Problem Set 3

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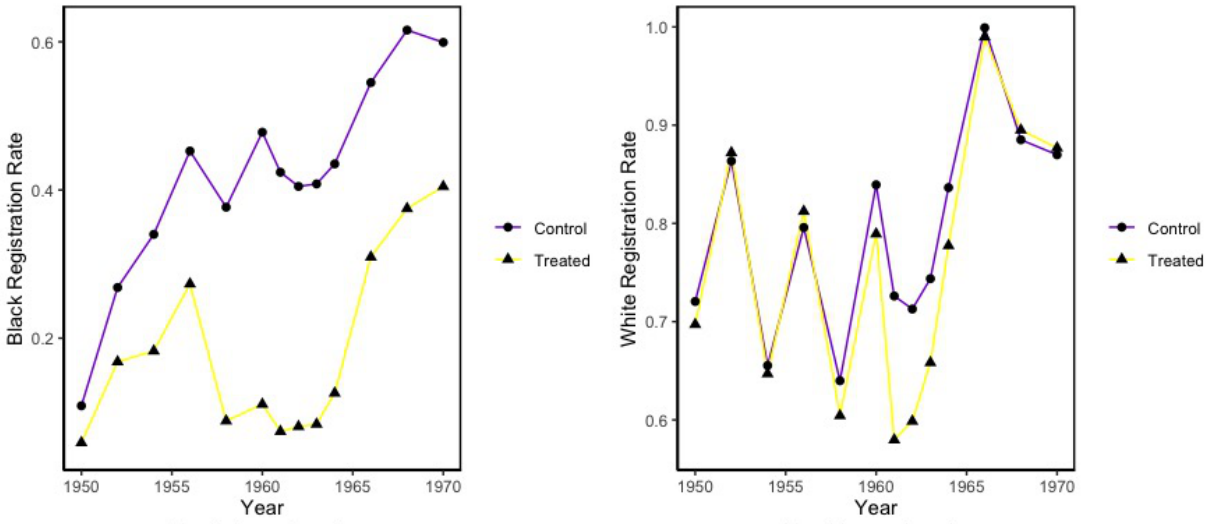
My Responses

1. Here I have succesfully replicated Figure 2 from the article. First I loaded all the packages, then I opened the .dta file and omitted any NA variables.Then, I cleaned the understandingclause2 variable in the dataset so that 1 equals a treated parish, and 0 equals the control.Then I grouped all the parishes so that there was one row per year, keeping the means of blackregrate and whiteregrate. Then, I created the ggplot for black registration rate (named ggblack) and the ggplot for white registration rate (named ggwhite), and for both plots, the specifications I used were the same to keep consistent with the table on the article (see code). I should note that I played around with the scale limits until the lines were positioned the same as the article figure. After both graphs were created, I merged them using patchwork, and added the title to match the original one. Voila!

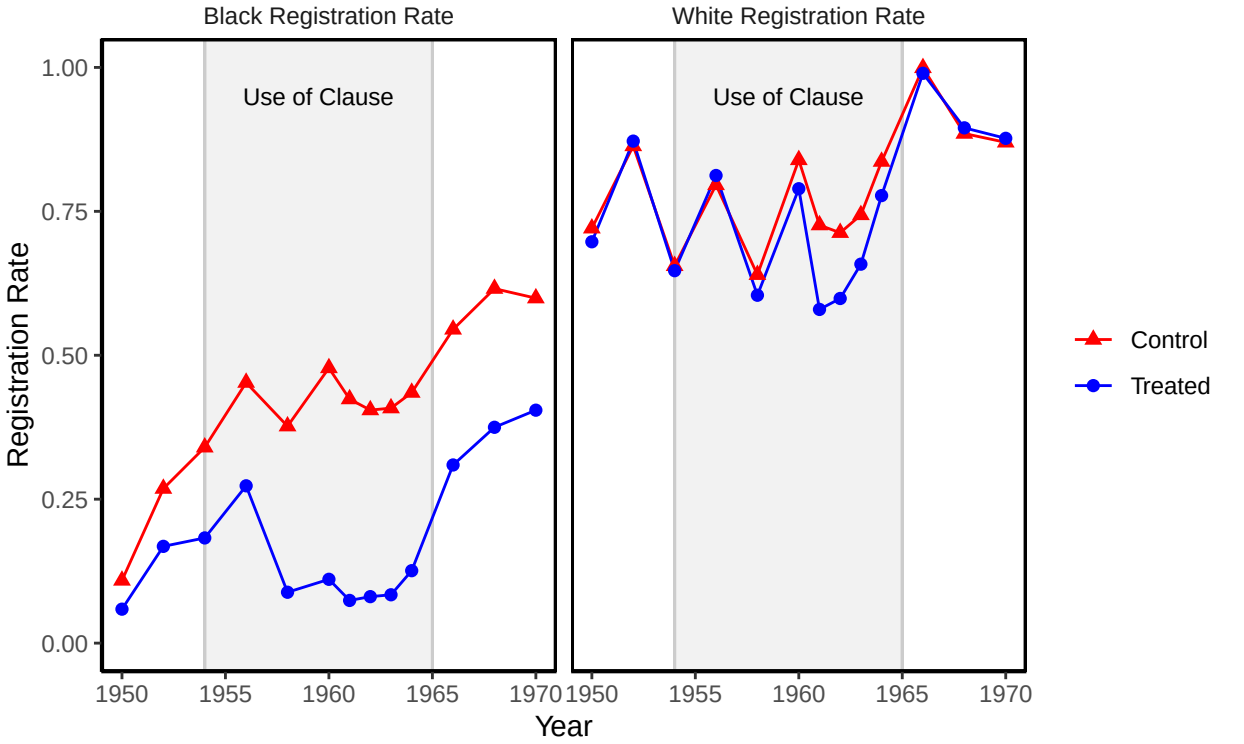
FIGURE 2. Proportion of Registered Voters by Race and by Understanding Clause Status. Treated Parishes Enforced the Understanding Clause and Control Parishes Did Not



(a) Black Registration (b) White Registration

2. When I started to make some changes and improve the figure, I first used the pivot longer function to stack black and white registration rates. Then, I created the ggplot while keeping the same x-axis scale for the years, but changed the y-axis to show all values 0-1 (this keeps the scale the same for both graphs, making it easier to see the difference). I played aroud with the colors, removed the background grid, added the shaded area representing the years in which the Clause was used, and made two subplots instead of two separate graphs using faceting. I decided to use red and blue colors for easier distinction, and kept the title for each plot at the top for clarity.

FIGURE 2. Proportion of Registered Voters by Race and by Understanding
Parishes Enforced the Understanding Clause and Control Parishes Did No




```
knitr::opts_chunk$set(
  echo = FALSE,
  eval = TRUE,
  fig.align = 'center',
  message = FALSE,
  warning = FALSE
  )
library(tinytex)
library(tidyverse)
library(knitr)
library(patchwork)
library(haven)
library(scales)
library(magick)
la <- read_dta("la_turnout_basic.dta")

la1 <- na.omit(la)

la_clean <- la1 %>%
  mutate(understandingclause2 = case_when(
    understandingclause2 == 1 ~ "Treated",
    understandingclause2 == 0 ~ "Control",
    TRUE ~ NA_character_
  ))

la_grouped <- la_clean %>%
```

```
  group_by(year, understandingclause2) %>%
  summarize(
    blackregrate = mean(blackregrate, na.rm = TRUE),
    whiteregrate = mean(whiteregrate, na.rm = TRUE),
    .groups = "drop"
  )

ggblack <- ggplot(la_grouped, aes(
  x = year,
  y = blackregrate,
  color = understandingclause2,
  shape = understandingclause2,
  group = understandingclause2)) +
  geom_line() +
  scale_color_manual(values = c("purple3","Yellow")) +
  geom_point(size = 2, color = 'black', alpha = 1) +
  labs(
    title = NULL,
    x = "Year",
    y = "Black Registration Rate",
    caption = "(a) Black Registration"
  ) +
  scale_x_continuous(limits = c(1950, 1970)) +
  scale_y_continuous(limits = c(.05, .62)) +
  theme_classic() +
  theme(panel.border = element_rect(color = "black", fill = NA, size = 1),
        legend.title = element_blank(),
        plot.caption = element_text(family = "Times New Roman", size = 12, hjust = .5))

ggwhite <- ggplot(la_grouped, aes(
  x = year,
  y = whiteregrate,
  color = understandingclause2,
  shape = understandingclause2,
  group = understandingclause2)) +
  geom_line() +
  scale_color_manual(values = c("purple3","Yellow")) +
  geom_point(size = 2, color = 'black', alpha = 1) +
  labs(
    title = NULL,
    x = "Year",
    y = "White Registration Rate",
    caption = "(b) White Registration"
  ) +
  scale_x_continuous(limits = c(1950, 1970)) +
  scale_y_continuous(limits = c(.57, 1)) +
  theme_classic() +
  theme(panel.border = element_rect(color = "black", fill = NA, size = 1),
        legend.title = element_blank(),
        plot.caption = element_text(family = "Times New Roman", size = 12, hjust = .5))

#ggblack + ggwhite
#(ggblack | ggwhite) +
```

```r
#  plot_annotation(title = "FIGURE 2. Proportion of Registered Voters by Race and by Understanding Clau
#Parishes Enforced the Understanding Clause and Control Parishes Did Not",
#                  theme = theme(plot.title = element_text(hjust = 0, face = #"bold")))

image_read("Rplot.jpeg")

la <- read_dta("la_turnout_basic.dta")

la1 <- na.omit(la)

la_clean <- la1 %>%
  mutate(understandingclause2 = case_when(
    understandingclause2 == 1 ~ "Treated",
    understandingclause2 == 0 ~ "Control",
    TRUE ~ NA_character_
  ))

la_grouped <- la_clean %>%
  group_by(year, understandingclause2) %>%
  summarize(
    blackregrate = mean(blackregrate, na.rm = TRUE),
    whiteregrate = mean(whiteregrate, na.rm = TRUE),
    .groups = "drop"
  )

subgps <- la_grouped %>%
  pivot_longer(
    cols = c(blackregrate, whiteregrate),
    names_to = "reg_type",
    values_to = "reg_rate"
  ) %>%
  mutate(reg_type = recode(reg_type,
                           blackregrate = "Black Registration Rate",
                           whiteregrate = "White Registration Rate"))

ggplot(subgps, aes(
  x = year,
  y = reg_rate,
  color = understandingclause2,
  shape = understandingclause2,
  group = understandingclause2
)) +
  geom_rect(aes(xmin = 1954, xmax = 1965, ymin = -Inf, ymax = Inf),
            fill = "grey95", color = "grey80", alpha = .3) +
  annotate("text", x = 1959.5, y = .95, label = "Use of Clause",
           size = 3, color = "black") +
  geom_line() +
  scale_color_manual(values = c("red","Blue")) +
  geom_point(size = 2) +
  scale_shape_manual(values = c("Control" = 17, "Treated" = 16)) +
  facet_wrap(~ reg_type, nrow = 1) +  # two subplots side by side
  labs(
    title = "FIGURE 2. Proportion of Registered Voters by Race and by Understanding Clause Status. Trea
```

```
Parishes Enforced the Understanding Clause and Control Parishes Did Not",
    x = "Year",
    y = "Registration Rate",
    color = NULL,
    shape = NULL
  ) +
  scale_x_continuous(limits = c(1950, 1970)) +
  scale_y_continuous(limits = c(0, 1)) +
  theme_classic() +
  theme(panel.border = element_rect(color = "black", fill = NA, size = 1)) +
  theme(strip.background = element_blank())
```