

Replication Materials for Narrow and Wide Replication of Chalfin and McCrary (REStat 2018)

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Brief Description of project

This file contains the instruction for the replication of *Narrow and Wide Replication of Chalfin and McCrary(REStat 2018)*.

We extend the Chalfin- McCrary dataset (CM) on police employment and crime (1960-2010), till 2019. The original paper (ReStat 2018), computes the police elasticity of crime for a defined set of violent and property crimes as defined by the FBI Return A using a panel of 242 cities.

The authors identify two sources of data for police employment, UCR and ASG. We first extend the data for both these variables, by cleaning the raw data, and preparing it for further inference. We then replicate the key CM results for four datasets: (i) narrow (ii) wide (iii) novel, and (iv) new data only. We also conduct the replications for (i) – (iii) using the OptIV estimator proposed by Anderson and Moen (2016).

Description of folders and contents

- **2_code:** This folder consists of the following R scripts:
 1. 00_master.R - Master R script
 2. 01_cleanup.R- cleans original and extended dataset.
 3. 02_replication.R- replicates Table 3 and 6 of CM 2018 with narrow and wide dataset.
 4. 02_replication_novel.R- replicates Table 3 and 6 of CM 2018 with novel dataset.
 5. 03_replicationfuncs.R- R script hosting all functions required to replicate the results.
 6. 04_rep_newdata.R- replicates Table 3 and 6 of CM 2018 with new data (2011-2019) as a robustness check.
- **3_raw:** This folder consists of the raw data used to construct the extended datasets:
 1. 11_empid-19_empid: Police employment and population data from Annual Survey of Government (ASG) Census (2011-2019)
 2. 11_emp-19_emp: Same as above, in csv format (2011-2019)

3. ASG_Original.dta: Police employment data from ASG from CM 2018 from 1960-2010 (Provided by authors)
 4. LEOKA.dta: Police employment data from Uniform Crime Report (UCR) from 1960-2019
 5. UCR_Kaplan.dta: Crime data from UCR for US cities from 1960-2019
 6. Base.dta: Crime data from UCR for US cities from 1960-2019 (Provided by authors)
 7. narrow.csv: Same as above, in csv format
 8. Crosswalk.dta: Keys for merging ORI7-FIPS-Census codes.
- **4_output:** This folder consists of clean datasets generated after running the codes:
 1. novel.csv: Novel dataset of crime and police employment obtained by cleaning raw data from 1960-2019.
 2. wide.csv: Clean hybrid dataset obtained by using authors files from 1960-2010 and appending cleaned source dta from 2011-2019.

Description of datasets

As described above, the codes replicate the key CM results for four datasets. Below is the description of the contents, as well as the key variables in each

1. **Narrow dataset:** This refers to the authors' original files consisting of police employment and crime data from UCR and ASG, over the period 1960-2010. This is present in the file narrow.csv
2. **Wide dataset:** This consists of police employment and crime data from UCR and ASG, over the period 1960-2019. For this, the authors' original files used till 1960-2010, while the data from 2011-2019 was taken from the raw ASG files, and the UCR_Kaplan and the LEOKA.dta files.
3. **Novel dataset:** This consists of police employment and crime data from UCR and ASG, over the period 1960-2019. The UCR data was taken from the UCR_Kaplan file for the *entire* period (1960-2019), while the ASG data was the same as in the wide dataset,
4. **New data only:** This consists of police employment and crime data from UCR and ASG, over the period 2011-2019, taken from raw ASG, UCR_Kaplan and LEOKA files.

All the clean datasets have the following key variables

- ORI7: FBI city code
- GOVID: Census city code
- STATE: two letter state code
- year: Year
- cityid: Unique numeric city identifier
- stateyear: State-year group variable
- Y1: Growth rate of murder (UCR): log-difference

- Y2: Growth rate of rape (UCR): log-difference
- Y3: Growth rate of robbery (UCR): log-difference
- Y4: Growth rate of assault (UCR): log-difference
- Y5: Growth rate of burglary (UCR): log-difference
- Y6: Growth rate of theft (UCR): log-difference
- Y7: Growth rate of motor vehicle theft (UCR): log-difference
- Y8: Growth rate of violent crimes (UCR): log-difference
- Y9: Growth rate of property \ (UCR): log-difference
- Y10: Growth rate of cost-weighted violent crimes (UCR): log-difference
- Y11: Growth rate of cost-weighted property crimes(UCR): log-difference
- Y12: Growth rate of all cost-weighted crimes(UCR): log-difference
- S: Growth rate of Total police officers (UCR)
- Z: Growth rate of Total police officers (ASG)
- C1: Growth rate of city population (UCR)
- C2: Growth rate of city population (ASG)
- W: 2010 city population (UCR)

Replication steps

To implement the replication, follow these steps

1. Open replication.Rproj.
2. Within the project, open 00_master.R.
3. Run the file.

The script 02_replication.R produces Tables 1-5 and Table 1-2 in the Appendix

The script 02_replication_novel.R produces Tables 4 and 5 in the Appendix.

The script 04_rep_newdata.R produces Table-3 in the Appendix.