         Renda = Income,
         Habitantes = Population) %>%
  select(State, Overdoses, Habitantes, IDH, Desemprego, Renda,
         Cocaina, Maconha) %>%
  datasummary(formula = ~ Overdoses + Habitantes + IDH
                  + Desemprego + Renda + Cocaina + Maconha
                ~ Mean + SD)
```

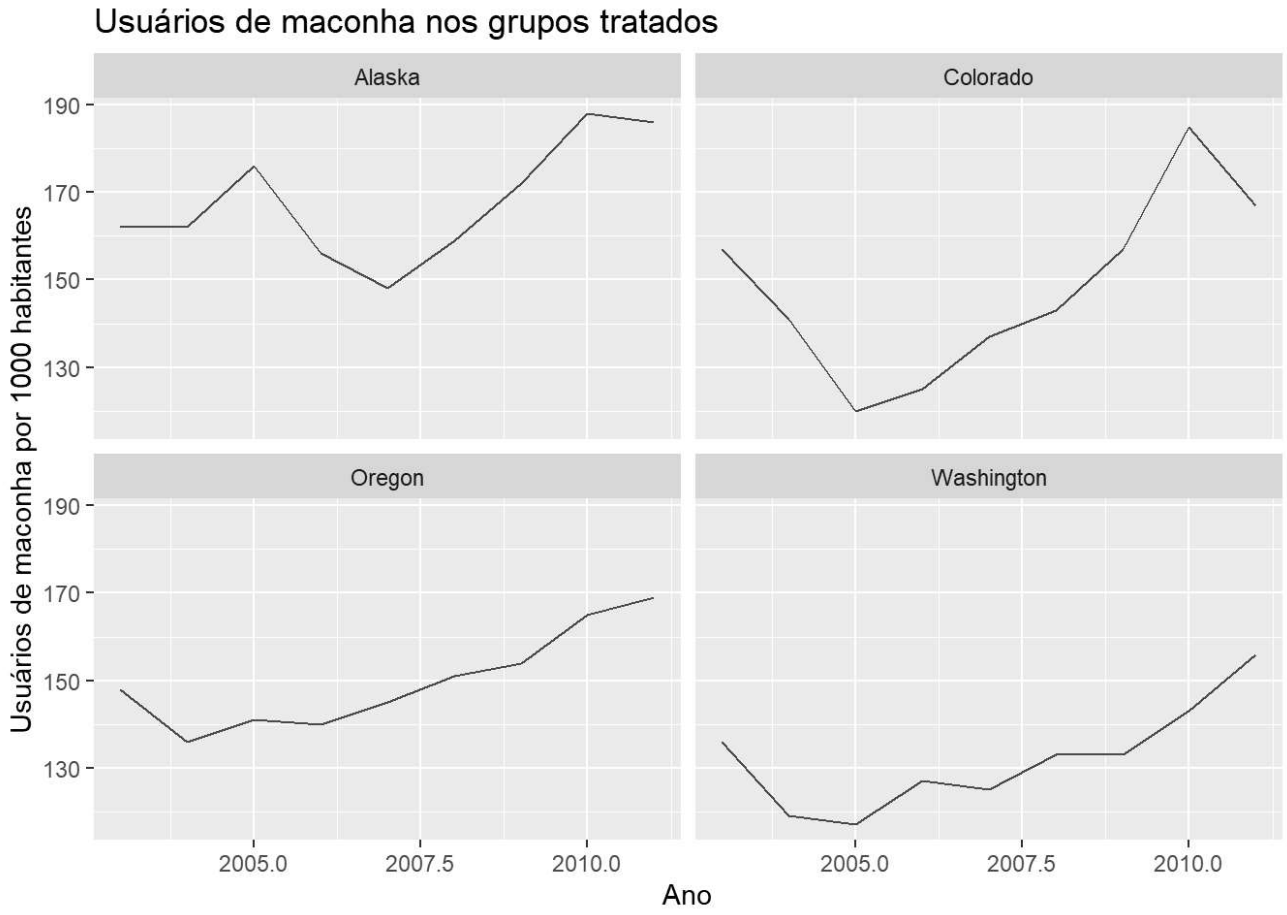
	Mean	SD
Overdoses	795.62	856.20
Habitantes	6194391.41	6984986.76
IDH	0.91	0.02
Desemprego	6.01	2.05
Renda	65957.81	10257.88
Cocaina	123241.71	152277.35
Maconha	685552.46	842265.58

2.2 Gráficos

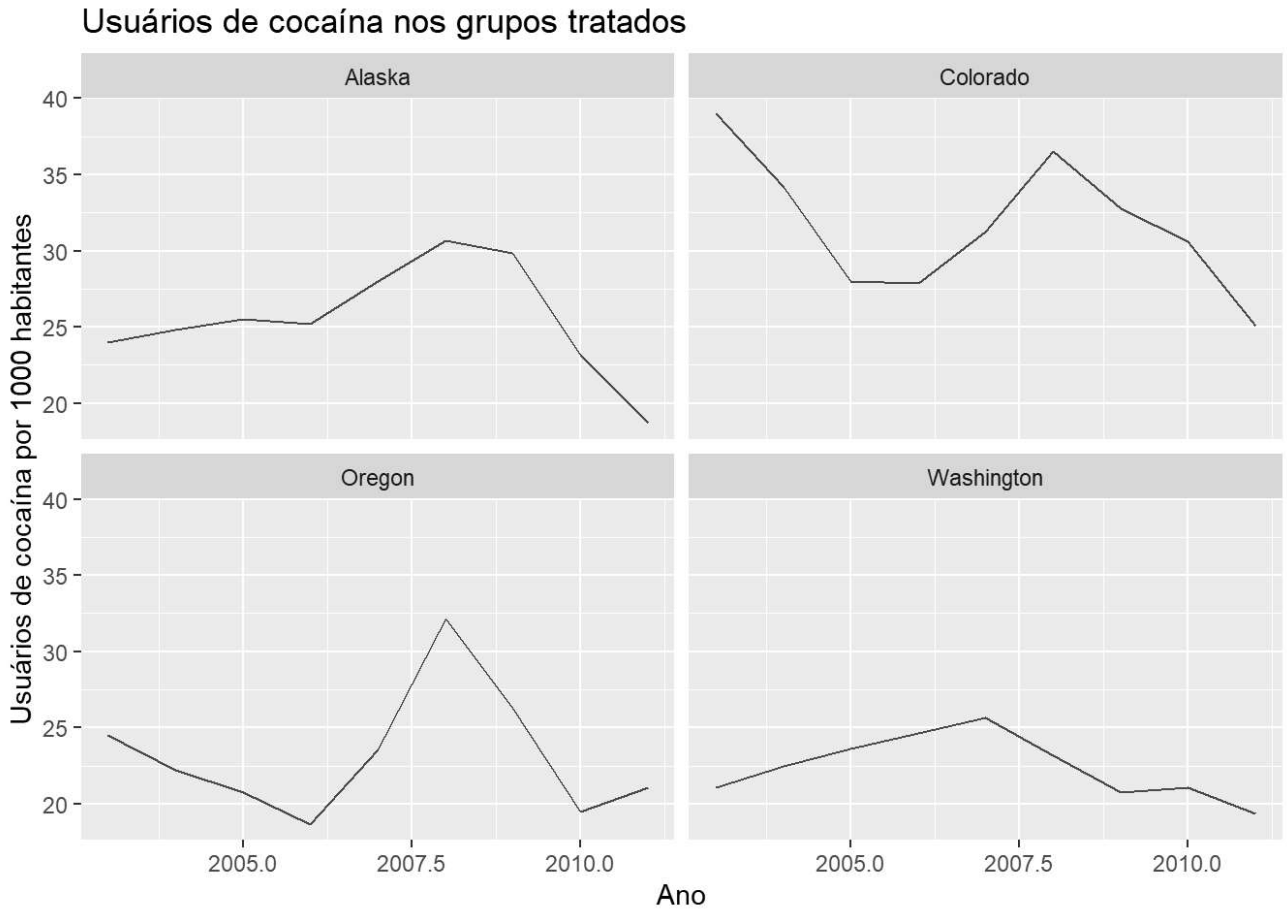
```
#gráficos com os tratamentos
base_TF %>%
  filter(State %in% c("Alaska", "Colorado", "Oregon",
                      "Washington")) %>%
  filter(year %in% c("2003":"2011")) %>%
  ggplot(aes(x = year, y = taxa_overdose))+
  geom_line(color = "#336600")+
  facet_wrap(~State) +
  labs(title = "Overdose para os tratados",
       x = "Ano", y = "Taxa de overdose por 1000 habitantes")
```



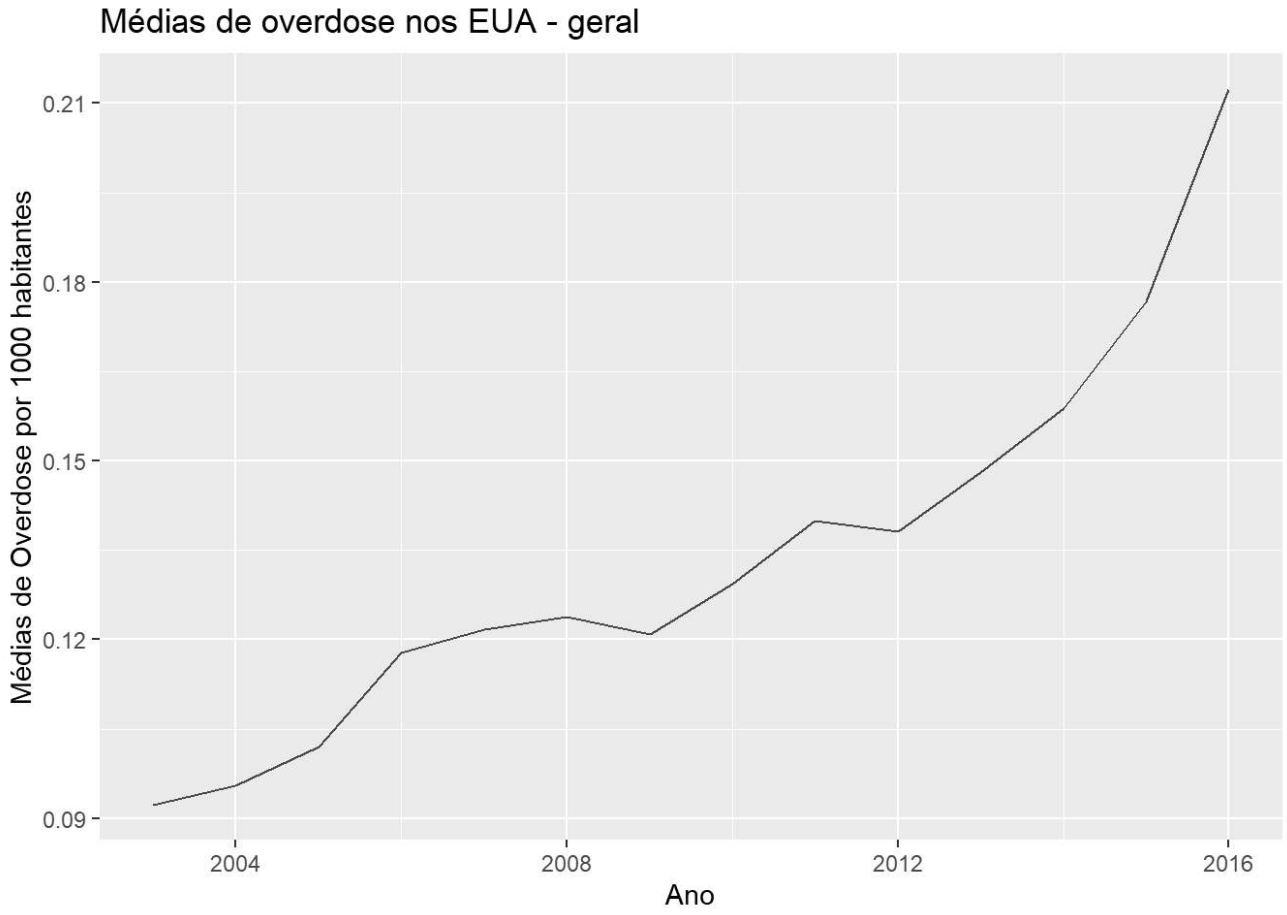

```
base_TF %>%
  filter(State %in% c("Alaska", "Colorado", "Oregon",
                      "Washington")) %>%
  filter(year %in% c("2003":"2011")) %>%
  ggplot(aes(x = year, y = taxa_weed))+
  geom_line(color = "#336600")+
  facet_wrap(~State) +
  labs(title = "Usuários de maconha nos grupos tratados",
       x = "Ano", y = "Usuários de maconha por 1000 habitantes")
```



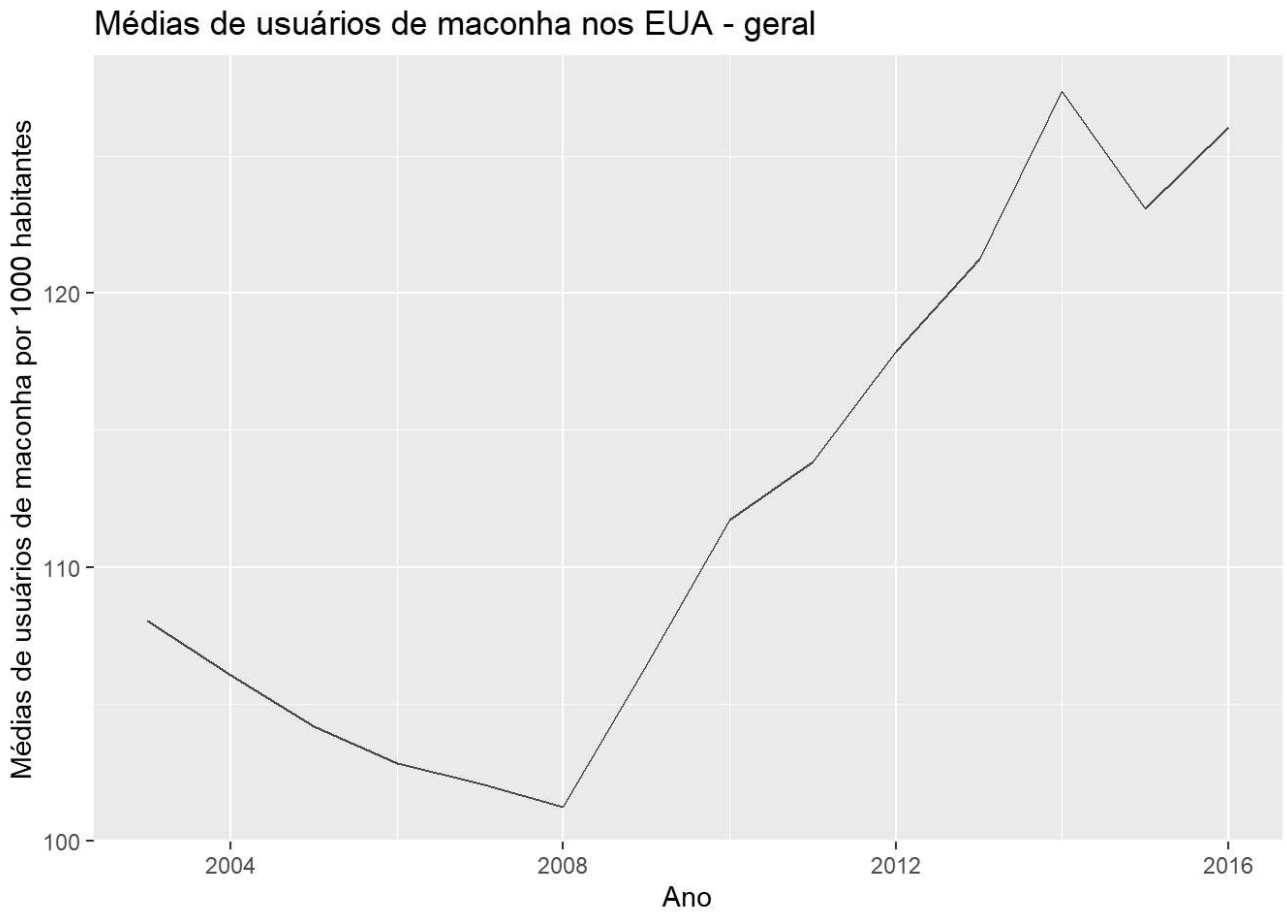

```
base_TF %>%
  filter(State %in% c("Alaska", "Colorado", "Oregon",
                      "Washington")) %>%
  filter(year %in% c("2003":"2011")) %>%
  ggplot(aes(x = year, y = taxa_cocain))+
  geom_line(color = "#336600")+
  facet_wrap(~State) +
  labs(title = "Usuários de cocaína nos grupos tratados",
       x = "Ano", y = "Usuários de cocaína por 1000 habitantes")
```



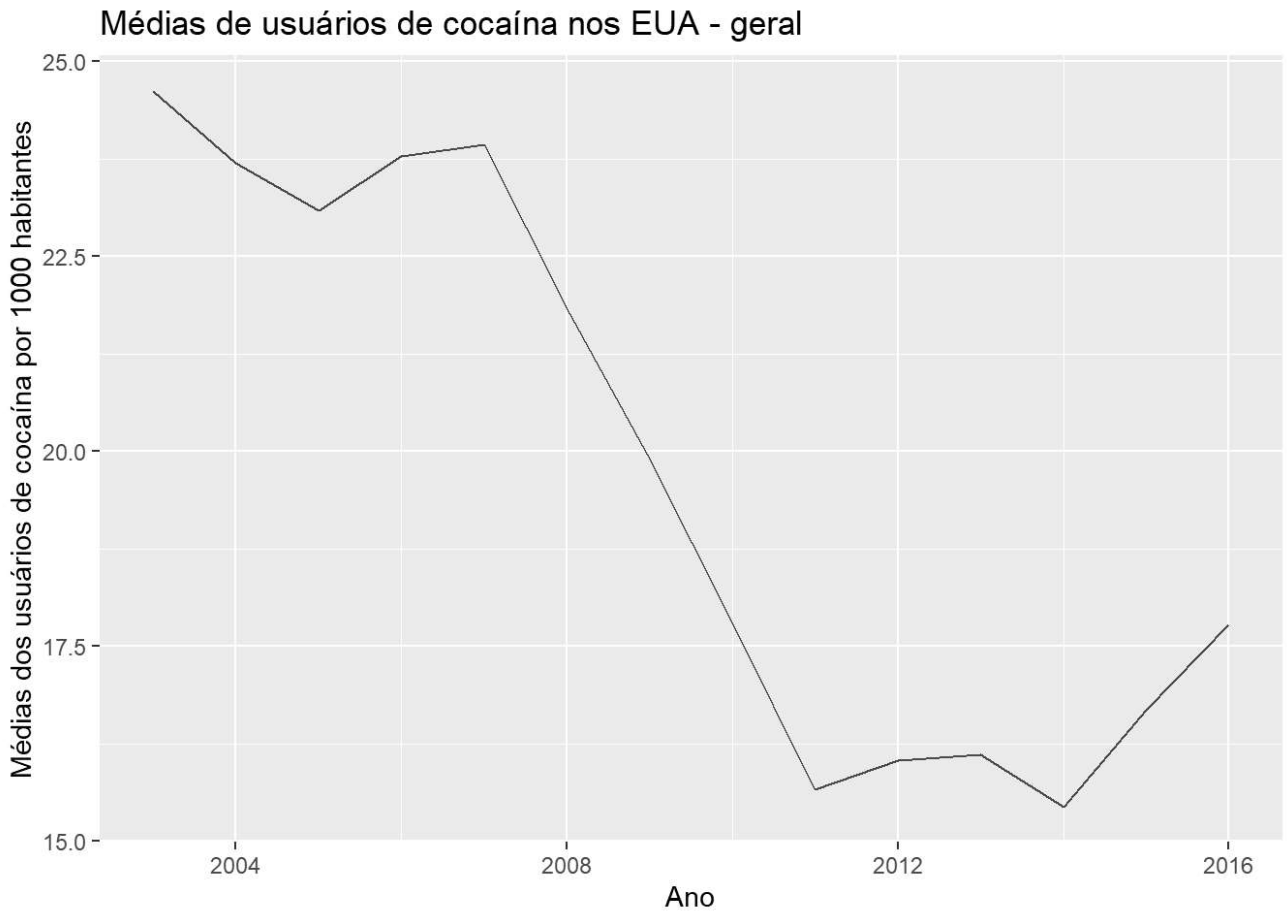

```
#gráfico de geral
medias <- base_TF %>%
  filter(!State %in% c("Alaska", "Oregon","Colorado", "Washington")) %>%
  group_by(year) %>%
  summarise(medias_overdose = mean(taxa_overdose),
            medias_maconha = mean(taxa_weed),
            medias_cocaina = mean(taxa_cocain))

medias %>%
  ggplot(aes(x = year, y = medias_overdose))+
  geom_line(color = "#336600") +
  labs(title = "Médias de overdose nos EUA - geral",
       x = "Ano", y = "Médias de Overdose por 1000 habitantes")
```




```
medias %>%
  ggplot(aes(x = year, y = medias_maconha))+
  geom_line(color = "#336600") +
  labs(title = "Médias de usuários de maconha nos EUA - geral",
       x = "Ano", y = "Médias de usuários de maconha por 1000 habitantes")
```




```
medias %>%
  ggplot(aes(x = year, y = medias_cocaina))+
  geom_line(color = "#336600") +
  labs(title = "Médias de usuários de cocaína nos EUA - geral",
       x = "Ano", y = "Médias dos usuários de cocaína por 1000 habitantes")
```


Médias de usuários de cocaína nos EUA - geral
Médias dos usuários de cocaína por 1000 habitantes
25.0
22.5
20.0
17.5
15.0
2004
2008
2012
2016
Ano

3 Regressão

3.1 Regressão de morte por overdoeses

```
#tentando rodar o sttagerd
primeiros_tratamentos <- base_TF %>%
  filter(Tratamento > 0) %>%
  group_by(State) %>%
  summarise(primeiros_tratamentos = min(year))

view(primeiros_tratamentos)

base_TF <- base_TF %>%
  mutate(year = as.numeric(year),
         Tratamento = as.numeric(Tratamento),
         Fips = as.numeric(Fips)) %>%
  left_join(primeiros_tratamentos, by = "State") %>%
  mutate(Tratado = ifelse(Tratamento > 0, primeiros_tratamentos, 0)) %>%
  arrange(State, year) %>%
  fill(Tratado, .direction = "down") %>%
  select(-primeiros_tratamentos)

base_TF <- base_TF %>%
  mutate(Tratado = case_when(State == "Alaska"~"2014",
                             State == "California"~"2016",
                             State == "Colorado"~"2012",
                             State == "Maine"~"2016",
                             State == "Massachusetts"~"2016",
                             State == "Nevada"~"2016",
                             State == "Oregon"~"2014",
                             State == "Washington"~"2012",
                             .default = "0")) %>%
  mutate(Tratado = as.numeric(Tratado))

view(base_TF)

#filtrei esses 4 estados pq não tem pós tratamento pra eles
base_2 <- base_TF %>%
  filter(State != "California",
         State != "Maine",
         State != "Massachusetts",
         State != "Nevada")
view(base_2)

overdose_death <- att_gt(yname = "taxa_overdose",
                   tname = "year",
                   idname = "Fips",
                   gname = "Tratado",
                   data = base_2)
```

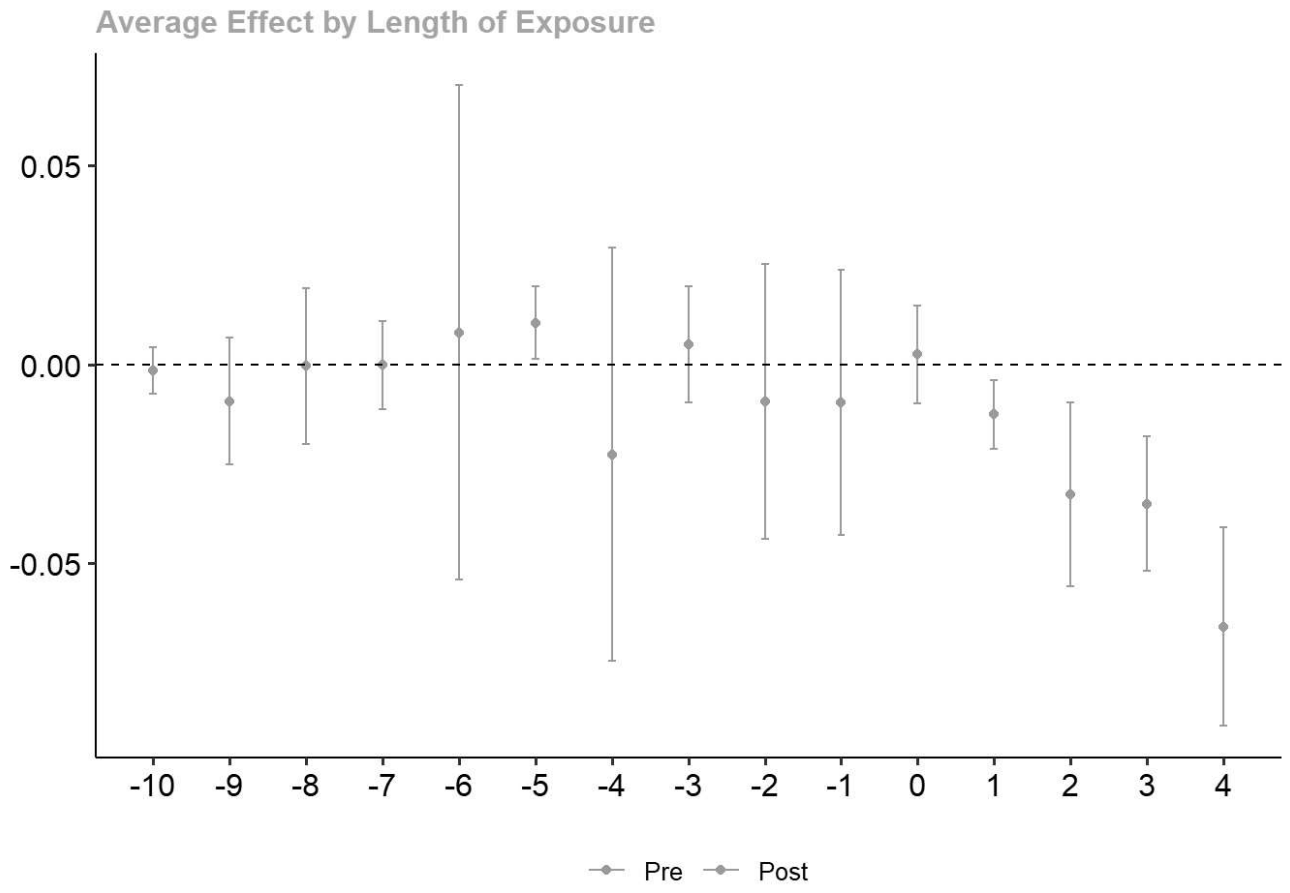
```
## Warning in pre_process_did(yname = yname, tname = tname, idname = idname, : Be
aware that there are some small groups in your dataset.
##   Check groups: 2012,2014.
```

```
## Warning in att_gt(yname = "taxa_overdose", tname = "year", idname = "Fips", :
## Not returning pre-test Wald statistic due to singular covariance matrix
```

```
aggte(overdose_death, type = "dynamic")
```

```
##
## Call:
## aggte(MP = overdose_death, type = "dynamic")
##
## Reference: Callaway, Brantly and Pedro H.C. Sant'Anna.  "Difference-in-Differe
nces with Multiple Time Periods." Journal of Econometrics, Vol. 225, No. 2, pp. 2
00-230, 2021. <https://doi.org/10.1016/j.jeconom.2020.12.001>, <https://arxiv.or
g/abs/1803.09015>
##
##
## Overall summary of ATT's based on event-study/dynamic aggregation:
##      ATT    Std. Error     [ 95%  Conf. Int.]
##  -0.0288        0.0052     -0.039     -0.0186 *
##
##
## Dynamic Effects:
##  Event time Estimate Std. Error [95% Simult.  Conf. Band]
##         -10  -0.0015     0.0026       -0.0075      0.0046
##          -9  -0.0092     0.0068       -0.0250      0.0065
##          -8  -0.0004     0.0079       -0.0188      0.0179
##          -7  -0.0002     0.0047       -0.0110      0.0107
##          -6   0.0080     0.0244       -0.0487      0.0647
##          -5   0.0104     0.0040        0.0012      0.0196 *
##          -4  -0.0227     0.0211       -0.0718      0.0265
##          -3   0.0050     0.0063       -0.0096      0.0196
##          -2  -0.0093     0.0142       -0.0424      0.0238
##          -1  -0.0096     0.0142       -0.0427      0.0235
##           0   0.0025     0.0046       -0.0081      0.0131
##           1  -0.0126     0.0034       -0.0205     -0.0048 *
##           2  -0.0327     0.0094       -0.0546     -0.0108 *
##           3  -0.0351     0.0069       -0.0512     -0.0190 *
##           4  -0.0660     0.0103       -0.0900     -0.0419 *
## ---
## Signif. codes: `*' confidence band does not cover 0
##
## Control Group:  Never Treated,  Anticipation Periods:  0
## Estimation Method:  Doubly Robust
```

```
#gráficos
ggdid(aggte(overdose_death, type = "dynamic"))
```



3.2 Regressão de uso de maconha

```
weed <- att_gt(yname = "taxa_weed",
                   tname = "year",
                   idname = "Fips",
                   gname = "Tratado",
                   data = base_2)
```

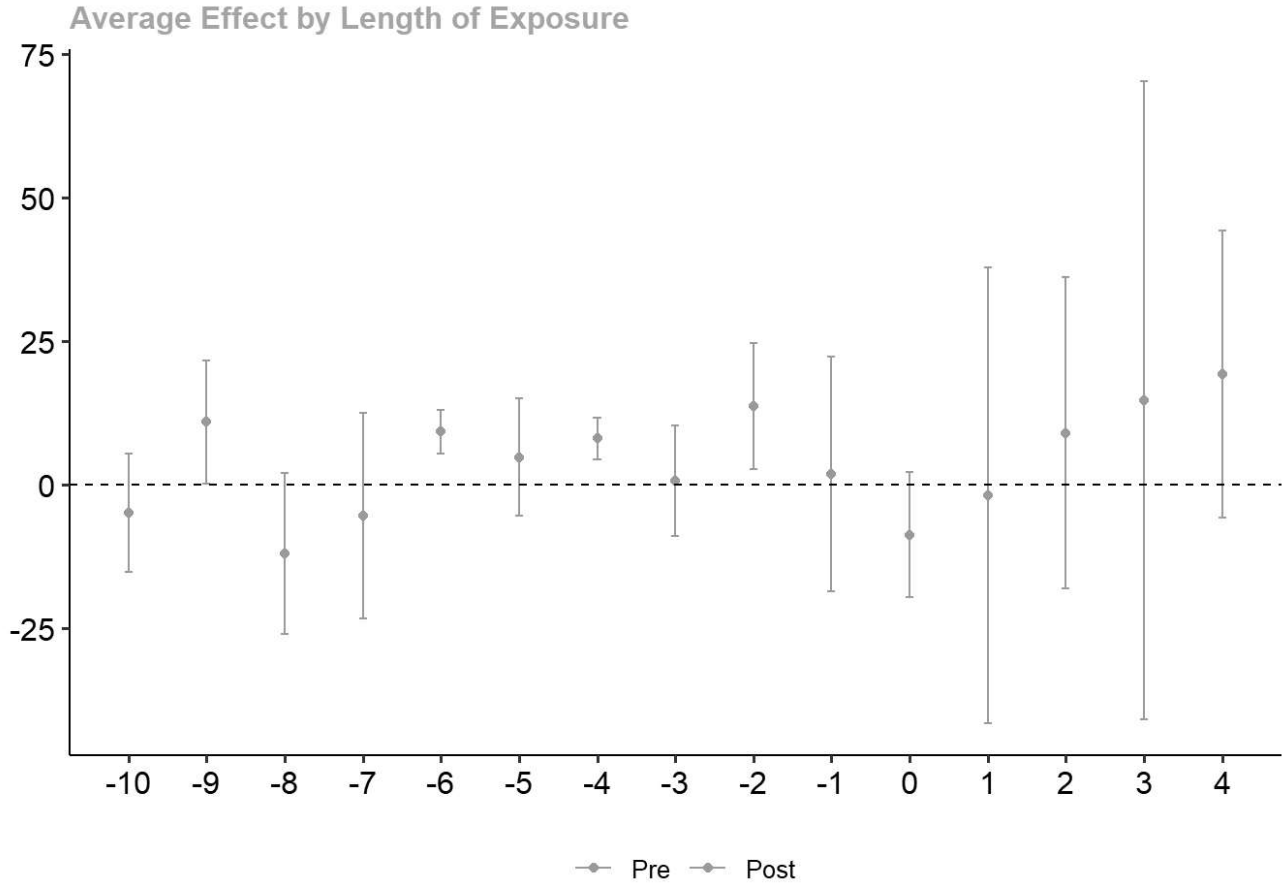
```
## Warning in pre_process_did(yname = yname, tname = tname, idname = idname, : Be
aware that there are some small groups in your dataset.
##   Check groups: 2012,2014.
```

```
## Warning in att_gt(yname = "taxa_weed", tname = "year", idname = "Fips", : Not
## returning pre-test Wald statistic due to singular covariance matrix
```

```
aggte(weed, type = "dynamic")
```

```
##
## Call:
## aggte(MP = weed, type = "dynamic")
##
## Reference: Callaway, Brantly and Pedro H.C. Sant'Anna.  "Difference-in-Differe
nces with Multiple Time Periods." Journal of Econometrics, Vol. 225, No. 2, pp. 2
00-230, 2021. <https://doi.org/10.1016/j.jeconom.2020.12.001>, <https://arxiv.or
g/abs/1803.09015>
##
##
## Overall summary of ATT's based on event-study/dynamic aggregation:
##    ATT    Std. Error     [ 95%  Conf. Int.]
##  6.493        6.9874    -7.2022     20.1881
##
##
## Dynamic Effects:
##  Event time Estimate Std. Error [95% Simult.  Conf. Band]
##         -10  -4.7907     4.6419      -14.6504      5.0690
##          -9  10.9651     3.8380        2.8128     19.1174 *
##          -8 -11.8953     4.5721      -21.6069     -2.1838 *
##          -7  -5.3488     4.8616      -15.6753      4.9776
##          -6   9.2674     1.3921        6.3105     12.2244 *
##          -5   4.8605     3.4375       -2.4411     12.1620
##          -4   8.0872     1.2692        5.3913     10.7831 *
##          -3   0.7674     3.3308       -6.3076      7.8425
##          -2  13.7616     3.6113        6.0909     21.4324 *
##          -1   1.9593     8.1190      -15.2862     19.2048
##           0  -8.6802     3.9745      -17.1224     -0.2381 *
##           1  -1.8370    14.3717      -32.3640     28.6900
##           2   9.0236     9.9167      -12.0405     30.0877
##           3  14.6732    20.6534      -29.1966     58.5429
##           4  19.2854    11.0550       -4.1964     42.7672
## ---
## Signif. codes: `*' confidence band does not cover 0
##
## Control Group:  Never Treated,  Anticipation Periods:  0
## Estimation Method:  Doubly Robust
```

```
#gráficos
ggdid(aggte(weed, type = "dynamic"))
```



3.3 Regressão de uso de cocaína

```
cocaine <- att_gt(yname = "taxa_cocain",
                  tname = "year",
                  idname = "Fips",
                  gname = "Tratado",
                  data = base_2)
```

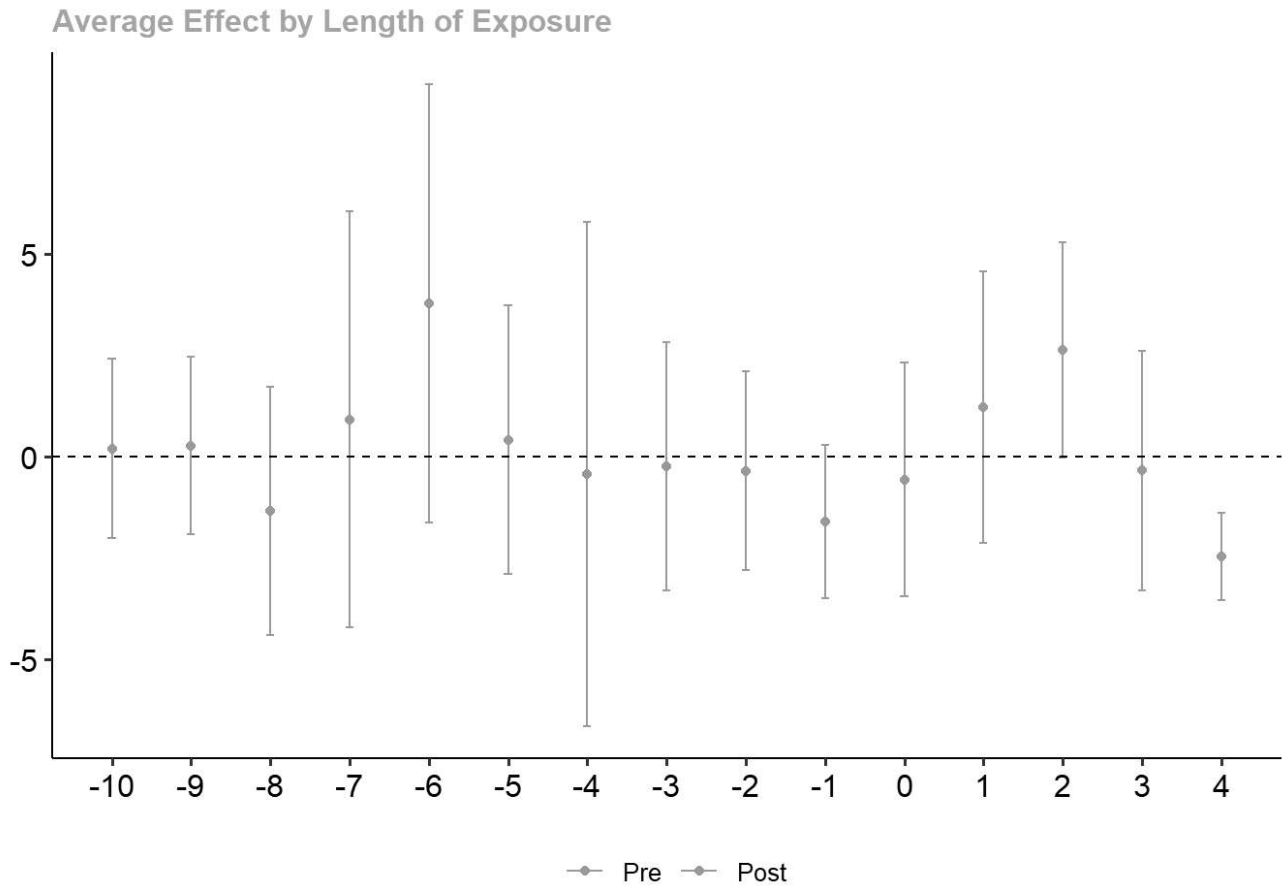
```
## Warning in pre_process_did(yname = yname, tname = tname, idname = idname, : Be
aware that there are some small groups in your dataset.
##   Check groups: 2012,2014.
```

```
## Warning in att_gt(yname = "taxa_cocain", tname = "year", idname = "Fips", : No
t
## returning pre-test Wald statistic due to singular covariance matrix
```

```
aggte(cocaine, type = "dynamic")
```

```
##
## Call:
## aggte(MP = cocaine, type = "dynamic")
##
## Reference: Callaway, Brantly and Pedro H.C. Sant'Anna.  "Difference-in-Differe
nces with Multiple Time Periods." Journal of Econometrics, Vol. 225, No. 2, pp. 2
00-230, 2021. <https://doi.org/10.1016/j.jeconom.2020.12.001>, <https://arxiv.or
g/abs/1803.09015>
##
##
## Overall summary of ATT's based on event-study/dynamic aggregation:
##     ATT    Std. Error     [ 95%  Conf. Int.]
##  0.0943        0.9262    -1.7209      1.9095
##
##
## Dynamic Effects:
##  Event time Estimate Std. Error [95% Simult.  Conf. Band]
##         -10   0.1968     1.6324       -3.0706      3.4642
##          -9   0.2638     0.8981       -1.5338      2.0613
##          -8  -1.3440     1.2797       -3.9054      1.2174
##          -7   0.9081     2.4442       -3.9842      5.8005
##          -6   3.7719     2.6245       -1.4814      9.0253
##          -5   0.4120     1.6497       -2.8900      3.7139
##          -4  -0.4363     2.8908       -6.2226      5.3500
##          -3  -0.2460     1.3320       -2.9122      2.4201
##          -2  -0.3545     1.1314       -2.6191      1.9101
##          -1  -1.6069     0.9673       -3.5431      0.3293
##           0  -0.5664     1.4374       -3.4435      2.3108
##           1   1.2170     1.5443       -1.8740      4.3080
##           2   2.6266     1.3303       -0.0361      5.2893
##           3  -0.3460     1.1629       -2.6737      1.9818
##           4  -2.4598     0.5068       -3.4742     -1.4453 *
## ---
## Signif. codes: `*' confidence band does not cover 0
##
## Control Group:  Never Treated,  Anticipation Periods:  0
## Estimation Method:  Doubly Robust
```

```
#gráficos
ggdid(aggte(cocaine, type = "dynamic"))
```


Average Effect by Length of Exposure
5
0
-5
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
Pre
Post