P8130 Final Report

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Abstract

In today's world where diversity abounds in every aspect of people's lives, hate crimes still remain a big issue that leave devastating effects on not only individuals but also communities as well. To better address and prevent future hate crimes, this study aims to identify variables that are most closely associated with hate crime rates. In doing so, we examined the data in every U.S. state that were recorded during the first weeks of November in 2016 by the Southern Poverty Law Center and examined a variety of potential factors that could be associated with hate crimes. With previous knowledge that income inequality is one of the main predictors of hate crime rates, we looked more into this factor and assessed its relationship with other variables. Through various model selections and statistical analyses, we concluded that on average, hate crime rate in the U.S. is linearly associated with an increase in the percentage of adults with a high school degree and a higher index of income inequality. The association between hate crime rate and income inequality in addition to the percentage of adults with a high school degree was stronger than that between hate crime rate and income inequality alone. Based on these results, future studies can look into identifying more factors that are closely related with hate crime rates globally and in the U.S. over the years.

Introduction

The current highest priority of the FBI's civil rights program is hate crimes. A hate crime, as defined by the FBI, is a "criminal offense against a person or property motivated in whole or in part by an offender's bias against a race, religion, disability, sexual orientation, ethnicity, gender, or gender identity."(FBI, n.d.). The number of hate crimes committed yearly in the United States has been growing and, as of 2020, has risen to the highest level in more than a decade, with 7,134 reported cases from 2019 (Balsamo, 2020). This number could be severely lower than the actual count, as hate crime data is voluntarily reported by law enforcement and only 2,172 out of the 15,000 participating agencies reported to the FBI last year (Balsamo, 2020). However, with the increasing incidence of hate crimes, there is a growing urgency to find trends within the hate crime data that can assist law enforcement agencies in addressing potentially problematic issues or provide lawmakers with justification for certain legislation and aid the detection and prevention of future incidents.

10 days after the 2016 election, more hate crimes were reported to the Southern Poverty Law Center on average per day than in the time between 2010 and 2015 (Majumder, 2017). Using the data reported in this time frame, which includes details on hate crimes that occurred in the United States by state, we seek to address the strength of association between a variety of potential variables and the incidence of hate crimes. The variables include the levels of unemployment, level of state urbanization, the median household income per state, percentage of adults over the age of 25 with high school degrees, the percentage of the population that are non-us citizens, the percentage of the population that are non-white, and the Gini index number that measures income inequality for each state (Majumder, 2017)

```
# Load libraries
rm(list = ls())
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.0 --

## v ggplot2 3.3.3     v purrr   0.3.4
## v tibble  3.0.6     v dplyr   1.0.4
## v tidyr   1.1.2     v stringr 1.4.0
## v readr   1.4.0     v forcats 0.5.1

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(arsenal)
library(corrplot)
```

```
## corrplot 0.84 loaded
```

```
library(boot)
```

```
# Load and tidy data, missing values of outcome variable are removed
hatecrimes_df <- read.csv("./data/HateCrimes.csv") %>%
 filter(hate_crimes_per_100k_splc != 'N/A') %>%
  mutate(
    unemployment = as.factor(unemployment),
    urbanization = as.factor(urbanization),
    hate_crime_rate = as.numeric(hate_crimes_per_100k_splc)) %>%
  select(-hate_crimes_per_100k_splc)
```

```
# Summary statistics
my_labels<-list(hate_crime_rate = "Hate Crimes(per 100k)", unemployment = "Unemplotment Level", urbaniza

#make controls
my_controls <- tableby.control(
               total = F,
               test=F,  # No test p-values yet
               numeric.stats = c("N", "meansd", "medianq1q3", "min", "max", "Nmiss2"),
               cat.stats = c("N", "countpct"),
               stats.labels = list(
                     meansd = "Mean (SD)",
                     medianq1q3 = "Median (Q1, Q3)",
                     min = "Min",
                     max = "Max",
                     Nmiss2 = "Missing",
                     countpct = "N (%)"))

#table 1
tab1<-tableby(~ hate_crime_rate + unemployment + urbanization + median_household_income + perc_populati
summary(tab1, title = "Descriptive Statistics: Hate Crimes per 100K Population and Possible Influential
```

```
##
##
## Table: Descriptive Statistics: Hate Crimes per 100K Population and Possible Influential Variables
```

	Overall (N=47)
Hate Crimes(per 100k)	
- N	47
- Mean (SD)	0.304 (0.253)
- Median (Q1, Q3)	0.226 (0.143, 0.357)
- Min	0.067
- Max	1.522
- Missing	0
Unemplotment Level	
- N	47
- high	24 (51.1%)
- low	23 (48.9%)
Urbanization Level	
- N	47
- high	24 (51.1%)
- low	23 (48.9%)
Median Household Income(dollar)	
- N	47
- Mean (SD)	54802.298 (9255.117)
- Median (Q1, Q3)	54310.000 (47629.500, 60597.500)
- Min	35521.000
- Max	76165.000
- Missing	0
High School Degree Rate(%)	
- N	47
- Mean (SD)	0.866 (0.034)
- Median (Q1, Q3)	0.871 (0.839, 0.895)
- Min	0.799
- Max	0.915
- Missing	0
Non-Citizen Rate(%)	
- N	45
- Mean (SD)	0.055 (0.031)
- Median (Q1, Q3)	0.050 (0.030, 0.080)
- Min	0.010
- Max	0.130
- Missing	2
Non-White Rate(%)	
- N	47
- Mean (SD)	0.315 (0.150)
- Median (Q1, Q3)	0.300 (0.205, 0.420)
- Min	0.060
- Max	0.630
- Missing	0
Gini Index	
- N	47
- Mean (SD)	0.456 (0.021)
- Median (Q1, Q3)	0.455 (0.441, 0.468)
- Min	0.419
- Max	0.532
- Missing	0