```
> ## Figure 1
>
> ## 4-year window around Election Day for young voters for 2010 and 2012
>
> library(dplyr)
> library(ggplot2)
> library(reshape2)
> library(timeDate)
> library(eeptools)
> library(gridExtra)
> library(grid)
> library(rdrobust)
> library(rdlocrand)
> library(lubridate)
>
> ## Clear workspace
>
> rm(list=ls())
>
> ## Set working directory
> setwd("~/Dropbox/Documents/Projects/Active_Projects/Compulsory_Voting_BR/Replication_Files/PSRM/")
>
>
> ##Opening the data:
>
> load("ReplicationData.RData")
>
>
> ## 2010
>
> ## Turnout variable
> data2010$turnout <- as.numeric(data2010$VOTOU.1°.TURNO) - 1
>
> ## Figure participation for 16-19yo
>
> ## Subsetting the 4-year window: 3 oct 1990 - 3 oct 1994
>
> data.young.2010 <- dplyr::filter(data2010, (dob >= "1990-10-03" & dob <= "1994-10-03") & turnout == 1)
>
> DataFigureYoung2010 <- data.young.2010 %>%
+   group_by(dob) %>%
+   summarise(voters = n())
`summarise()` ungrouping output (override with `.groups` argument)
>
>
> ## Age variable:
>
> DataFigureYoung2010$age <- age_calc(DataFigureYoung2010$dob, enddate = as.Date("2010/10/03"), units = "years", precise = TRUE)
>
> ## Obliged variable:
>
> DataFigureYoung2010$obliged <- as.numeric(DataFigureYoung2010$age >= 18)
>
>
> ## Figure 1A:
>
> figure1A <- ggplot(DataFigureYoung2010, aes(x = age,y = voters)) +
+     annotate("rect", xmin = 18, xmax = 20, ymin = -Inf, ymax = Inf, alpha = .25) +
+     geom_point(aes(group = obliged),size = 0.1) +
+     geom_vline(xintercept = 16, linetype = 3) +
+     geom_vline(xintercept = 17, linetype = 3) +
+     geom_vline(xintercept = 18) +
+     annotate('text', x = 18.2,y = 1200, label = "ED", size = 3) +
+     geom_vline(xintercept = 19, linetype = 3) +
+     geom_vline(xintercept = 17.755, linetype = 2) +
+     annotate('text', x = 17.55, y = 1200, label = "EY", size = 3) +
+     ylim(1000, 8500) +
+     xlab('Age at election') +
+     ylab("Number of voters in 2010") +
+     theme(axis.title.x = element_text(vjust = 0), axis.title.y = element_text(vjust = 0.5)) +
+     annotate('text', x = 16.5,y = 6500, label = "Not \n obliged \n to vote", hjust = 0.5, size = 3) +
+     annotate('text', x = 19.5,y = 4500, label = "Obliged \n to vote", hjust = 0.5, size = 3) +
+     theme_bw() +
+     theme(panel.border = element_blank(), panel.grid.major = element_blank(), panel.grid.minor = element_blank(), axis.line =
element_line(colour = "black")) +
+     ggtitle("A. 2010 Presidential Elections")
>
>
> ## 2012
>
> ## Turnout variable
```

```
> data2012$turnout <- as.numeric(data2012$VOTOU.1°.TURNO) - 1
>
> ## Subsetting the 4-year window: 7 oct 1992 - 7 oct 1996
>
> data.young.2012 <- dplyr::filter(data2012, (dob >= "1992-10-07" & dob <= "1996-10-07") & turnout == 1)
>
> DataFigureYoung2012 <- data.young.2012 %>%
+   group_by(dob) %>%
+   summarise(voters = n())
`summarise()` ungrouping output (override with `.groups` argument)
>
> ## Age variable:
>
> DataFigureYoung2012$age <- age_calc(DataFigureYoung2012$dob, enddate = as.Date("2012/10/07"), units = "years", precise = TRUE)
>
> ## Obliged variable:
>
> DataFigureYoung2012$obliged <- as.numeric(DataFigureYoung2012$age >= 18)
>
>
> ## Figure 1B:
>
> figure1B <- ggplot(DataFigureYoung2012, aes(x = age,y = voters)) +
+     annotate("rect", xmin = 18, xmax = 20, ymin = -Inf, ymax = Inf, alpha = .25) +
+     geom_point(aes(group = obliged),size = 0.1) +
+     geom_vline(xintercept = 16, linetype = 3) +
+     geom_vline(xintercept = 17, linetype = 3) +
+     geom_vline(xintercept = 18) +
+     annotate('text', x = 18.2,y = 1200, label = "ED", size = 3) +
+     geom_vline(xintercept = 19, linetype = 3) +
+     geom_vline(xintercept = 17.755, linetype = 2) +
+     annotate('text', x = 17.55, y = 1200, label = "EY", size = 3) +
+     ylim(1000, 8500) +
+     xlab('Age at election') +
+     ylab("Number of voters in 2012") +
+     theme(axis.title.x = element_text(vjust = 0), axis.title.y = element_text(vjust = 0.5)) +
+     annotate('text', x = 16.5,y = 6500, label = "Not \n obliged \n to vote", hjust = 0.5, size = 3) +
+     annotate('text', x = 19.5,y = 4500, label = "Obliged \n to vote", hjust = 0.5, size = 3) +
+     theme_bw() +
+     theme(panel.border = element_blank(), panel.grid.major = element_blank(), panel.grid.minor = element_blank(), axis.line =
element_line(colour = "black")) +
+     ggtitle("B. 2012 Municipal Elections")
>
>
>
> ## Combining the 2 plots into one figure
>
> Figure1 <- grid.arrange(figure1A, figure1B,
+               nrow = 1)
>
> ggsave(file="Figure1.png", plot = Figure1, width = 7.5, height = 4.5)
>
>
```