The NOIHD is a law-enforcement-wide database combining information on homicides resulting from all police actions (prior to booking) merged with crosswalks to law-enforcement agency- , demographic- , crime- , emergency department- , and gun- data. The database is aggregated at the level of law-enforcement agencies with annual measurement (2000-2017; n=641,821) suited for analysis of extant policy and/or policy changes that may be related to police-involved homicides in the United States.

National Officer-Involved Homicide Database (NOIHD), 2000-2017

CODEBOOK

Brian K. Finch, Ph.D.

More information about the Fatal Encounters database, which provides the officer-involved death counts used for creating the NPRDD is available here:

https://fatalencounters.org/

An assessment of the strengths and weaknesses of the Fatal Encounters data and an assessment of incident coverage relative to the universe of incidents and other official sources are discussed here:

Finch, Brian Karl, Audrey N. Beck, D. Brian Burghart, Richard Johnson, David Klinger, and Kyla Thomas. 2019. "Using Crowd-Sourced Data to Explore Police-Related-Deaths in the United States (2000-2017): The Case of Fatal Encounters." *Journal of Open Health Data* 6: 1-8.

TABLE OF CONTENTS

The following source files were used:

(FE) Fatal Encounters Data (2000-2017)

Fatal Encounters attempts to collect a census of all incident homicides resulting during police actions and/or arrests, prior to booking. We define homicides as any death of a human resulting from another human, regardless of the ultimate judicial disposition. These incidents would include more commonly observed homicides such as officer-involved shootings, but also include suicides taking place during police action, and vehicular homicides resulting from both police and suspect vehicles. These incidents are well-defined in the Fatal Encounters database, and are carefully aggregated to the law-enforcement agency level as annual counts, according to circumstance.

This database is the largest collection of officer-involved homicides in the United States, with ongoing attempts to approach a census of all such events. The data are available daily, but are aggregated to annual counts in the NPHD.

Although incident-level records are available in the Fatal Encounters incident database, our project attributed a responsible agency by documenting its relevant ORI and then producing counts by both circumstance of the homicides and the race/ethnicity of the decedent. These counts are part of the NPIHD and represent the primary dependent variables for analysis.

https://fatalencounters.org/

(LEOKA) Law Enforcement Officers Killed and Assaulted (2000-2017)

This database is an attempted census of all officers intentionally and unintentionally killed, as well as assaults on officers during active duty. The database is voluntarily submitted to the FBI, and thus does not contain the universe of assaults and deaths, and are aggregated monthly in the LEOKA, but annually in the NPIHD.

United States Department of Justice. Federal Bureau of Investigation. Uniform Crime Reporting Program Data [United States]: Police Employee (LEOKA) Data, 2000-2017. Inter-university Consortium for Political and Social Research [distributor].

(CSLLEA) Census of State and Local Law Enforcement Agencies (2000-2017)

The Bureau of Justice Statistics collects a census of the nation's state and local law enforcement agencies, known as the Directory Survey, This survey includes all state and local law enforcement agencies that are publicly funded and employ at least one full-time or part-time sworn officer with

general arrest powers. This census largely includes information on the number of employed sworn officers, and updates department addresses, leadership contacts, and general contact information—which we append via LEOKA data.

https://www.icpsr.umich.edu/web/NACJD/studies/3484

(LEMAS) Law Enforcement Management and Administrative Statistics (2000, 2003, 2007, 2013, 2016 only)

The LEMAS is a periodic assessment of law-enforcement agency demographics and policies in the United States. A certainty sample of the ~1000 largest agencies (size determined by current counts of sworn officers) is combined with a probability sample of 2,000+ smaller agencies. Data collection is periodic, and the NPIHD imputes values in between measurements to subsequent years.

United States Department of Justice. Office of Justice Programs. Bureau of Justice Statistics. Law Enforcement Management and Administrative Statistics (LEMAS): 2000 Sample Survey of Law Enforcement Agencies. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2008-12-08. https://doi.org/10.3886/ICPSR03565.v2

United States Department of Justice. Office of Justice Programs. Bureau of Justice Statistics. Law Enforcement Management and Administrative Statistics (LEMAS): 2003 Sample Survey of Law Enforcement Agencies. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2006-05-10. https://doi.org/10.3886/ICPSR04411.v1

United States Department of Justice. Office of Justice Programs. Bureau of Justice Statistics. Law Enforcement Management and Administrative Statistics (LEMAS), 2007. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2011-07-07. https://doi.org/10.3886/ICPSR31161.v1

United States Department of Justice. Office of Justice Programs. Bureau of Justice Statistics. Law Enforcement Management and Administrative Statistics (LEMAS), 2013. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2015-09-22. https://doi.org/10.3886/ICPSR36164.v2

United States Department of Justice. Office of Justice Programs. Bureau of Justice Statistics. Law Enforcement Management and Administrative Statistics (LEMAS), 2016. Inter-university Consortium for Political and Social Research [distributor], 2020-08-20. https://doi.org/10.3886/ICPSR37323.v1

(UCR) FBI Uniform Crime Report Data (2000-2017)

UCR data are reported monthly to the FBI, but are submitted voluntarily. Thus, while submitted data cover agencies representing just under 80% of all sworn full-time officers, data submission is voluntary and most likely biased towards certain agency types. Data are aggregated to annual counts and rates in the NPIHD.

United States. Federal Bureau of Investigation. Uniform Crime Reporting Program Data: Arrests by Age, Sex, and Race, United States, 2000-2016. Inter-university Consortium for Political and Social Research [distributor], https://www.icpsr.umich.edu/web/ICPSR/series/57

(SHR) FBI UCR Supplementary Homicide Reports (2000-2017)

SHR data are also reported monthly to the FBI, but are submitted voluntarily. Thus, while submitted data cover agencies representing just under 80% of all sworn full-time officers, data submission is voluntary and most likely biased towards certain agency types. Data are aggregated to annual counts and rates in the NPIHD.

United States Department of Justice. Federal Bureau of Investigation. Uniform Crime Reporting Program Data [United States]: Supplementary Homicide Reports, 2000-2017. Inter-university Consortium for Political and Social Research [distributor].

(Vice) Vice News Nonfatal Police Shooting Data (2000-2016)

https://news.vice.com/en_us/article/a3jjpa/nonfatal-police-shootings-data

Census Data

"CensusCD Neighborhood Change Database Long Form", GeoLytics, Inc. East Brunswick, NJ, 2013. 2000 and 2010 census, 2010 5-Year ACS estimates.

"American FactFinder generated tables (various), 5-Year estimates, 2011-2017 American Community Survey", U.S. Census Bureau. http://factfinder2.census.gov. Generated by project team.

Firearm Laws

Siegel, M., Ross, C. S., & King III, C. (2013). The relationship between gun ownership and firearm homicide rates in the United States, 1981–2010. American journal of public health, 103(11), 2098-2105.

Siegel, M., Pahn, M., Xuan, Z., Fleegler, E., & Hemenway, D. (2019). The impact of state firearm laws on homicide and suicide deaths in the USA, 1991–2016: a panel study. Journal of general internal medicine, 34(10), 2021-2028.

Gun Ownership Proxy

Siegel, M., Ross, C. S., & King, C. (2014). A new proxy measure for state-level gun ownership in studies of firearm injury prevention. Injury prevention, 20(3), 204-207.

GEOGRAPHIC IDENTIFIERS: CROSSWALK

(LEAIC) Law Enforcement Agency Identifiers Crosswalk (2012)

In order to append relevant geographic (i.e. demographic or contextual) data from sources such as the Census and American Community Survey, we used the BJS's LEAIC which attributes various census codes (FIPS, e.g.) to each unique law enforcement identification code (i.e., the ORI assigned by the FBI).

United States. Bureau of Justice Statistics. Law Enforcement Agency Identifiers Crosswalk, United States, 2012. Inter-university Consortium for Political and Social Research [distributor], 2018-09-18.

https://doi.org/10.3886/ICPSR35158.v2

Please see ICPSR site for more information on particular cross-walk variables.

DATABASE CONSTRUCTION AND MERGING OF RELEVANT DATA SOURCES

The backbone of the NPIHD remains the incident-level files in Fatal Encounters which document each incident (rows) of an officer-involved homicide, prior to booking, in the United States between 2000 and the present. These incidents are documented with respect to a host of relevant variables (columns), including, but not restricted: responsible law enforcement agency (name and ORI code); city, county, and state of incident (names and FIPS codes); age of decedent; sex of decedent; race/ethnicity of decedent; day/month/year of incident; circumstance of the homicide (gunshot, suicide, vehicular homicide, e.g.); and a threat assessment of the incident. In order to produce a data file that would allow for law-enforcement agency level analyses, we then produced annual homicide counts by agency, in addition to annual homicide counts by agency by race/ethnicity of the decedent and circumstance of the incident. When multiple agencies were involved and the responsible agency could not be identified after direct contact by our research team, we attributed fractional counts, which explains the presence of a nominal amount of rational, rather than whole numbers.

ORI's for each agency were then used to merge annual law enforcement agency characteristics, including: crime (UCR), assaults against officers (LEOKA), sworn officer counts (CSLLEA), and law enforcement agency demographics and policies (LEMAS). A crosswalk linking ORIs with census codes (FIPS, e.g.) was then applied to link relevant contextual information from: the decennial census and linear interpolations for intercensal years; the American Community Survey (ACS); and annual state level data on proxies for gun ownership. When available, the lowest level of census aggregation (i.e, the census place) is used for merges of Census/ACS data. If not available, merges are made by county, MSA, then state, in that order. A variable flag indicates the lowest level of aggregation merged for each law enforcement agency, for each year.

Finally, a restricted version of the data set includes information about the number of emergency departments per square mile, as well as the number of emergency departments per 10k population. These data are available from various proprietary sources, and it is recommended that these data are obtained individually to account for discrepancies between shootings and deaths that are strictly the result of either non-existent or sparse emergency departments.

Flags for imputed ORI codes are the project's own and are based on imputing either adding additional following zeros or removing them from existing ORI information to retain additional cases missing either ORI9s or ORI7s. Year and data source were created to indicate the year of merged data and source of data.

VARIABLE NAME	VARIABLE LABEL
XWK_1	ORI9
XWK_2	Flag: Imputed ORI9
XWK_3	ORIGINATING AGENCY IDENTIFIER (7 CHARACTERS) FROM UCR FILES
XWK_4	Flag: Imputed ORI7
XWK_5	ORI NUMBER ASSIGNED BY FBI
XWK_6	Year
XWK_7	Data source
XWK_8	NAME OF AGENCY
XWK_9	FIPS STATE CODE
XWK_10	FIPS COUNTY CODE
XWK_11	FIPS PLACE CODE
XWK_12	FIPS STATE CODE - ALPHANUMERIC
XWK_13	FIPS COUNTY CODE - ALPHANUMERIC
XWK_14	FIPS STATE-COUNTY CODE - ALPHANUMERIC
XWK_15	AGENCY NAME
XWK_16	URBAN AREA/URBAN CLUSTER CODE
XWK_17	STATE NAME
XWK_18	COUNTY NAME
XWK_19	URBAN AREA/URBAN CLUSTER NAME
XWK_20	AGENCY/ORI IS PART OF LARGER PARENT AGENCY
XWK_21	AGENCY TYPE
XWK_22	AGENCY SUB-TYPE 1
XWK_23	AGENCY SUB-TYPE 2
XWK_24	GOVERNMENT ID (CENSUS)
XWK_25	CENSUS NAME
XWK_26	ADDRESS - NAME
XWK_27	ADDRESS - STREET LINE 1

XWK_28	ADDRESS - STREET LINE 2
XWK_29	ADDRESS - CITY
XWK_30	ADDRESS - STATE
XWK_31	ADDRESS - ZIP CODE
XWK_32	ORI REPORTED 1 OR MORE OFFENSES 1985 - 2012
XWK_33	CSLLEA 2008 AGENCY IDENTIFIER
XWK_34	LEMAS FILES ID
XWK_35	UCR NUMERIC STATE CODE (UCR CODING)
XWK_36	UCR COUNTY (UCR CODING)
XWK_37	GROUP NUMBER (AS OF 2012)
XWK_38	UCR TOTAL POPULATION (AS OF 2012)
XWK_39	CENSUS POPULATION
XWK_40	FLAG VARIABLE TO SUBSET THE LEAIC TO APPROXIMATE THE CSLLEA
XWK_41	COMMENTS - TYPICALLY LISTING INFORMATION ON MULTI-JURISDICTIONAL AGENCIES
XWK_42	latitude
XWK_43	longitude
XWK_44	CONGRESSIONAL DISTRICT 1 (AS OF 2010)
XWK_45	CONGRESSIONAL DISTRICTS 2 THROUGH 18 (AS OF 2010)
XWK_46	FEDERAL JUDICIAL DISTRICT NAME
XWK_47	SOURCE FILE FLAG: CSLLEA 2008
XWK_48	SOURCE FILE FLAG: UCR 2010
XWK_49	SOURCE FILE FLAG: UCR 2011
XWK_50	SOURCE FILE FLAG: UCR 2012
XWK_50	SOURCE FILE FLAG: NCIC 2012
XWK_50	SOURCE FILE FLAG: VENDOR FILE 2012

OFFICER INVOLVED DEATHS: FE INCIDENT CHARACTERISTICS

Fatal Encounters is a 501(c)3 nonprofit, journalist-curated effort to create an impartial, comprehensive, and searchable national database of people killed during interactions with law enforcement. Fatal Encounters documents non-police deaths that occur when police are present or are precipitated by police action or presence. Officer deaths are included when a second officer is present, including friendly fire incidents, suicides, criminal actions—like domestic violence—and vehicle accidents that occur when police are present or are precipitated by police action or presence.

Beginning in 2012, the project has used several methods to collect incidents. The project began as an effort to crowd-source public records requests. A system for crowd-sourcing data from news reports was developed concurrently.

In 2015, after completing more than 2,500 public records requests, FE switched to primarily crowd-sourcing data from news reports on the Internet and doing monthly updates of current deaths on the publicly available Google Sheet.

In September 2014, the project began doing systematic state-by-date record searches and data collection using the internet and commercial news clipping services including newspapers.com and newsbank.com by paid researchers and a few consistent volunteers.

In November 2017, upon completion of the state-by-date data collection, FE began doing weekly updates using primarily internet searches, Google News Alerts, and other large databases, including Gunviolencearchive.org and the Washington Post's database of intentional police shootings.

In December 2017, latitude and longitude coordinates were added.

In January 2020, racial imputations were added to the FE dataset.

In January 2020, FE began posting new records on a near daily basis.

Fatal Encounters is a "living" project. New data is added and clarified on any or all records going back to January 1, 2000.

Data Sources/References: Note that the following variables were utilized to either demographically identify decedents, identify cause of death, or to place individuals within a specific geographic area.

https://fatalencounters.org/

Note that these variables are available in the raw, incident-level FE database, but form the basis of the count variables in the NPIHD.

VARIABLE: **uniqueid**   "Unique Identifier"

Unique Identifier	
Notes:	

VARIABLE: **race**   "Race/Ethnicity of Decedent"

European-American/White	
African-American/Black	
Hispanic/Latino/a	
Asian/Pacific Islander	
Native American	
Race Not Specified	
Notes:Race is determined by official reports or images (articles, obituaries, photo, body camera/surveillance videos). In some cases, race/ethnicity came from contact with the family.	

VARIABLE: **raceimp**   "Imputed Race/Ethnicity of Decedent"

European-American/White	
African-American/Black	
Hispanic/Latino/a	
Asian/Pacific Islander	
Native American	
Race Not Specified	
Notes: Column includes imputed race when available and non-imputed race for cases which were available from primary sources. See Appendix A.	

VARIABLE: **streetadd**   "Street Address of Death-Causing Injury/Death"

Street Address	
Notes: The best street address of the location where the injury causing death happened that could be found using public documents, news reports, and videos.	

VARIABLE: **cityadd**   "City of Death-Causing Injury/Death"

Age of Decedent	
Notes: The best city of the location where the injury causing death happened that could be found using public documents, news reports, and videos.	

VARIABLE: **longitude**   "Longitude of Death-Causing Injury/Death"

Longitude	
Notes: From Google Maps API. After the initial completion of Lat/Longs in December 2017, some locations for which there was not a full street address were hand coded. During the initial batch geocoding, only addresses that produced an error were hand-coded.	

VARIABLE: **latitude**   "Latitude of Death-Causing Injury/Death"

Latitude	
Notes: From Google Maps API. After the initial completion of Lat/Longs in December 2017, some locations for which there was not a full street address were hand coded. During the initial batch geocoding, only addresses that produced an error were hand-coded.	

VARIABLE: **date**   "Date of injury/death"

Date of Injury/Death	
Notes:	

VARIABLE: **agency**   "Agency(s) Involved in Death"

Agency or Agencies Involved in Death	
Notes: When available and unique to a particular law enforcement agency, we attributed the relevant ORI code. When not available and/or when multiple agencies were involved, we contacted each agency about each incident (n=xxxx) to determine the responsible agency. When multiple agencies assumed responsibility, we attributed fractional counts. For example, if two agencies fired at one decedent, but no final identification was made for the responsible bullet, each ORI (agency) would receive a count of 0.5.	

VARIABLE: **COD**   "Circumstance of Death"

Gunshot	
Vehicle	
Beaten/Bludgeoned w/Instrument	
Asphyxiated/Restrained	
Fell From A Height	
Drug Overdose	
Drowned	

Tasered	
Stabbed	
Chemical agent/Pepper spray	
Burned/Smoke Inhalation	
Medical Emergency	
Undetermined	
Notes: Describe how determined	

VARIABLE: **suicide**   "Suicide"

Suicide	
Suicide by Cop	
Accident/Homicide	
Notes: Describe how determined	

Data Sources/References:

Notes: When multiple agencies assumed responsibility, we attributed
fractional counts. For example, if two agencies fired at one decedent, but no
final identification was made for the responsible bullet, each ORI (agency)
would receive a count of 0.5.

Project Derived Variables: Counts constructed from individual-level PRD data
by project team. Suffixes indicate imputed (**_i**), race/ethnicity (**_b**, **_w**, **_h**,
_a, **_me**, **_na**, **_ur**), imputed race/ethnicity (**_ib**, **_iw**, **_ih**, **_ia**, **_ime**, **_ina**,
_iur), suicides omitted (**_ns**).

VARIABLE NAME	VARIABLE LABEL
FE_1	"Officer-Involved Deaths, FE"
FE_2	"Deaths, Asphyxiated or Restrained, FE"
FE_3	"Deaths, Beaten or Bludgeoned, FE"
FE_4	"Deaths, Burned or Smoke Inhalation, FE"
FE_5	"Deaths, Chemical Agent or Pepper Spray, FE"
FE_6	"Deaths, Drowned, FE"
FE_7	"Deaths, Drug Overdose, FE"
FE_8	"Deaths, Fell From Height, FE"
FE_9	"Deaths, Gunshot, FE"
FE_10	"Deaths, Medical Emergency, FE"
FE_11	"Deaths, Other, FE"
FE_12	"Deaths, Stabbed, FE"
FE_13	"Deaths, Tasered, FE"
FE_14	"Deaths, Undetermined, FE"
FE_15	"Deaths, Vehicle, FE"
FE_16	"Deaths, Intentional Use of Force, FE"
FE_17	"Deaths, Fell FH or Drowned, FE"
FE_18	"Deaths, Med Emerg or Overdose, FE"
FE_19	"Deaths, Other or Undetermined, FE"
FE_20	"Suicide Deaths, FE"
FE_21	"Suicide by Police Deaths, FE"
FE_22	"Black Deaths, FE"
FE_23	"White Deaths, FE"
FE_24	"Hispanic Deaths, FE"
FE_25	"Asian Deaths, FE"
FE_26	"Middle-Eastern Deaths, FE"
FE_27	"Native-American Deaths, FE"

FE_28	"Unknown Race Deaths, FE"
FE_29	"Deaths with Imputed Race, FE"

United States Department of Justice. Federal Bureau of Investigation. Uniform Crime Reporting Program Data [United States]: Supplementary Homicide Reports, 2000-2017. Inter-university Consortium for Political and Social Research [distributor].

Please see ICPSR site for more information on SHR variable(s). For researchers who wish to assign a "0" to departments without homicides, please use in combination with UCR_13 which indicates month last reported data to the UCR. Those agencies which last reported in December can more reasonably be considered complete reporters than those which last reported in earlier months.

VARIABLE NAME	VARIABLE LABEL
SHR_1	Count of Justifiable Homicides, SHR

POLICE OFFICERS ASSAULTED AND KILLED: COUNTS

United States Department of Justice. Federal Bureau of Investigation. Uniform Crime Reporting Program Data [United States]: Police Employee (LEOKA) Data, 2000-2017. Inter-university Consortium for Political and Social Research [distributor].

Please see ICPSR site for more information on particular LEOKA variables.

PROJECT DERIVED VARIABLES: Annual numbers or number of months reported are a sum count of month-specific information.

VARIABLE NAME	VARIABLE LABEL
LEO_1	Group, LEOKA
LEO_2	Total Population, LEOKA
LEO_3	Male Officers, LEOKA
LEO_4	Female Officers, LEOKA
LEO_5	Total Employees, LEOKA
LEO_6	Total Officers, LEOKA
LEO_7	Officer Rate per 10,000, LEOKA
LEO_8	Annual Number of Assaults With Injury, LEOKA
LEO_9	Annual Number of Assaults Without Injury, LEOKA
LEO_10	Number of Months Reported, Assaults with Injury, LEOKA
LEO_11	Number of Months Reported, Assaults without Injury, LEOKA
LEO_12	Annual Number of Officers Killed, Felony, LEOKA
LEO_13	Annual Number of Officers Killed, Accident, LEOKA

POLICE DEPARTMENT CHARACTERISTICS

Data Sources/References:

United States Department of Justice. Office of Justice Programs. Bureau of Justice Statistics. Law Enforcement Management and Administrative Statistics (LEMAS): 2000 Sample Survey of Law Enforcement Agencies. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2008-12-08. https://doi.org/10.3886/ICPSR03565.v2

United States Department of Justice. Office of Justice Programs. Bureau of Justice Statistics. Law Enforcement Management and Administrative Statistics (LEMAS): 2003 Sample Survey of Law Enforcement Agencies. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2006-05-10. https://doi.org/10.3886/ICPSR04411.v1

United States Department of Justice. Office of Justice Programs. Bureau of Justice Statistics. Law Enforcement Management and Administrative Statistics (LEMAS), 2007. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2011-07-07. https://doi.org/10.3886/ICPSR31161.v1

United States Department of Justice. Office of Justice Programs. Bureau of Justice Statistics. Law Enforcement Management and Administrative Statistics (LEMAS), 2013. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2015-09-22. https://doi.org/10.3886/ICPSR36164.v2

United States Department of Justice. Office of Justice Programs. Bureau of Justice Statistics. Law Enforcement Management and Administrative Statistics (LEMAS), 2016. Inter-university Consortium for Political and Social Research [distributor], 2020-08-20. https://doi.org/10.3886/ICPSR37323.v1

PROJECT DERIVED VARIABLES: Variables with an "_i" correspond to the imputed version of the noted variable, imputed with last known information up until a given where such information is updated with wave-specific information. Additional information on derived variables is listed below the following table.

VARIABLE NAME	VARIABLE LABEL
LEM_1	Count of Men FT Sworn, LEMAS
LEM_2	Count of Women FT Sworn, LEMAS
LEM_3	Agency Educational Incentives, LEMAS
LEM_4	Agency Tuition Incentives, LEMAS
LEM_5	Count of Training Types, LEMAS
LEM_6	Count of Training Types Normalized, LEMAS
LEM_7	Count of All Required Training Hours, LEMAS
LEM_8	Count of New Recruit Required Training Hours, LEMAS

LEM_9	Minimum Education Requirement, LEMAS
LEM_10	Count White FT Sworn, LEMAS
LEM_11	Count Black FT Sworn, LEMAS
LEM_12	Count Hispanic FT Sworn, LEMAS
LEM_13	Count American Indian FT Sworn, LEMAS
LEM_14	Count Asian American FT Sworn, LEMAS
LEM_15	Count Native Hawaiian FT Sworn, LEMAS
LEM_16	Count Unreported Race FT Sworn, LEMAS
LEM_17	Count Other Race FT Sworn, LEMAS
LEM_18	Count Total Pop FT Sworn, LEMAS
LEM_19	% White FT Sworn, LEMAS
LEM_20	% Black FT Sworn, LEMAS
LEM_21	% Hispanic FT Sworn, LEMAS
LEM_22	% American Indian FT Sworn, LEMAS
LEM_23	% Asian American FT Sworn, LEMAS
LEM_24	% Native Hawaiian FT Sworn, LEMAS
LEM_25	% Other Race FT Sworn, LEMAS
LEM_26	% Unreported Race FT Sworn, LEMAS
LEM_27	% Women FT Sworn, LEMAS
LEM_28	% Men FT Sworn, LEMAS
LEM_29	Written Lethal Force Policy, LEMAS
LEM_30	Written Less than Lethal Force Policy, LEMAS
LEM_31	Written Conduct/Appearance Policy, LEMAS
LEM_32	Written Off Duty Emp Policy, LEMAS
LEM_33	Written Off Max Hours Policy, LEMAS
LEM_34	Description of Written Pursuit Policy, LEMAS
LEM_35	Pursuits Must Be Reviewed, LEMAS
LEM_36	Domestic Dispute Policy, LEMAS
LEM_37	Civilian Board for Excessive Force Complaints, LEMAS
LEM_38	Independent Investigative Authority for Board, LEMAS

Additional Information on Select Variables Listed Below:

VARIABLE: **LEM_5** "Count of Training Types, LEMAS"

Count of all training types utilized by a department in a given wave.	
Note: **LEM_5_i** is an imputed version of the above variable.	

VARIABLE: **LEM_6**   "Count of Training Types Normalized, LEMAS"

Count of common set of training types captured across waves utilized by department. Includes: background check, credit check, criminal record check, driving record, drug test, medical exam, interview, personality test, physical, polygraph, psychological evaluation, voice stress test, written aptitude.	
Note: **LEM_6_i** is an imputed version of the above variable.	

VARIABLE: **LEM_7**   "Count of All Required Training Hours, LEMAS"

Count of all training hours including in-service and new recruits.	
Note: **LEM_7_i** is an imputed version of the above variable.	

VARIABLE: **LEM_16**   "Count Unreported Race FT Sworn, LEMAS"

Count of unreported race in a given wave. In a small number of cases all officers in a given department were coded as "other race"; we recoded these to unreported.	
Note: **LEM_16_i** is an imputed version of the above variable.	

VARIABLE: **LEM_18**   "Count Total Pop FT Sworn, LEMAS"

Count of FT Sworn officers from LEMAS or summed count of race-specific counts if the latter was greater.	
Note: **LEM_18_i** is an imputed version of the above variable.	

VARIABLE: **LEM_34**   "Description of Written Pursuit Policy, LEMAS"

Discouragement	1
Judgmental	2
Restricted	3
Other (please specify)	4
Agency does not have a written policy	5
Note: In 2013, LEM_34 can be used in combination with LEM_35 which indicates department did not specify a policy only that pursuits need to be reviewed. Departments with "needs to be reviewed" were coded as missing on LEM_34 for 2013. "Prohibited" in 2013 and 2016 was coded as restricted as it was not a separate category in previous waves. Users could remerge the original LEMAS variables if they wish to make a different determination. **LEM_34_i** is an imputed version of the above variable.	

VARIABLE: **LEM_38** "Independent Investigative Authority for Board, LEMAS"

Indicator of independent investigative authority for board.	
Note: Only available for departments that indicate in LEM_37 that they convene a civilian board for excessive force complaints.	
LEM_38_i is an imputed version of the above variable.	

CRIME MEASURES: COUNTS/RATES

United States. Federal Bureau of Investigation. Uniform Crime Reporting Program Data: Arrests by Age, Sex, and Race, United States, 2000-2016. Inter-university Consortium for Political and Social Research [distributor], https://www.icpsr.umich.edu/web/ICPSR/series/57

Please see ICPSR site for more information on particular UCR variables.

PROJECT DERIVED VARIABLES: Crimes are an annual sum of month-specific crimes. Crime rates per 10,000 were calculated using the annual sum of crimes and population variables (sum of Population 1, 2, and 3 from UCR which denotes the population in the given county or multiple counties for city agencies which span counties). Month last reported in UCR is an indicator of the last month in a given year in which there was reported crime data.

VARIABLE NAME	VARIABLE LABEL
UCR_1	Total Population, UCR
UCR_2	Annual Total of All Actual Offenses, UCR
UCR_3	Annual Crime Rate, UCR
UCR_4	Annual Total of Violent Crimes, UCR
UCR_5	Annual Violent Crime Rate, UCR
UCR_6	Annual Total of Homicides, UCR
UCR_7	Annual Homicide Rate, UCR
UCR_8	Annual Number of Officers Killed by Felonious Acts, UCR
UCR_9	Annual Number of Officers Killed by Accidental or Negligent Acts, UCR
UCR_10	Annual Number of Officers Assaulted, UCR
UCR_11	Annual Total of Property Crimes, UCR
UCR_12	Annual Property Crime Rate, UCR
UCR_13	Month Last Reported, UCR
UCR_14	Included in January Report, UCR
UCR_15	Included in February Report, UCR
UCR_16	Included in March Report, UCR
UCR_17	Included in April Report, UCR
UCR_18	Included in May Report, UCR
UCR_19	Included in June Report, UCR
UCR_20	Included in July Report, UCR
UCR_21	Included in August Report, UCR
UCR_22	Included in September Report, UCR
UCR_23	Included in October Report, UCR
UCR_24	Included in November Report, UCR
UCR_25	Included in December Report, UCR

CONTEXTUAL GUNSHOT MEASURES: COUNTS

Available data from fifty largest police departments collected from Vice
News, including additional media sources such as Chicago Tribune officer-
involved shootings database, from 2010-2016. See the following site for
additional information on the data:
https://news.vice.com/en_us/article/a3jjpa/nonfatal-police-shootings-data

Project Derived Variables: From available information on the number of shots
fired, subject's armed status, and whether the shooting was fatal, we
constructed the following counts at the police department level for agencies
with available data.

VARIABLE NAME	VARIABLE LABEL
VIC_1	ORI9, Vice
VIC_2	Agency, Vice
VIC_3	Total Number of Shots Fired Count, Vice
VIC_4	Fatal Shootings Count, Vice
VIC_5	Unknown if Fatal Shootings Count, Vice
VIC_6	Nonfatal Shootings Count, Vice
VIC_7	Subject Unarmed Shootings Count, Vice
VIC_8	Unknown if Subject Armed Shootings Count, Vice
VIC_9	Subject Armed Shootings Count, Vice

SOCIO-DEMOGRAPHIC MEASURES

Data Sources/References:

"CensusCD Neighborhood Change Database Long Form", GeoLytics, Inc. East Brunswick, NJ, 2013. 2000 and 2010 census, 2010 5-Year ACS estimates.

"American FactFinder generated tables (various), 5-Year estimates, 2011-2017 American Community Survey", U.S. Census Bureau. http://factfinder2.census.gov. Generated by project team.

NOTE: All variables were linearly interpolated between 2000 and 2010 using Stata's *ipolate* command. There are three geographic levels of data:

1. Normalized Places: Normalized place data was aggregated up to the place level from census tract data to ensure consistent census boundaries across years. All normalized place data has a **_np** suffix. Flag variable **CEN_26_np**=1.
2. County: County data was aggregated up to the county level from census tract data to ensure consistent census boundaries across years. All county data has a **_c** suffix. Flag variable **CEN_26_c**=1.
3. Places: Data at the place level, which may not have consistent boundaries over time is available with a **_p** suffix. Flag variable **CEN_26_p**=1.

   Proportions were calculated after this aggregation, segregation measures were calculated using tract-level information for geographic aggregations 1 (normalized place _np) and 2 (county _c), but not 3 (place _p).

4. Lowest Geographic Unit: **_geo** variables include given information for the smallest level of geography available for a given locale in the crosswalk file. For county-level departments, it will be county-level data. For census places, it will primarily be normalized place data if tract level information was available, or for a small number of police department which were geographically in places too small to have tract level estimates in the NCDB or American FactFinder, place level data will be included. Flags for geography measured in the _geo variables are noted by **_fnp** (normalized place), **_fc** (county), and **_fp** (place).

Note: 2016 is utilized as an example year for ACS tables/variable names. Other ACS years utilize consistent variable labels, though the place in the given year's table may have changed slightly. Any exceptions are noted below.

VARIABLE NAME	VARIABLE LABEL
CEN_1	Proportion Non-Hispanic White, Census
CEN_2	Proportion Non-Hispanic Black, Census
CEN_3	Proportion Hispanic, Census
CEN_4	Place Population, Census

CEN_5	Proportion Age Less Than 18, Census
CEN_6	Proportion Owner-Occupied Households, Census
CEN_7	Proportion Foreign-Born, Census
CEN_8	Proportion Unemployed, Census
CEN_9	Proportion Below Poverty Line, Census
CEN_10	Proportion Receiving Welfare, Census
CEN_11	Proportion of Families and Subfamilies Headed By Women w/ Children
CEN_12	Proportion Age 25+ w/Less Than HS Degree, Census
CEN_13	Proportion Age 25+ w/HS Degree, Census
CEN_14	Proportion Age 25+ w/Some College, Census
CEN_15	Proportion Age 25+ w/College Degree, Census
CEN_16	Rank Order Family Income Segregation
CEN_17	Dissimilarity Index, White-Black
CEN_18	Isolation Index, White-Black
CEN_19	Information Theory Index, White-Black
CEN_20	Dissimilarity Index, White-Hispanic
CEN_21	Isolation Index, White-Hispanic
CEN_22	Information Theory Index-White
CEN_23	Dissimilarity Index, White-Asian
CEN_24	Isolation Index, White-Asian
CEN_25	Information Theory Index, White- Asian
CEN_26	Flag, Geographic Level

Additional Information on Select Variables Listed Below:

VARIABLE: **CEN_1**   "Proportion Non-Hispanic White, Census"

Proportion Non-Hispanic White of Total Population	
Sources: 2000 (Decennial Census), 2010(Decennial Census), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_2**   "Proportion Non-Hispanic Black, Census"

Proportion Non-Hispanic Black of Total Population	
Sources: 2000 (Decennial Census), 2010(Decennial Census), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_3**   "Proportion Hispanic, Census"

Proportion Hispanic of Total Population	
Sources: 2000 (Decennial Census), 2010(Decennial Census), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_4**   "Place Population, Census"

Total Population	
Sources: 2000 (Decennial Census), 2010(Decennial Census), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_5**   "Proportion Age Less Than 18, Census"

Proportion Age Less Than 18 of Total Population	
Sources: 2000 (Decennial Census), 2010(Decennial Census), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_6**   "Proportion Owner-Occupied Households, Census"

Proportion Owner-Occupied Households of Total Housing Units	
Sources: 2000 (Decennial Census), 2010(Decennial Census), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_7**   "Proportion Foreign-Born, Census"

Proportion Foreign Born of Total Population	
Sources: 2000 (Decennial Census), 2010(5-Year ACS), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_8**   "Proportion Unemployed, Census"

Proportion Unemployed of Population 16+ Years Old in the Civilian Labor Force	
Sources: 2000 (Decennial Census), 2010(5-Year ACS), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_9**   "Proportion Below Poverty Line, Census"

Proportion Below Poverty Line of Total Population with Poverty Status Determined	
Sources: 2000 (Decennial Census), 2010(5-Year ACS), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_10** "Proportion Receiving Welfare, Census"

Proportion Households with Public Assistance of Total Households	
Sources: 2000 (Decennial Census), 2010(5-Year ACS), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_11** "Proportion of Families and Subfamilies Headed By Women w/Children, Census"

Proportion of Families and Subfamilies Headed by Women w/Own/Related Children of All Families and Subfamilies	
Sources: 2000 (Decennial Census), 2010(5-Year ACS), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_12**   "Proportion Age 25+ w/Less Than HS Degree, Census"

Proportion of Persons 25+ Years Old w/Less Than High School Diploma of Total Persons 25+ Years Old	
Sources: 2000 (Decennial Census), 2010(5-Year ACS), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_13** "Proportion Age 25+ w/HS Degree, Census"

Proportion of Persons 25+ Years Old w/High School Completion of Total Persons 25+ Years Old	
Sources: 2000 (Decennial Census), 2010(5-Year ACS), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_14**   "Proportion Age 25+ w/Some College, Census"

Proportion of Persons 25+ Years Old w/Some College of Total Persons 25+ Years Old	
Sources: 2000 (Decennial Census), 2010(5-Year ACS), 2011-2017 (5-Year ACS)	

VARIABLE: **CEN_15**   "Proportion Age 25+ w/College Degree, Census"

Proportion of Persons 25+ Years Old w/Bachelors or Graduate/Professional Degree of Total Persons 25+ Years Old	
Sources: 2000 (Decennial Census), 2010(5-Year ACS), 2011-2017 (5-Year ACS)	

SEGREGATION MEASURES

Income and Race-Ethnicity Segregation Measures were created for normalized census places and counties with greater than 25,000 individuals. It is recommended that researchers consider using measures only for the largest places/counties.

Income Segregation: **CEN_16**

Estimated using "rankseg" in Stata.

Sean F. Reardon & Joseph B. Townsend, 2018. "RANKSEG: Stata module to compute rank-order segregation measures with finite sample-bias correction," Statistical Software Components S458460, Boston College Department of Economics, revised 18 Apr 2018.

Race-Ethnicity Segregation:

Estimated using "seg" in Stata.

White-Black:**CEN_17** Dissimilarity Index, **CEN_18** Isolation Index, **CEN_19** Information Theory Index

White-Hispanic: **CEN_20** Dissimilarity Index, **CEN_21** Isolation Index, **CEN_22** Information Theory Index

White-Asian: **CEN_23** Dissimilarity Index, **CEN_24** Isolation Index, **CEN_25** Information Theory Index

CONSTRUCTED CONTEXTUAL FIREARM MEASURES

FIREARM LAWS

Data Sources/References:

Siegel, M., Ross, C. S., & King III, C. (2013). The relationship between gun ownership and firearm homicide rates in the United States, 1981–2010. American journal of public health, 103(11), 2098-2105.

-Constructed database on firearm laws drawn from the Thomson Rueters Westlaw database, Everytown for Gun Safety database, and authors' own additions. Introduces firearm law measured (**SIE_2**-**SIE_5**)

Siegel, M., Pahn, M., Xuan, Z., Fleegler, E., & Hemenway, D. (2019). The impact of state firearm laws on homicide and suicide deaths in the USA, 1991–2016: a panel study. Journal of general internal medicine, 34(10), 2021-2028.

-Utilized beta estimates for weighted count measure (**SIE_6**).

Siegel, M., Ross, C. S., & King III, C. (2014). A new proxy measure for state-level gun ownership in studies of firearm injury prevention. Injury Prevention, 20:204-207.

-Introduces two measures of gun ownership proxy (**SIE_8, SIE_9**).

NOTE: All variables are measured at the state level.

VARIABLE NAME	VARIABLE LABEL
SIE_1	State, Siegel Firearm
SIE_2	Firearm Law-Violent Misdemeanor, Siegel Firearm
SIE_3	Firearm Law-Universal Background Check, Siegel Firearm
SIE_4	Firearm Law-May Issue, Siegel Firearm
SIE_5	Firearm Law-Count of Three Laws, Siegel Firearm
SIE_6	Firearm Law-Weighted Count of Three Laws, Siegel Firearm

Additional Information on Select Variables Listed Below:

VARIABLE: **SIE_2**   "Firearm Law-Violent Misdemeanor, Siegel Firearm"

Firearm possession is not prohibited for people who have committed a violent misdemeanor punishable by less than one year of imprisonment	0
Firearm possession is prohibited for people who have committed a violent misdemeanor punishable by less than one year of imprisonment	1

VARIABLE: **SIE_3**   "Firearm Law-Universal Background Check, Siegel Firearm"

Universal background checks not required at point of purchase for all firearms	0
Universal background checks required at point of purchase for all firearms	1

VARIABLE: **SIE_4**   "Firearm Law-May Issue, Siegel Firearm"

Non-"May Issue" state	0
"May-Issue" state (Law provides authorities with discretion in deciding whether to grant a concealed carry permit, or the law bans all concealed weapons.)	1

VARIABLE: **SIE_5**   "Firearm Law-Count of Three Laws, Siegel Firearm"

Count of SIE_2, SIE_3, SIE_4	0-3
Note: Three laws identified by Seigel et al. (2019) as significant predictors of homicide rates.	

VARIABLE: **SIE_6**   "Firearm Law-Weighted Count of Three Laws, Siegel Firearm"

Weighted SIE_5	-0.275-0.086
Note: Count weighted by beta coefficients for each law (Table 3, fully adjusted) in Seigel et al. (2019). Higher values associated with weighted increases in homicide rates, lower values indicating weighted decreases in homicide rates.	

GUN OWNERSHIP PROXY

Data Sources/References:

Siegel, M., Ross, C. S., & King, C. (2014). A new proxy measure for state-level gun ownership in studies of firearm injury prevention. Injury prevention, 20(3), 204-207.

-Constructed measures: original measured as suicides committed using a firearm divided by all suicides, and an improved measure measured as firearm suicides divided by all suicides and the per capita number of hunting licenses.

NOTE: All variables are measured at the state level.

VARIABLE NAME	VARIABLE LABEL
SIE_7	State, Siegel Gun Ownership
SIE_8	Gun Ownership Proxy, Original, Siegel Gun Ownership
SIE_9	Gun Ownership Proxy, Improved, Siegel Gun Ownership

VARIABLE: **SIE_8**   "Gun Ownership Proxy, Original, Siegel Gun Ownership"

Proportion of suicides in a state committed using a gun (FS/S)	
Note: Methodology detailed in Siegel et al. 2014.	

VARIABLE: **SIE_9**   "Gun Ownership Proxy, Improved, Siegel Gun Ownership"

Proportion of suicides in a state committed using a gun (FS/S) + per capita hunting licenses.	
Note: Methodology detailed in Siegel et al. 2014.	

EMERGENCY ROOM DISCHARGES/EXPOSURE: RESTRICTED DATA

Data Source/References:

<mark>Reference</mark>

Restricted data includes a count of emergency departments, emergency departments per 1,000 individuals and emergency departments per square mile for select years (2001, 2003, 2005, 2007, 2009, 2011, 2012, 2013, and imputed annually).

APPENDIX A: IMPUTED RACE

The imputations were calculated by:

Joseph Gibbons, PhD

Department of Sociology

Associate Director Center for Human Dynamics in our Mobile Age (HDMA)

San Diego State University

jgibbons@sdsu.edu

For most entries without a reported race/ethnicity, race/ethnicity was imputed with estimates derived with Bayesian Improved Surname Geocoding (BISG). This method uses both surnames and demographics of place of residence of victims to estimate their race/ethnicity (Elliott et al. 2008). This method has been demonstrated in other fields, including mortgage research, to be a useful method to determine race/ethnicity (Consumer Financial Protection Bureau 2014). Our estimates were validated by singling out encounters where one's race was determined and comparing the estimated values to the reported values. As reported below, we found the correlation of estimates to reported values to be moderate to strong and in all cases statistically significant. The data also includes the probabilities for each imputed race/ethnicity.

Correlations Between Imputed Race/Ethnicity and Reported Race/Ethnicity:

White, 0.61; Black, 0.64; Hispanic, 0.82; Asian, 0.68; Native American, 0.46

Citations

Consumer Financial Protection Bureau. 2014. "Using Publicly Available Information to Proxy for Unidentified Race and Ethnicity." Washington, D.C.: Consumer Financial Protection Bureau.

Elliott, Marc, Allen Fremont, Peter Morrison, Philip Pantoja, and Nicole Lurie. 2008. "A New Method for Estimating Race/Ethnicity and Associated Disparities Where Administrative Records Lack Self-Reported Race/Ethnicity." Health Services Research 43 (5 Pt 1): 1722–36. https://doi.org/10.1111/j.1475-6773.2008.00854.x.

VARIABLE: **CEN_1**   "Proportion Non-Hispanic White, Census"

2000 Estimates: SHRNHW0N / SHR0D

SHR0D   "2000 Total population for race/ethnicity" (Census 2000
               source: Table P6:1)

SHRNHW0N   "2000 Total non-Hisp./Latino White population" (Census
               2000 source: Table P4:5,14,17,35)

2010 Estimates: SHRNHW1N / SHR1D

SHR1D   "2010 Total population for race/ethnicity" (Census 2010
               source: Table P8:1)

SHRNHW1N   "2010 Total non-Hispanic/Latino White population"
               (Census 2010 source: Table P9:5,14,17,35)

ACS Estimates: HC01_VC94/ HC01_VC43 (2016)

HC01_VC43   "Estimate; RACE - Total population" (ACS, 2016 5-year
               source: Table DP05)

HC01_VC94   "Estimate; HISPANIC OR LATINO AND RACE - Total
               population - Not Hispanic or Latino - White alone"
          (ACS, 2016 5-year source: Table DP05)

VARIABLE: **CEN_2**   "Proportion Non-Hispanic Black, Census"

2000 Estimates: SHRNHB0N / SHR0D

SHR0D   "2000 Total population for race/ethnicity" (Census 2000
               source: Table P6:1)

SHRNHB0N   "2000 Total non-Hisp./Latino Black/Afr. Am. Population"
               (Census 2000 source: Table P4:6,13,18-21,29-32,39-
          44,50-55,60-63,66-69,71,73)

2010 Estimates: SHRNHB1N / SHR1D

SHR1D   "2010 Total population for race/ethnicity" (Census 2010
               source: Table P8:1)

SHRNHB1N   "2010 Total non-Hispanic/Latino Black/African American
               population" (Census 2010 source: Table P9:6,13,18-
          21,29-32, 39-44, 50-55, 60-63, 66-69,71,73)

2016 Estimates: HC01_VC95/ HC01_VC43

HC01_VC43   "Estimate; RACE - Total population" (ACS, 2016 5-year
               source: Table DP05)

HC01_VC95   "Estimate; HISPANIC OR LATINO AND RACE - Total
        population - Not Hispanic or Latino – Black or African
    American alone" (ACS, 2016 5-year source: Table DP05)

VARIABLE: **CEN_3**   "Proportion Hispanic, Census"

2000 Estimates: SHRHSP0N / SHR0D

SHR0D   "2000 Total population for race/ethnicity" (Census 2000
        source: Table P6:1)

SHRHSP0N   "2000 Total Hisp./Latino population" (Census 2000
        source: Table P7:10)

2010 Estimates: SHRHSP1N / SHR1D

SHR1D   "2010 Total population for race/ethnicity" (Census 2010
        source: Table P8:1)

SHRHSP1N   "2010 Total Hispanic/Latino population" (Census 2010
        source: Table P9:2)

2016 Estimates: HC01_VC88/ HC01_VC43

HC01_VC43   "Estimate; RACE - Total population" (ACS, 2016 5-year
        source: Table DP05)

HC01_VC88   "Estimate; HISPANIC OR LATINO AND RACE - Total
        population – Hispanic or Latino (of any race)" (ACS,
    2016 5-year source: Table DP05)

VARIABLE: **CEN_4**   "Place Population, Census"

2000 Estimates: TRCTPOP0   "2000 Total population" (Census 2000
        source: Table P1:1)

2010 Estimates: TRCTPOP1   "2010 Total population" (Census 2010
        source: Table P1:1)

2016 Estimates: HC01_VC03 "Estimate; SEX AND AGE - Total population"
        (ACS,2016 5-year source: Table DP05)

VARIABLE: **CEN_5**   "Proportion Age Less Than 18, Census"

2000 Estimates: CHILD0N / TRCTPOP0

TRCTPOP0   "2000 Total population" (Census 2000 source: Table P1:1)

CHILD0N   "2000 Children under 18 years old" (Census 2000 source:
        Table P8:3-20,42-59)

2010 Estimates: CHILD1N / TRCTPOP1

TRCTPOP1   "2010 Total population" (Census 2010 source: Table P1:1)

CHILD1N   "2010 Children under 18 years old" (Census 2010 source:
               Table P14:3-20,24-41)

2016 Estimates:(HC01_VC03-HC01_VC32)/HC01_VC03

HC01_VC03   "Estimate; SEX AND AGE - Total population"
               (ACS,2016 5-year source: Table DP05)

HC01_VC32   "Estimate; SEX AND AGE - 18 years and over"
               (ACS,2016 5-year source: Table DP05)

VARIABLE: **CEN_6**   "Proportion Owner-Occupied Households, Census"

2000 Estimates: OWNOCC0 / TOTHSUN0

TOTHSUN0   "2000 Total housing units" (Census 2000 source: Table
               H1:1)

OWNOCC0   "2000 Total owner-occ. housing units" (Census 2000
               source: Table H7:2)

2010 Estimates: OWNOCC1 / TOTHSUN1

TOTHSUN1   "2010 Total housing units" (Census 2010 source: Table
               H1:1)

OWNOCC1   "2010 Total owner-occupied housing units" (Census 2010
               source: Table H4:2-3)

2016 Estimates: HC02_EST_VC01/HC01_EST_VC01

HC01_EST_VC01 "Occupied housing units; Estimate; Occupied housing
               units"(ACS,2016 5-year source: Table S2502)

HC02_EST_VC01 "Owner-occupied housing units; Estimate; Occupied
               housing units"(ACS,2016 5-year source: Table S2502)

VARIABLE: **CEN_7**   "Proportion Foreign-Born, Census"

2000 Estimates: FORBORN0 / TRCTPOP0

TRCTPOP0   "2000 Total population" (Census 2000 source: Table P1:1)

FORBORN0   "2000 Foreign born population" (Census 2000 source:
               Table P21:13)

2010 Estimates: FORBORN1A /(FORBORN1A + NATBORN1A)

NATBORN1A   "06-10 Native born population" (ACS 06-10 source: Table
               B05002:2)

FORBORN1A   "06-10 Foreign born population" (ACS 06-10 source: Table
          B05002:13)

2016 Estimates: HC04_EST_VC01/HC01_EST_VC01

HC01_EST_VC01 "Total; Estimate; Total population" (ACS,2016 5-year
         source: Table S0601)

HC04_EST_VC01 "Native; born outside U.S.; Estimate; Total population"
         (ACS,2016 5-year source: Table S0601)

VARIABLE: **CEN_8**   "Proportion Unemployed, Census"

2000 Estimates: UNEMPT0N / UNEMPT0D

UNEMPT0N   "2000 Persons 16+ years old in the civilian labor force
         and Unemployed" (Census 2000 source: Table P43:7,14)

UNEMPT0D   "2000 Persons 16+ years old in the civilian labor force"
       (Census 2000 source: Table P43:5,12)

2010 Estimates: UNEMPT1AN / UNEMPT1AD

UNEMPT1AN   "06-10 Persons 16+ years old in the civilian labor force
       and unemployed (ACS 06-10 source: Table B23001:8, 15,
       22, 29, 36, 43, 50, 57, 64, 71, 76, 81, 86, 94, 101,
       108, 115, 122, 129, 136, 143, 150, 157, 162, 167, 172)

UNEMPT1AD   "06-10 Persons 16+ years old in the civilian labor
         force" (ACS 06-10 source: Table B23001:6, 13, 20, 27,
         34, 41, 48, 55, 62, 69, 92, 99, 106, 113, 120, 127,
       134, 141, 148, 155)

2016 Estimates:(HD01_VD06 + HD01_VD11 + HD01_VD17 + HD01_VD22 + HD01_VD28 +
HD01_VD33 + HD01_VD39 + HD01_VD44 + HD01_VD50 + HD01_VD55)/ HD01_VD04 +
HD01_VD09 + HD01_VD15 + HD01_VD20 + HD01_VD26 + HD01_VD31 + HD01_VD37 +
HD01_VD42 + HD01_VD48 + HD01_VD53)

NUMERATOR: HD01_VD06, HD01_VD11, HD01_VD17, HD01_VD22, HD01_VD28,
       HD01_VD33, HD01_VD39, HD01_VD44, HD01_VD50, HD01_VD55
       ESTIMATES OF UNEMPLOYED INVIDUALS BY SEX AND MARITAL STATUS
       (ACS,2016 5-year source: Table B12006)

DENOMINATOR: HD01_VD04, HD01_VD09, HD01_VD15, HD01_VD20, HD01_VD26,
       HD01_VD31, HD01_VD37, HD01_VD42, HD01_VD48, HD01_VD53
       ESTIMATES OF INVIDUALS IN THE LABOR FORCE BY SEX AND
       MARITAL STATUS (ACS,2016 5-year source: Table B12006)

VARIABLE: **CEN_9**   "Proportion Below Poverty Line, Census"

2000 Estimates: POVRAT0N / POVRAT0D

POVRAT0N   "2000 Total persons below the poverty level last year"
         (Census 2000 source: Table P87:2)

POVRAT0D   "2000 Total population with poverty status determined"
                (Census 2000 source: Table P87:1)

2010 Estimates: POVRAT1AN / POVRAT1AD

POVRAT1AN   "06-10 Total persons below the poverty level in past 12
                months" (ACS 06-10 source: Table B17001:2)

POVRAT1AD   "06-10 Total population with poverty status determined"
                (ACS 06-10 source: Table B17001:1)

2016 Estimates: ((HC01_EST_VC67/100)*HC01_EST_VC66)/ HC01_EST_VC66

HC01_EST_VC66 "Total; Estimate; POVERTY STATUS IN THE PAST 12 MONTHS -
        Population for whom poverty status is determined"
        (ACS,2016 5-year source: Table S0601)

HC01_EST_VC67 "Total (PERCENTAGE); Estimate; POVERTY STATUS IN THE
                PAST 12 MONTHS - Population for whom poverty status is
        determined - Below 100 percent of the poverty level"
        (ACS,2016 5-year source: Table S0601)

VARIABLE: **CEN_10** "Proportion Receiving Welfare, Census"

2000 Estimates: WELFAR0N / WELFAR0D

WELFAR0N   "2000 Households with public assistance inc. (incl. SSI)
        last year" (Census 2000 source: Table P63:2 + Table
        P64:2)

WELFAR0D   "2000 Total HHs" (Census 2000 source: Table P64:1)

2010 Estimates: WELFAR1ARN / WELFAR1AD

WELFAR1ARN   "06-10 Households with public assistance income (not
                incl. SSI) in past 12 months" (ACS 06-10 source: Table
        B19057:2)

WELFAR1AD   "06-10 Total households" (ACS 06-10 source: Table
                B19001:1)

2016 Estimates: HD01_VD02/HD01_VD01

HD01_VD01   "Estimate; Total: public assistance income
                determined" (ACS,2016 5-year source: Table S19057)

HD01_VD02   "Estimate; Total: - With public assistance income"
                    (ACS,2016 5-year source: Table S19057)

VARIABLE: **CEN_11** "Proportion of Families and Subfamilies Headed By Women
w/Children, Census"

2000 Estimates: FFH0N / FAMSUB0

FAMSUB0   "2000 Total families and subfamilies" (Census 2000
                 source: Table P10:6 + Table PCT4:1)

FFH0N   "2000 Female-headed families and subfamilies with own
                 children" (Census 2000 source: Table P12:12,27 + Table
            PCT4:5)

2010 Estimates: FFH1AN / FAMSUB1A

FAMSUB1A   "06-10 Total families and subfamilies" (ACS 06-10
                 source: Table B11003:1 + Table B11013:1)

FFH1AN   "06-10 Female-headed families and subfamilies with own
                 children" (ACS 06-10 source: Table B11003:16 + Table
            B11013:5)

2016 Estimates: (HD01_VD16+HD01_VD05)/(HD01_VD01+HD01_VD01)

HD01_VD01   "Estimate; Total (FAMILIES)"(ACS,2016 5-year source:
                 Table B11004)

HD01_VD01   "Estimate; Total (SUBFAMILIES)"(ACS,2016 5-year source:
                 Table B11013)

HD01_VD16   "Estimate; Other family: - Female householder, no
                 husband present: - With related children of the
                 householder under 18 years" (ACS,2016 5-year source:
            Table B11004)

HD01_VD05   "Estimate; Mother-child subfamily" (ACS,2016 5-year
                 source: Table B11013)

VARIABLE: **CEN_12**   "Proportion Age 25+ w/Less Than HS Degree,

Census"

2000 Estimates: (EDUC80 + EDUC110)/ EDUCPP0

EDUC80   "2000 Persons 25+ years old who have competed 0-8 years
                of school" (Census 2000 source: Table P37:3-6,20-23)

EDUC110   "2000 Persons 25+ years old who have completed 9-12
                years of school but no diploma" (Census 2000 source:
           Table P37:7-10,24-27)

EDUCPP0   "2000 Persons 25+ years old" (Census 2000 source: Table
                P37:1)

2010 Estimates: (EDUC81A + EDUC111A)/ EDUCPP1A

EDUC81A   "06-10 Persons 25+ years old who have competed 0-8 years
           of school" (ACS 06-10 source: Table B15002:3-6,20-23)

EDUC111A   "06-10 Persons 25+ years old who have completed 9-12
                years of school but no diploma" (ACS 06-10 source:
        Table B15002:7-10,24-27)

EDUCPP1A   "06-10 Persons 25+ years old" (ACS 06-10 source: Table
                B15002:1)

2016 Estimates:((HC01_EST_VC46/100)*HC01_EST_VC45)/ HC01_EST_VC45

HC01_EST_VC45   "Total; Estimate; EDUCATIONAL ATTAINMENT - Population
                25 years and over" (ACS,2016 5-year source: Table
        S0601)

HC01_EST_VC46   "Total (PERCENTAGE); Estimate; EDUCATIONAL ATTAINMENT -
        Population 25 years and over - Less than high school
        graduate" (ACS,2016 5-year source: Table S0601)

VARIABLE: **CEN_13**   "Proportion Age 25+ w/HS Degree, Census"

2000 Estimates: EDUC120 / EDUCPP0

EDUC120   "2000 Persons 25+ years old who have completed h.s. but
                no college" (Census 2000 source: Table P37:11,28)

EDUCPP0   "2000 Persons 25+ years old" (Census 2000 source: Table
                P37:1)

2010 Estimates: EDUC121A / EDUCPP1A

EDUC121A   "06-10 Persons 25+ years old who have completed high
                school but no college" (ACS 06-10 source: Table
                B15002:11,28)

EDUCPP1A   "06-10 Persons 25+ years old" (ACS 06-10 source: Table
                B15002:1)

2016 Estimates:((HC01_EST_VC47/100)*HC01_EST_VC45)/ HC01_EST_VC45

HC01_EST_VC45   "Total; Estimate; EDUCATIONAL ATTAINMENT - Population
                25 years and over" (ACS,2016 5-year source: Table
        S0601)

HC01_EST_VC47   "Total(PERCENTAGE); Estimate; EDUCATIONAL ATTAINMENT -
                Population 25 years and over - High school graduate
        (includes equivalency) (ACS,2016 5-year source: Table
        S0601)

VARIABLE: **CEN_14**   "Proportion Age 25+ w/Some College, Census"

2000 Estimates: (EDUC150 + EDUCA0) / EDUCPP0

EDUC150   "2000 Persons 25+ years old who have completed some
               college but no degree" (Census 2000 source: Table
        P37:12-13,29-30)

EDUCA0   "2000 Persons 25+ years old who have an associate degree
        but no bachelors degree" (Census 2000 source: Table
        P37:14,31)

EDUCPP0   "2000 Persons 25+ years old" (Census 2000 source: Table
               P37:1)

2010 Estimates: EDUC151A + EDUCA1A) / EDUCPP1A

EDUC151A   "06-10 Persons 25+ years old who have completed some
               college but no degree" (ACS 06-10 source: Table
               B15002:12-13,29-30)

EDUCA1A   "06-10 Persons 25+ years old who have an associate
               degree but no bachelors degree" (ACS 06-10 source:
        Table B15002:14,31)

EDUCPP1A   "06-10 Persons 25+ years old" (ACS 06-10 source: Table
               B15002:1)

2016 Estimates:((HC01_EST_VC48/100)*HC01_EST_VC45)/ HC01_EST_VC45

HC01_EST_VC45 "Total; Estimate; EDUCATIONAL ATTAINMENT - Population
               25 years and over" (ACS,2016 5-year source: Table
        S0601)

HC01_EST_VC48 "Total (PERCENTAGE); Estimate; EDUCATIONAL ATTAINMENT -
        Population 25 years and over - Some college or
        associate's degree" (ACS,2016 5-year source: Table
        S0601)

VARIABLE: **CEN_15**   "Proportion Age 25+ w/College Degree, Census"

2000 Estimates: EDUC160 / EDUCPP0

EDUC160   "2000 Persons 25+ years old who have a bachelors or
               graduate/professional degree" (Census 2000 source:
        Table P37:15-18,32-35)

EDUCPP0   "2000 Persons 25+ years old" (Census 2000 source: Table
               P37:1)

2010 Estimates: EDUC161A / EDUCPP1A

EDUC161A   "06-10 Persons 25+ years old who have a bachelors or
               graduate/professional degree" (ACS 06-10 source: Table
          B15002:15-18,32-35)

EDUCPP1A   "06-10 Persons 25+ years old" (ACS 06-10 source: Table
               B15002:1)

2016 Estimates:(((HC01_EST_VC49/100)*HC01_EST_VC45)+
((HC01_EST_VC50/100)*HC01_EST_VC45))/ HC01_EST_VC45

HC01_EST_VC45 "Total; Estimate; EDUCATIONAL ATTAINMENT - Population
               25 years and over" (ACS,2016 5-year source: Table
          S0601)

HC01_EST_VC49 "Total (PERCENTAGE); Estimate; EDUCATIONAL ATTAINMENT -
          Population 25 years and over - Bachelor's degree"
          (ACS,2016 5-year source: Table S0601)

HC01_EST_VC50 "Total; Estimate; EDUCATIONAL ATTAINMENT - Population
               25 years and over - Graduate or professional degree"
          (ACS,2016 5-year source: Table S0601)

APPENDIX C: RECOMMENDED REGRESSION FOR COUNT/RATE ANALYSIS

Since the majority of police departments will have zero police-involved homicides, a zero-inflated-Poisson or a negative binomial regression will likely be the model of choice (see e.g., Osgood 2000).

Osgood, D. Wayne. 2000. "Poisson-Based Regression Analysis of Aggregate Crime Rates." *Journal of Quantitative Criminology* 16(1): 21-43.