Add Health
The National Longitudinal Study of Adolescent to Adult Health

Wave V Fatal and Non-Fatal Police Shootings User Guide

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1. Introduction

The National Longitudinal Study of Adolescent to Adult Health (Add Health) is a nationally representative sample of U.S. adolescents who were in grades 7-12 during the 1994-1995 school year. Using a complex, school-based cluster-sampling frame, researchers selected high school and feeder school pairs from 80 communities across the United States and drew a sex- and grade-stratified random sample of 20,745 adolescents for inclusion in the study. This sample has been followed from adolescence into early midlife across six waves of data collection to date, with the most recent wave of data collection (Wave VI) taking place between 2022 and 2025 when respondents were ages 39 to 49.

Over the years, Add Health has collected a wealth of information from respondents and their parents about demographic characteristics, familial structures, social relationships, health behaviors, cognition, physical and mental health status, medication usage, and health care access. Add Health also has collected anthropometric, cardiovascular, metabolic, renal, hepatic, inflammatory/immune, infectious, neurodegenerative, and multi-omic biomarkers from respondents. In addition, Add Health has merged multilevel contextual data about the economic, school, neighborhood, policy, and environmental contexts in which the respondents are embedded to the core survey and biological data at each wave. The Add Health dataset thereby provides researchers with rich opportunities to explore the causes and consequences of health status across multiple contextual domains as individuals age across the life course.

2. Background

Police violence is an urgent public health crisis in the U.S.[1,2] With more than 1,000 people killed by police each year from 2013-2022,[3] violent encounters with police are increasingly understood as an important cause of mortality, especially in Black and other minoritized communities.[4-7] Morbidities stemming from police violence can also proliferate beyond direct victims to loved ones and community members.[8-10] Since the fatal shooting of Michael Brown in Ferguson, MO, in 2014, there has been a heightened societal scrutiny of police violence. Alongside this scrutiny is emerging research investigating how individuals' exposure to police violence undermines their health via post-traumatic stress, depression, poor sleep, and other factors.[10-15]

Despite increased public awareness and empirical attention, four critical data and knowledge gaps on the public health impact of police violence persist – particularly pertaining to police shootings. First, the overwhelming focus has been on *fatal* shootings without adequate attention to *nonfatal* shootings that may indirectly harm individual and community health.[4-7] While one study shows fatal police encounters worsen Black adults' mental health,[9] this approach risks underestimating the actual public health toll of the full spectrum of police shootings as it overlooks nonfatal incidents. Second, most police shooting research relies solely on ecological data,[4-7] examining aggregate fatal incidents (e.g., state, county, or city level) without linking them to other health data. These data may result in interpretations that rely on the ecological fallacy.[16] To overcome this, a multi-level approach to measuring individual-level health responses to aggregate police shootings is needed to understand individual health impacts better. Third, even in rare cases when multi-level data are used, they are cross-sectional (no prospective cohort data), and health is narrowly defined (e.g., poor mental health days).[9] The methodological rigor of extant work could be greatly enhanced by 1) using multi-level, *longitudinal* data, 2) documenting variation in proximity to shooting events (e.g., precise geocoded data of latitude/longitude event coordinates and respondent residential addresses), and 3) establishing the time order of variables and precise time since the event (e.g., in days).

3. Data Structure and Form

This data file (**w5firearms**) contains a total of 1,285 variables for Add Health respondents who participated in Wave V. The first variable is the respondent identifier (AID), by which this data file can be merged with other Add Health data files. The next 10 variables are state-level policy variables. The next 20 variables are tract-level shooting variables to represent the number and types of police shootings within the respondent's census tract. The final 1,254 variables are the number of police shootings, their type, distance from the respondent's home, and timing in relation to the respondent's interview.

4. Source Description

Respondent Level

Data on fatal and nonfatal shootings by police officers were drawn from the Augmented Gun Violence Archive (AGVA). The AGVA was developed by a team of trained reviewers, who were unaffiliated with the GVA nonprofit or its website. The GVA is an online, public database of fatal and nonfatal US gun violence events, identified from approximately 7,500 media, law enforcement, government, and commercial sources daily since 2013. GVA incidents are cataloged by date, location, and gun violence type (e.g., "officer involved").[17]

The AGVA was developed from July 2021 to April 2022 through a manual review of all GVA-listed "officer-involved" shootings described as occurring from January 1, 2015 through December 31, 2020. Incidents in which shots were fired by one or more law enforcement officers, resulting in injuries to people who were not responding officers, were retained for further review by the AGVA team. Police occupational injuries, injuries by bullet alternatives exclusively (e.g., rubber bullets), shootings without injury, and self-inflicted injuries were excluded. For the remaining incidents, publicly available information (linked to the GVA or elsewhere) was reviewed to systematically identify situational and victim-specific characteristics.

Socially assigned race and ethnicity of the injured person were designated based on explicit reporting or two-person concordant review of a published photo. Shootings designated as involving co-occurring mental health conditions or substance use were identified, then re-reviewed and confirmed between June 2023 and June 2024. Shooting that either 1) only involved physical, cognitive, or developmental diagnoses that may have been mistaken for mental illness, or 2) were reported as "suicide by cop" without any such symptoms or symptoms shown only after a prolonged standoff were reviewed but not designated as mental health involved here. Mental health and substance use designations are based on the best available information as of September 8, 2024.

Each shooting event is coded to the date of the recorded event and geocoded using the longitude and latitude of where the event was reported to have occurred. Shootings by on-duty or off-duty officers were included. Additional information on the development and contents of the AGVA, including analysis of duty status distribution and significance, is available elsewhere.[18]

See the Data Dictionary for a list of the respondent-level variables.

Tract-Level Variables

Data on Tract-Level variables are drawn from the American Violence Project (www.AmericanViolence.org), which provides neighborhood-level counts for both fatal and non-fatal shootings for the 100 largest cities in the US based on 2010 census information. Based on this information, the tract-level counts of total shootings were calculated by extracting all incidents and aggregating by census tract and year for 2014-2018.[19]

Data on tract-level shootings for the American Violence Project were obtained from the Gun Violence Archive (GVA), a public online resource that compiles data on firearm-related incidents from over 7,500 sources, including media reports, police records, and government publications. Monthly counts were

extracted for both fatal and nonfatal shooting victims. To focus on incidents of interpersonal violence, only incidents with at least one victim categorized by GVA as "Shot – Dead" (excluding suicide-only cases) or "Shot – Wounded/Injured" were included. Fatal shootings were defined as the number of individuals killed in multi-party shooting incidents, while nonfatal shootings were defined as the number of individuals injured in such incidents. Although GVA includes incident-level details, it is often not possible to distinguish between accidental and intentional shootings when both occur in the same event. However, given the relatively small number of accidental shooting victims, incidents involving accidental shootings were retained in the dataset. Because GVA was established in late 2013, data on shootings are only available beginning in 2014.

See the Data Dictionary for a list of the tract-level variables.

State-Policy Level Variables

State-level policy variables were coded based on the effective dates of firearm laws. The classification and coding of these laws were conducted by the Johns Hopkins Center for Gun Violence Solutions, which performed legal research to determine the precise enactment dates—month, day, and year—for each state policy. Using these effective dates, binary indicators were created for each policy. Each indicator was coded as 1 beginning in the first full calendar year following the policy's implementation.[20-22]

See the Data Dictionary for a list of the state-policy level variables.

5. Variable Naming Conventions

Apart from AID, all variables in the data file adhere to the following nomenclature:

1st character: Refers to the level of the data:
- S - State
- T - Tract
- R - Respondent

2nd character: Refers to the wave of data collection:
- 5 = Wave V

3rd - 10th character (state-level variables): Refer to the combination of source and theme of the data.
- E.g., S5SYC = "SYC" represents state-level stand your ground policy

3rd - 6th character (tract-level variables): Refer to the type of shooting data.
- FATAL - Fatal police shootings in tract
- NONFTL - Nonfatal police shootings in tract
- NORM - Fatal police shootings per 10,000 population in tract
- NFNORM - Nonfatal police shootings per 10,000 population in tract

Last four characters (tract-level variables): Refer to the year of data collection
- 2014 - Tract-level information from 2014
- 2015 - Tract-level information from 2015
- 2016 - Tract-level information from 2016
- 2017 - Tract-level information from 2017
- 2018 - Tract-level information from 2018

3rd - 7th character (respondent-level variables): Refer to combination of source and theme of the data.
- SHOOT - Total shootings within certain distance and time
- VICS - Total victims within certain distance and time
- NONFTL - Non-fatalities within certain distance and time
- FATAL - Fatalities within certain distance and time
- AGELT18 - Victims under age 18 within certain distance and time
- AGE1830 - Victims age 18-30 within certain distance and time
- AGE31-50 - Victims age 31-50 within certain distance and time
- AGEGT50 - Victims over age 50 within certain distance and time
- AGEUNK - Victims age unknown within certain distance and time
- WHITE - White victims within certain distance and time
- BLACK - Black victims within certain distance and time
- BHHISP - Hispanic victims within certain distance and time
- RACEOTH - Other race victims within certain distance and time
- RACEUNK - Unknown race victims within certain distance and time
- BHSU - Substance use among victims within certain distance and time
- BHMH - Mental health concerns among victims within certain distance and time
- BHSI - Suicidal/self-harm symptoms among victims within certain distance and time
- BHHI - Homicidal/violent symptoms among victims within certain distance and time

BHDO - Disorganized/paranoid/hallucination behavior among victims within certain distance and time

Last five characters (respondent-level variables): Refer to the time and distance measures from the respondent's interview date and home address.

E.g., R5FATALD5T06 refers to fatal shootings that happened within 7.5-10 miles from the respondent's home 2-3 months prior to their interview.

Distance characters:
D1 - Shooting occurred 0 - 1 miles from the respondent's home
D2 - Shooting occurred 1 - 2.5 miles from the respondent's home
D3 - Shooting occurred 2.5 - 5 miles from the respondent's home
D4 - Shooting occurred 5 - 7.5 miles from the respondent's home
D5 - Shooting occurred 7.5 - 10 miles from the respondent's home
D6 - Shooting occurred 10 - 20 miles from the respondent's home

Time characters:
T01 - Shooting occurred 0 - 1 weeks prior to respondent's interview
T02 - Shooting occurred 1 - 2 weeks prior to respondent's interview
T03 - Shooting occurred 2 - 3 weeks prior to respondent's interview
T04 - Shooting occurred 3 - 1 month prior to respondent's interview
T05 - Shooting occurred 1 - 2 months prior to respondent's interview
T06 - Shooting occurred 2 - 3 months prior to respondent's interview
T07 - Shooting occurred 3 - 4 months prior to respondent's interview
T08 - Shooting occurred 4 - 5 months prior to respondent's interview
T09 - Shooting occurred 5 - 6 months prior to respondent's interview
T10 - Shooting occurred 6 - 9 months prior to respondent's interview
T11 - Shooting occurred 9 - 12 months prior to respondent's interview

6. Data Dictionary

Respondent-Level

For more information about this data source, see the Source Description.

Name	Description
R5SHOOTD1T01 - R5SHOOTD6T11	Total number of police shooting within varying distances from the respondent's home and varying time frames from the respondent's interview
R5VICSD1T01 - R5VICSD6T11	Total number of victims of police shootings within varying distances from the respondent's home and varying time frames from the respondent's interview
R5NONFTLD1T01 - R5NONFTLD6T11	Number of nonfatal injurious police shootings within varying distances from the respondent's home and varying time frames from the respondent's interview
R5FATALD1T01 - R5FATALD6T11	Number of fatal police shootings within varying distances from the respondent's home and varying time frames from the respondent's interview
R5AGELT18D1T01 - R5AGELT18D6T11	Number of victims of police shootings under age 18 within varying distances from the respondent's home and varying time frames from the respondent's interview
R5AGE1830D1T01 - R5AGE1830D6T11	Number of victims of police shootings between the ages of 18 and 30 within varying distances from the respondent's home and varying time frames from the respondent's interview
R5AGE3150D1T01 - R5AGE3150D6T11	Number of victims of police shootings between the ages of 31 and 50 within varying distances from the respondent's home and varying time frames from the respondent's interview
R5AGEGT50D1T01 - R5AGEGT50D6T11	Number of victims of police shootings over age 50 within varying distances from the respondent's home and varying time frames from the respondent's interview
R5AGEUNKD1T01 - R5AGEUNKD6T11	Number of victims of police shootings of unknown age within varying distances from the respondent's home and varying time frames from the respondent's interview
R5WHITED1T01 - R5WHITED6T11	Number of White victims of police shootings within varying distances from the respondent's home and varying time frames from the respondent's interview
R5BLACKD1T01 - R5BLACKD6T11	Number of Black victims of police shootings within varying distances from the respondent's home and varying time frames from the respondent's interview
R5BHHISPD1T01 - R5BHHISPD6T11	Number of Hispanic victims of police shootings within varying distances from the respondent's home and varying time frames from the respondent's interview
R5RACEOTHD1T01 - R5RACEOTHD6T11	Number of victims of police shootings of other races within varying distances from the respondent's home and varying time frames from the respondent's interview
R5RACEUNKD1T01 - R5RACEUNKD6T11	Number of victims of police shootings of unknown race/ethnicity within varying distances from the respondent's home and varying time frames from the respondent's interview
R5BHSUD1T01 - R5BHSUD6T11	Number of victims of police shootings involving substance use within varying distances from the respondent's home and varying time frames from the respondent's interview
R5BHMHD1T01 - R5BHMHD6T11	Number of victims of police shootings involving mental health concerns within varying distances from the respondent's home and varying time frames from the respondent's interview

Name	Description
R5BHSID1T01 - R5BHSID6T11	Number of victims of police shootings involving mental health concerns with suicidal or self-harming symptoms within varying distances from the respondent's home and varying time frames from the respondent's interview
R5BHHID1T01 - R5BHHID6T11	Number of victims of police shootings involving mental health concerns with homicidal or violent symptoms within varying distances from the respondent's home and varying time frames from the respondent's interview
R5BHDOD1T01 - R5BHDOD6T11	Number of victims of police shootings involving mental health concerns with disorganized, paranoid, or hallucination symptoms within varying distances from the respondent's home and varying time frames from the respondent's interview

State-Level Policy Variables

For more information about this data source, see the Source Description.

Name	Description
S5PTP	Indicates state statute requires prospective firearm purchasers to first obtain a license. Designated 1 in the first full year of policy implementation.
S5CCW	Categorizes state statutes regulating the carrying of a loaded, concealed handgun in public spaces. Categories are defined by the degree of issuing discretion (from higher to lowest): May Issue, Shall Issue, or Permitless. Designations assigned in the first full year of policy implementation.
S5SYG	Indicates state policy allows criminal non-prosecution for the use of deadly force even if the person could safely retreat. Designated 1 in the first full year of policy implementation.
S5VMANY	Indicates state statute prohibits firearm purchase by individuals with a history of violent misdemeanor conviction. Designated 1 in the first full year of policy implementation.
S5AGECARRY21	Indicates state statute prohibits firearm carrying in public under age 21 (with or without a permit). Designated 1 in the first full year of policy implementation.
S5MEANHFR	Estimated state household firearm ownership rate
S5WHTAIANHFR	Estimated firearm ownership rate among Non-Hispanic White and AI/AI households
S5OTHRACEHFR	Estimated firearm ownership rate among all other races besides Non-Hispanic White and AI/AI households
S5ADULT_POP	State adult population

Tract-Level Variables

For more information about this data source, see the Source Description.

Name	Description
T5FATAL2014 - T5FATAL2018	Number of fatal (non-police) shootings in respondent's census tract in years 2014, 2015, 2016, 2017, and 2018
T5NONFTL2014 - T5NONFTL2018	Number of nonfatal injurious (non-police) shootings in respondent's census tract in years 2014, 2015, 2016, 2017, and 2018
T5NORM2014 - T5NORM2018	Number of fatal (non-police) shootings per 10,000 people in the population in the respondent's census tract in years 2015, 2016, 2017, and 2018
T5NFNORM2014 - T5NFNORM2018	Number of non-fatal injurious (non-police) shootings per 10,000 people in the population in the respondent's census tract in years 2015, 2016, 2017, and 2018

7. Missing codes

A respondent will be missing a value if they (a) are missing in source data, (b) are lacking geocode necessary for merging the source data, or (c) had no shootings within 20 miles and/or 1 year prior to their interview. In the dataset, there are three replacement codes representing missing data:

- -9992 Missing in the source data
- -9990 Respondent lacks the geocode necessary for merging the source data
- -9987 No shootings within 20 miles and/or 1 year prior to respondent's interview

8. Notes

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