Data and Code for "Access to Guns in the Heat of the Moment: More Restrictive Gun Laws Mitigate the Effect of Temperature on Violence"

Jonathan Colmer and Jennifer Doleac

September 2023

Introduction

This document provides detailed instructions on how to reconstruct the data used, and replicate the findings presented in, "Access to Guns in the Heat of the Moment: More Restrictive Gun Laws Mitigate the Effect of Temperature on Violence'. The submission folder contains all code, data, and results. Replication materials have been uploaded to the Review of Economics and Statistics Dataverse.

File Structure

Data Build Code

First, run "config_stata.do" to ensure that all packages are installed. All packages required for each .R file are installed at the start of each program.

The "Data Build Code" Folder has separate folders for each of the datasets used in the analysis, "Weather Data", "NIBRS", and "UCR". Within each subfolder there are do files. To reconstruct the processed data from the raw files set your file path in "master.do". Running "master.do" will re-create the processed data for that data set.

Data

All raw data is provided in the "Raw Data" folder.[1] Code to process the data is found in the Data Build Code above. All processed data can be found in the "Processed Data" folder. Final analysis data files are found in "Analysis Data".

[1]The exception is the raw weather data, which contains 150GB worth of files. The processed weather data and code is provided.

Computational Requirements

Software Requirements

Code was last run using,

- Stata 14.2
  - reghdfe (as of 14/07/2019)
- R 4.2.2
  - foreign (as of 08/03/2019)
- RStudio 2023.03.1+446

Memory and Runtime Requirements

This code was last run on a 2018 Mac Mini with a **3.2 GHz 6-Core Intel Core i7** processor and **16 GB** of memory, running **macOS Ventura 13.4**. The unzipped data files contain XGB of data. All data processing takes approximately 7 hours.

Instructions

Code for each Table and Figure are found in the folder "Analysis Code", e.g. "Table_2.R" loads the data, conducts the relevant analysis, and then exports the results to "Figures and Tables/Figure_2/Panel_A_Table_2.tex", "Figures and Tables/Figure_2/Panel_B_Table_2.tex", and "Figures and Tables/Figure_2/Panel_C_Table_2.tex"

Figures

- Figure 1:
  - "Analysis Code/Figure_1.do" → "Figures and Tables/Figure_1/Figure_1.png"
- Figure 2:
  - "Analysis Code/Figure_2.do" → "Figures and Tables/Figure_1/Figure_2a.png"
  - "Analysis Code/Figure_2.do" → "Figures and Tables/Figure_1/Figure_2b.png"
- Figure 3:
  - "Analysis Code/Figure_3_data.R" → "Figures and Tables/Figure_3/Figure_3_data.csv"
  - "Analysis Code/Figure_3.do" → "Figures and Tables/Figure_3/Figure_3.png"
- Figure A1:

  - "Analysis Code/Figure_A1.do" → "Figures and Tables/Figure_A1/Figure_A1a.png"
  - "Analysis Code/Figure_A1.do" → "Figures and Tables/Figure_A1/Figure_A1b.png"
  - "Analysis Code/Figure_A1.do" → "Figures and Tables/Figure_A1/Figure_A1c.png"
  - "Analysis Code/Figure_A1.do" → "Figures and Tables/Figure_A1/Figure_A1d.png"

- Figure A2:
  - "Analysis Code/Figure_A2.do" → "Figures and Tables/Figure_A2/Figure_A2.png"

Tables

- Table 1:
  - "Analysis Code/Table_1.R" → "Figures and Tables/Table_1/dstats_dstats_homicide_pc.tex"
  - "Analysis Code/Table_1.R" → "Figures and Tables/Table_1/dstats_dstats_gun_homicide_pc.tex"
  - "Analysis Code/Table_1.R" → "Figures and Tables/Table_1/dstats_dstats_ngun_homicide_pc.tex
  - "Analysis Code/Table_1.R" → "Figures and Tables/Table_1/dstats_dstats_agg_assault_pc.tex"
  - "Analysis Code/Table_1.R" → "Figures and Tables/Table_1/dstats_dstats_population.tex"
  - "Analysis Code/Table_1.R" → "Figures and Tables/Table_1/dstats_dstats_tMean.tex"
  - "Analysis Code/Table_1.R" → "Figures and Tables/Table_1/dstats_dstats_precip.tex"

- Table 2:
  - "Analysis Code/Table_2.R" →"Figures and Tables/Table_2/Panel_A_Table_2.tex"
  - "Analysis Code/Table_2.R" →"Figures and Tables/Table_2/Panel_B_Table_2.tex"
  - "Analysis Code/Table_2.R" →"Figures and Tables/Table_2/Panel_C_Table_2.tex"

- Table 3:
  - "Analysis Code/Table_3.R" → "Figures and Tables/Table_3/Table_3_Columns_1_4.tex"
  - "Analysis Code/Table_3.R" → "Figures and Tables/Table_3/Table_3_Column_5.tex"

- Table 4:
  - "Analysis Code/Table_4.R" → "Figures and Tables/Table_4/Table_4_Panel_A.tex"
  - "Analysis Code/Table_4.R" → "Figures and Tables/Table_4/Table_4_Panel_B.tex"

- Table 5:
  - "Analysis Code/Table_5.R" → "Figures and Tables/Table_5/Table_5_Panel_A.tex"
  - "Analysis Code/Table_5.R" → "Figures and Tables/Table_5/Table_5_Panel_B.tex"

- Table A1:

  - "Analysis Code/Table_A1.R" → "Figures and Tables/Table_A1/Table_A1_Panel_A.tex"
  - "Analysis Code/Table_A1.R" → "Figures and Tables/Table_A1/Table_A1_Panel_B.tex"
  - "Analysis Code/Table_A1.R" → "Figures and Tables/Table_A1/Table_A1_Panel_C.tex"
- Table A2:
  - "Analysis Code/Table_A2.R" → "Figures and Tables/Table_A2/Table_A2_Panel_A.tex"
  - "Analysis Code/Table_A2.R" → "Figures and Tables/Table_A2/Table_A2_Panel_B.tex"
  - "Analysis Code/Table_A2.R" → "Figures and Tables/Table_A2/Table_A2_Panel_C.tex"
- Table A3:
  - "Analysis Code/Table_A3.R" → "Figures and Tables/Table_A3/Table_A3_Panel_A.tex"
  - "Analysis Code/Table_A3.R" → "Figures and Tables/Table_A3/Table_A3_Panel_B.tex"
  - "Analysis Code/Table_A3.R" → "Figures and Tables/Table_A3/Table_A3_Panel_C.tex"
  - "Analysis Code/Table_A3.R" → "Figures and Tables/Table_A3/Table_A3_Panel_D.tex"
- Table A4:
  - "Analysis Code/Table_A4.R" → "Figures and Tables/Table_A4/Table_A4_Panel_A.tex"
  - "Analysis Code/Table_A4.R" → "Figures and Tables/Table_A4/Table_A4_Panel_B.tex"
  - "Analysis Code/Table_A4.R" → "Figures and Tables/Table_A4/Table_A4_Panel_C.tex"
- Table B1:
  - "Analysis Code/Table_B1.R" → "Figures and Tables/Table_B1/Table_B1.tex"
- Table B2:
  - "Analysis Code/Table_B2.R" → "Figures and Tables/Table_B2/Table_B2_Panel_A.tex"
  - "Analysis Code/Table_B2.R" → "Figures and Tables/Table_B2/Table_B2_Panel_B.tex"
- Table B3:
  - "Analysis Code/Table_B3.R" → "Figures and Tables/Table_B3/Table_B3_Panel_A.tex"
  - "Analysis Code/Table_B3.R" → "Figures and Tables/Table_B3/Table_B3_Panel_B.tex"
- Table B4:
  - "Analysis Code/Table_B4.R" → "Figures and Tables/Table_B4/Table_B4.tex"
- Table B5:
  - "Analysis Code/Table_B5.R" → "Figures and Tables/Table_B5/Table_B5.tex"
- Table B6:

  - "Analysis Code/Table_B6.R" → "Figures and Tables/Table_B6/Table_B6.tex"

- Table B6:
  - "Analysis Code/Table_B7.R" → "Figures and Tables/Table_B7/Table_B7_Panel_A.tex"
  - "Analysis Code/Table_B7.R" → "Figures and Tables/Table_B7/Table_B7_Panel_B.tex"
- Table C1:
  - "Analysis Code/Table_C1.R" → "Figures and Tables/Table_C1/Table_C1_Panel_A.tex"
  - "Analysis Code/Table_C1.R" → "Figures and Tables/Table_C1/Table_C1_Panel_B.tex"
- Table C2:
  - "Analysis Code/Table_C2.R" → "Figures and Tables/Table_C2/Table_C2_Panel_A.tex"
  - "Analysis Code/Table_C2.R" → "Figures and Tables/Table_C2/Table_C2_Panel_B.tex"
  - "Analysis Code/Table_C2.R" → "Figures and Tables/Table_C2/Table_C2_Panel_C.tex"
- Table C3:
  - "Analysis Code/Table_C3.R" → "Figures and Tables/Table_C3/Table_C3_Panel_A.tex"
  - "Analysis Code/Table_C3.R" → "Figures and Tables/Table_C3/Table_C3_Panel_B.tex"
  - "Analysis Code/Table_C3.R" → "Figures and Tables/Table_C3/Table_C3_Panel_C.tex"
- Table C4:
  - "Analysis Code/Table_C4.R" → "Figures and Tables/Table_C4/Table_C4_Panel_A.tex"
  - "Analysis Code/Table_C4.R" → "Figures and Tables/Table_C4/Table_C4_Panel_B.tex"
  - "Analysis Code/Table_C4.R" → "Figures and Tables/Table_C4/Table_C4_Panel_C.tex"
- Discussion Calculations:
  - "Analysis Code/Discussion_Calculations.do"

Data Dictionary

- `STATE` – Numeric State Code
- `ori9` – Originating agency identifier (jurisdiction code)
- `date` – date of year
- `population` – ori9 population count
- `fips` – 5-digit county FIPS code
- `year` – calendar year

- `month` – month of year
- `day` – day of month
- `lon` – longitude
- `lat` – latitude
- `tMean` – daily mean temperature
- `tMean2` – daily mean temperature^2
- `tMean4` – daily mean temperature^3
- `tMean4` – daily mean temperature^4
- `DD_H` – indicator for if the daily mean temperature exceeds 18°C
- `tMax` – daily maximum temperature
- `tMin` – daily minimum temperature
- `prec` – daily total precipitation
- `MP` – Indicator for whether the state has "More Prohibitive" Right-to-Carry laws in effect
- `BG` – Indicator for whether the state requires a background check before purchasing a firearm
- `WAIT` – Indicator for whether the state requires a waiting period before purchasing a firearm
- `std_laws` – A standardized index of the number of prohibiting gun laws implemented in the state
- `temp_MP` – an interaction between the `tMean` and `MP`
- `temp_BG` – an interaction between the `tMean` and `BG`
- `temp_WAIT` – an interaction between the `tMean` and `WAIT`
- `temp_std_laws` – an interaction between the `tMean` and `std_laws`
- `temp_max_MP` an interaction between the `tMax` and `MP`
- `temp_min_MP` an interaction between the `tMin` and `MP`
- `prec_MP` an interaction between the `prec` and `MP`
- `prec_BG` – an interaction between the `prec` and `BG`
- `prec_WAIT` – an interaction between the `prec` and `WAIT`

- `prec_std_laws` – an interaction between the `prec` and `std_laws`
- `homicide_pc` – number of homicides per 100,000 people
- `gun_homicide_pc` – number of homicides committed with a firearm per 100,000 people
- `ngun_homicide_pc` – number of homicides committed without a firearm per 100,000 people
- `homicide_pc_morning` – number of homicides committed between 6am and noon per 100,000 people
- `homicide_pc_afternoon` – number of homicides committed between noon and 6pm per 100,000 people
- `homicide_pc_night` – number of homicides committed between 6pm and 6am per 100,000 people
- `homicide_at_home_pc` – number of homicides committed in the home per 100,000 people
- `homicide_outside_pc` – number of homicides committed outside per 100,000 people
- `homicide_other_pc` – number of homicides committed in other locations (not in the home or outside) per 100,000 people
- `agg_assault_pc` – number of aggravated assaults per 100,000 people
- `gun_agg_assault_pc` – number of aggravated assaults committed with a firearm per 100,000 people
- `ngun_agg_assault_pc` – number of aggravated assaults committed without a firearm per 100,000 people
- `any_homicide` – whether any homicide occured on that day
- `week` – week of the year
- `dow` – day of the week
- `sample_month` – month-of-sample identifier
- `state_sample_month` – state $\times$ month-of-sample identifier
- `ori_sample_month` – jurisdiction $\times$ month-of-sample identifier