National Violent
Death Reporting System

NVDRS

USER GUIDELINES

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Centers for Disease Control and Prevention

HEALTHIER COMMUNITIES

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1. Introduction

1.1   NVDRS Background and Objectives

The National Violent Death Reporting System (NVDRS) is the only state-, territory-, and jurisdiction-based violent death reporting system in the United States that helps provide information and context on when, where, and how violent deaths occur and who is affected. In all 50 U.S. states, the District of Columbia, and Puerto Rico, NVDRS links data from vital records, coroner/medical examiners (C/ME), and law enforcement (LE) agencies to obtain the most comprehensive data available on suicides, homicides, deaths from legal intervention (i.e., a subtype of homicide where the victim is killed by LE acting in the line of duty), deaths of undetermined intent, and unintentional firearm deaths. Figure 1 illustrates how data from the three core data sources—death certificates (DC), C/ME reports, and LE reports—are integrated into NVDRS.

Figure 1: A schematic of typical NVDRS data flow
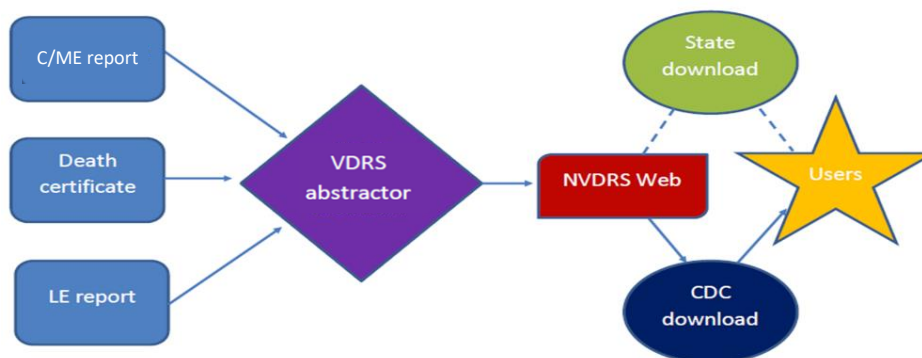
NVDRS data collection began in 2003 with six participating states (Maryland, Massachusetts, New Jersey, Oregon, South Carolina, and Virginia) and has expanded to include additional states over time. Seven states (Alaska, Colorado, Georgia, North Carolina, Oklahoma, Rhode Island, and Wisconsin) began data collection in 2004, three (Kentucky, New Mexico, and Utah) in 2005, two (Ohio and Michigan) in 2010, and 14 (Arizona, Connecticut, Hawaii, Iowa, Illinois, Indiana, Kansas, Maine, Minnesota, New Hampshire, New York, Pennsylvania, Vermont, and Washington) in 2015. Eight states (Alabama, California, Delaware, Louisiana, Missouri, Nebraska, Nevada, and West Virginia), the District of Columbia, and Puerto Rico began data collection in 2017. In 2018, NVDRS expanded to include the final 10 states (Arkansas, Florida, Idaho, Mississippi, Montana, North Dakota, South Dakota, Tennessee, Texas, and Wyoming); these new states began collecting data in January 2019. There are now Violent Death Reporting System (VDRS) programs in all 50 states, the District of Columbia, and Puerto Rico, making NVDRS a national system. Figure 2 depicts the expansion of NVDRS by year data collection started.

Figure 2. Expansion of NVDRS by year data collection started

National Violent Death Reporting System (NVDRS) Expansion, by Year Data Collection Started

Year (Total n)
- 2003 (n=6)
- 2004 (n=7)
- 2005 (n=3)
- 2010 (n=2)
- 2015 (n=14)
- 2017 (n=10)*
- 2019 (n=10)

*CA collected data in four counties from 2005-2009 and resumed data collection in 2017
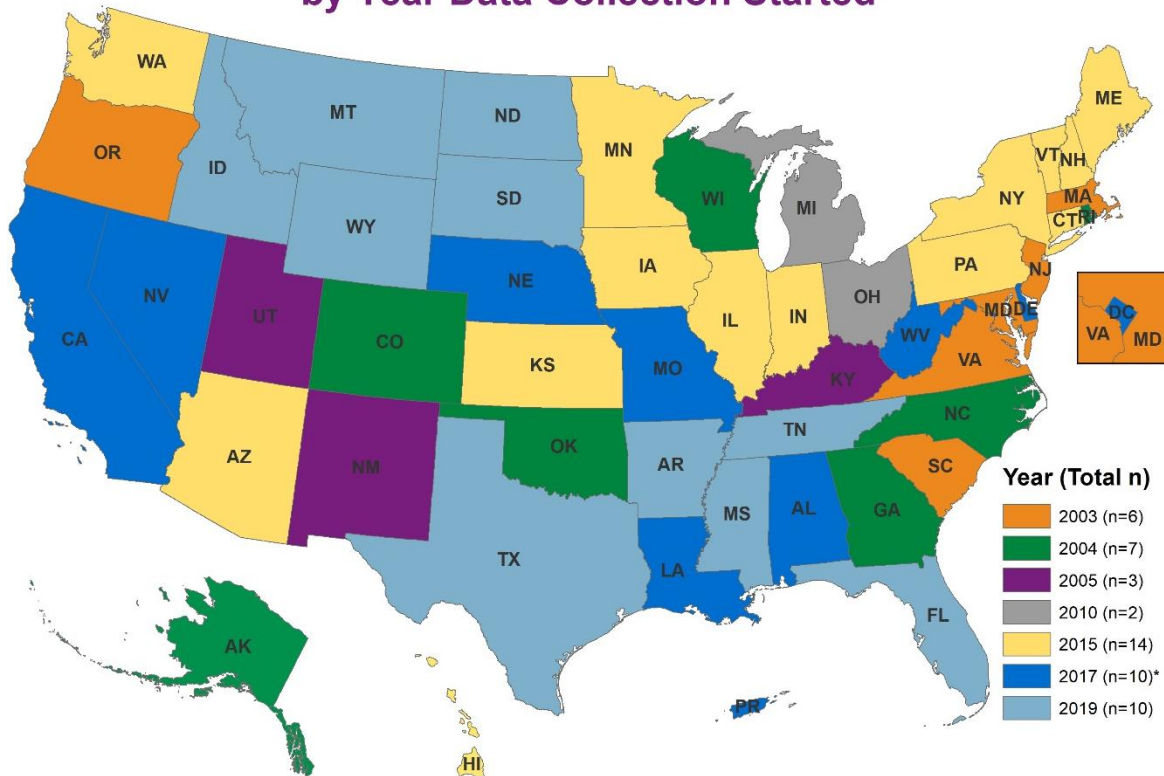
Goals of NVDRS: The goals of NVDRS are to: 1) collect high-quality data for analysis of the magnitude and characteristics of violent deaths at the national, state/territory/jurisdiction, and local levels; 2) ensure that violent death data are routinely and expeditiously disseminated to public health officials, law enforcement officials, policy makers, and the public; 3) track and facilitate the use of NVDRS data for developing, implementing and evaluating strategies designed to prevent violent deaths and injuries at the national, state/territory/jurisdiction, and local levels; 4) build and strengthen partnerships with organizations and communities at the national, state/territory/jurisdiction, and local levels to ensure that data collected are used to prevent violent deaths and injuries; and 5) identify creative strategies for sustaining NVDRS in all 50 states, the District of Columbia, and Puerto Rico.

1.2   NVDRS Resources

This document presents general and analytic guidance for NVDRS data users. In addition to this document, data users may find the following resources to be of assistance:

NVDRS Data Dictionary: The dictionary lists all the variables in the NVDRS analytic dataset and their origin, usage, and format.

NVDRS Coding Manual: The NVDRS Coding Manual is a reference document used by program-level data abstractors that provides a detailed description of all NVDRS variables and the way the variables are defined and structured. This resource is also useful to data users because it provides nuanced information that helps with data analysis and interpretation considerations.

SAS Formats Catalog (32-bit and 64-bit): The SAS formats catalog should be used with the NVDRS SAS dataset to ensure that variables stored with a format receive the correct value labels when they are downloaded for analysis. Run Proc Contents on your dataset to see which variables are stored with a format.

Excel and PDF files of SAS Formats: The excel spreadsheet and PDF file provide a list of all NVDRS SAS formats. Formats provide information on data values and their associated text labels.

Restricted Access Database (RAD) File Specification Sheet: The file specification sheet lists all the variables available to NVDRS RAD users.

It is important to review these documents prior to conducting any analysis of NVDRS data, as CDC has developed case definitions specifically for NVDRS that often include specific inclusion and exclusion criteria for certain types of cases. For example, the NVDRS Coding Manual provides specific scenarios that should or should not be classified as unintentional firearm deaths. In NVDRS, a death resulting from celebratory firing that was not intended to frighten, control, or harm anyone is classified as an unintentional firearm death, whereas a death resulting from a person unintentionally shooting another person while using a firearm to commit a crime is classified as homicide. The data dictionary provides important information that can affect the analysis, such as when the variable was added to the system.

1.3   NVDRS System

1.3.1   Type of Surveillance System

NVDRS is a state-, territory-, and jurisdiction-based active surveillance system that collects data on all suicides, homicides, deaths due to legal intervention (i.e., a subtype of homicide where victim is killed by law enforcement acting in the line of duty), deaths of undetermined intent that may be due to violence, and unintentional firearm deaths.

The NVDRS database contains hundreds of unique data elements including demographic data for both victims and suspects, victim-suspect relationships, victim characteristics (e.g., pregnancy, former and current military service, and homelessness), data on the injury event (e.g., date, time, and place of injury) and the death (e.g., time, place, and cause of death), weapon type or method, toxicology findings, wound location(s), and the circumstances that preceded the death. In addition, the trained NVDRS data abstractor writes a short narrative that tells the story of the events leading up to the death as described in the C/ME reports and a second narrative based on information from LE reports. See Appendix A for a full list of NVDRS variables.

Incident-based system: Whereas most surveillance systems are victim-based only, the NVDRS is incident-based: NVDRS reports all victims associated with a given incident in one record (e.g., a homicide followed by the suicide of the suspect or a homicide involving multiple victims). Specifically, deaths that occur within 24 hours of each other and are clearly linked by source documents would be considered part of the same incident. Each victim record in an incident includes information about that victim, suspect(s) if any, the victim-suspect relationship(s), weapon(s) or method(s) involved in the incident, among many other variables. NVDRS also includes a variable called "incident category" that classifies different types of incidents in the system based on the number of victims and manners of deaths involved (e.g., single homicide, homicide followed by suicide, multiple homicide).

1.3.2   Data Sources

NVDRS collects and links data from death certificates (DC), coroner/medical examiner records (C/ME), and law enforcement reports (LE). Data found in C/ME and LE reports may come from the injury or death scene, ongoing

investigations, or accounts of family members or friends. Data in the C/ME and LE reports are abstracted and entered in NVDRS by trained data abstractors at the state/territory/jurisdictional VDRS program-level using standardized CDC guidance found in the NVDRS Coding Manual. Official reports from other data sources may also be used, including but not limited to Child Fatality Review reports, crime lab results, Federal Bureau of Investigation Supplemental Homicide Reports, hospital discharge data, court records, and firearm trace data from the Bureau of Alcohol, Tobacco and Firearms.

Reconciling data from multiple sources: Because NVDRS collects data from multiple, complementary sources, there are several variables in the system (e.g., victim demographics) that are collected from more than one source. For most of these variables, each VDRS program sets their own primacy rules (by judging the validity of the data and data source) for determining which source's data is entered into the system. For others (primarily circumstance variables), NVDRS creates a calculated variable that combines data from the original C/ME and LE sources into one variable (see *Section 2. Data Considerations*).

1.3.3   Quality Assurance

The data are entered into a national web-based system and are stored without personally identifiable information (PII) in a secure national database maintained by CDC. CDC supports consistency and accuracy in adhering to coding guidelines in several ways. First, coding (i.e., data abstraction) training is required for new Violent Death Reporting System (VDRS) programs joining NVDRS. Second, the NVDRS Coding Manual is the primary reference document used for defining cases, entering data, and checking data once it is entered. It also contains information about individual variables and the way the data are structured. Third, ongoing coding support is provided through an email helpdesk, monthly conference calls with all VDRS programs, and regular conference calls with individual VDRS programs. Fourth, CDC produces quality assurance reports at least once a year that provide programs with information concerning probable errors in their yearly data, which programs then in turn correct. Finally, CDC provides several software features to enhance coding reliability, including validation rules and a hover-over help feature. NVDRS data for a calendar year of violent deaths are officially released approximately 18 months after the end of that calendar year. VDRS programs have 16 months to complete each incident record, allowing for time for collection of data from C/ME and LE reports. CDC then takes at least 2 more months to clean, check, and validate data at the national level.

1.4   NVDRS System Updates

NVDRS is a complex surveillance system that has grown over time, with different states/territories/jurisdictions and variables added across the years. The NVDRS Data Dictionary includes dates when variables were added or revised as part of the description of each variable.

Year 2003:

- NVDRS data collection began with six (6) participating states.

Year 2004:

- CDC expanded funding to add seven (7) new states to the NVDRS system.

Year 2005:

- CDC expanded funding to add three (3) new states to the NVDRS system.

Year 2007:

- Abstractors were instructed to only enter information on weapons that caused a fatal injury to one or more victims. Previously, abstractors entered information on all weapons that caused harm to the victim.

Year 2009:

- Eliminated Victim-Suspect and Person-Weapon relationship tables.
- Added linking fields to Person record to link victims to suspects and weapons.
- Homicide and suicide circumstances merged; homicide and suicide victims now have access to both sets of circumstances (Unintentional firearm remains separate).
- Intimate Partner Violence Module, an optional data collection module, was added to the web system.
- Supplemental homicide report (SHR) eliminated as separate data source; SHR fields moved to LE report tab.
- Incident type data element added to incident tab.
- Eight new circumstance variables were added (history of abuse as a child, other addiction, family relationship problem, eviction or loss of home, anniversary of a traumatic event, mentally ill suspect, random violence, drive-by shooting). Three of these variables (mentally ill suspect, random violence, drive-by shooting) had been available as coding options for the "Other homicide circumstance" variable and were made into independent variables.

Year 2010:

- CDC expanded funding to add two (2) new states to the NVDRS system.

Year 2011:

- Seven circumstances were reverted to homicide-only (drive-by shooting, justifiable self-defense, victim was intervener assisting crime victim, brawl, victim was bystander, random violence, victim used a weapon).

Year 2013:

- Moved to a web-based system.
- Added several victim variables to the web system (including sexual orientation, victim height and weight, recent release from institutional setting).
- Added several circumstance and crisis-related circumstance variables (current mental health problem, alcohol problem, substance abuse problem, other addiction, intimate partner problem, family relationship problem, precipitated by abuse or neglect, physical fight prior to incident, timing of argument, stalking, prostitution, walk by assault, jealousy (lovers' triangle), criminal legal problems, civil/legal problems, contributing physical health problem, physical health problem, job problem, financial problem, school problem, eviction/loss of home, disaster exposure, history of suicidal thoughts/plans, disclosure of suicide plans to whom).
- Relationship problems with family member was added in August 2013 and replaces family stressor, which was added in 2009. Other relationship problem was expanded to any relationship except intimate partner or family relationships.
- Time frames were removed from guidance around coding of recent suicide of friend/family and other death of friend/family variables. Prior to August 2013, only deaths occurring within five years of decedent's death was captured.

- Victim history of abuse or neglect was expanded to capture any history of abuse as a child outside the fatal incident. Prior to August 2013, this variable was used to collect deaths related to abuse and deaths related to intimate partner violence that had a history of abuse.
- As of August 2013, a victim who takes methadone is no longer assumed to be in treatment for heroin addiction and should be coded as "No" unless other information is available (e.g., taking methadone as part of substance abuse treatment).
- Gun cleaning variable was expanded to include unintentional deaths that occurred while the victim was also repairing or assembling/disassembling the gun.
- Limit on number of weapons was removed, allowing for data for as many weapons as were involved in inflicting fatal injuries. Prior to August 2013, number of weapons was limited to three.
- Gun storage, ownership, and access variables were expanded to all firearm deaths where data is available. Prior to August 2013, this variable primarily collected information on youth victims (age 17 and under) and suspects.

Year 2014:

- CDC expanded funding to add 14 new states to the NVDRS system.
- RAD Users now receive dataset file through a secure File Transfer Protocol (FTP).

Year 2015:

- Created flat file that eliminated the SAS merge steps to combine multiple analytic files.
- Variable names changed with release of 2012 data.
- Launched major upgrades to NVDRS web system that improved system performance for funded states.
- The Drug Overdose Module, an optional data collection module, was added to the NVDRS web system.
- "Other Race" response choice was removed from victim and suspect race/ethnicity variable beginning in 2015 to comply with the Office of Management and Budget standards for race/ethnicity categorization.
- Two new variables (relationship status and sex of partner) were added to victim demographics to assess to capture more information about victims' involvement in an intimate relationship at the time of an incident particularly for sexual minority decedents.
- Expanded ICD-10 code list to include all codes in most recent World Health Organization release.
- Updated and verified city and county code lists (i.e., Federal Information Processing Standards "FIPS" US Census Bureau codes).
- "Domestic partnership" response option was added to victim marital status to ensure both opposite- and same- sex marriages are being captured.

Year 2016:

- CDC expanded funding to include eight (8) additional states, DC, and one U.S. territory (Puerto Rico) in the NVDRS system.
- Five new suspect variables were added to the system to collect additional information on suspects captured in the system (e.g., suspect had developmental disability, suspected alcohol use, suspected substance use, suspect was recently released from an institution, suspect had recently been in contact with law enforcement).
- The Drug Overdose Module, an optional data collection module, was expanded to capture a more complete picture of unintentional poisoning deaths.

- The data file for the 2015 data year now includes data from nine (9) new states (Arizona, Connecticut, Hawaii, Kansas, Maine, Minnesota, New Hampshire, New York, and Vermont) for a total of 27 states.

Year 2018:

- The data file for the 2016 data year includes data from five (5) new states (Iowa, Illinois, Indiana, Pennsylvania, and Washington) for a total of 32 states.
- CDC expanded funding to include 10 states, with funded VDRS programs in all 50 states, DC, and Puerto Rico.
- Several variable names were updated in the dataset.

Year 2019:

- The data file for the 2017 data year now includes data from four (4) new states (California, Delaware, Nevada, West Virginia), DC, and Puerto Rico for a total of 35 states, DC, and Puerto Rico.

Year 2020:

- The data file for the 2018 data year now includes data from four (4) new states (Alabama, Louisiana, Missouri, and Nebraska) for a total of 39 states, DC, and Puerto Rico.
- Ten new victim variables were added to the system to collect additional circumstance information (non-adherence to treatment for mental health or substance abuse problem, history of traumatic brain injury, caregiver burden, family stressor, household known to authorities, prior Child Protective Services report, living transition/loss of independent living, use of corporal punishment contributed to death, history of self-harm).
- Four additional victim variables were added to the system to collect additional information about the victim and fatal incidence (housing instability, child present and/or witnessed fatal incident, other significant conditions contributing to death, how injury occurred).
- Two new response options (37 - Victim was new partner of suspect's ex-partner; 38 - Victim was ex-partner of suspect's current partner) were added to the primary and secondary victim-suspect relationship variables.
- The School-Associated Violent Death (SAVD) Module and corresponding variables were added in November 2020. Data collection for the SAVD module applies to eligible deaths occurring on and after January 1, 2021.

Year 2021:

- The data file for the 2019 data year now includes data from three (3) new states (Montana, North Dakota, Wyoming) for a total of 42 states, DC, and Puerto Rico.
- Addition of the Transfer Incident feature in NVDRS. States now have the ability to transfer incidents to other states directly within the NVDRS software.
- Three additional variables were added to collect additional information on the victim (victim known to authorities, type of physical health problem, no substance[s] given as cause of death).
- Industry and occupation (I&O) text data for data years 2003-2018 were coded using the CDC's National Institute for Occupational Safety and Health (NIOSH) Industry and Occupation Computerized Coding System (NIOCCS V4) to assign the following codes: 2012 U.S. Census industry and occupation codes, 2012 North American Industry Classification System (NAICS), and 2010 Standard Occupation Classification (SOC). See *2.3.5 Occupation and Industry Variables*.

- The "Disclosed [suicide] intent to whom" variable was converted to eight (8) separate checkbox variables and one text variable (other text description). Responses from previous data years have been converted to this new format.

Year 2022:

- The data file for the 2020 data year includes data from six (6) new states (Arkansas, Idaho, Mississippi, South Dakota, Tennessee, Texas) for a total of 48 states, DC, and Puerto Rico. Texas collected data in four counties (Bexar, Dallas, Harris, and Tarrant).
- 2012 U.S. Census, 2012 NAICS, and 2010 SOC industry and occupation codes for 2019 and 2020 were added to the data file.
- The Public Safety Officer Suicide (PSOS) Module and corresponding variables were added in January 2022. Data collection for the PSOS Module applies to eligible deaths occurring on and after January 1, 2022.

Year 2023:

- The data file for the 2021 data year includes data from 48 states, DC, and Puerto Rico.
- Industry and occupation code data were updated to 2017 Census, 2017 NAICS, and 2018 SOC.
- The variable county of death was added.
- A text box was added to the web system to allow data abstractors to record information about other related incidents (e.g., serial homicides attributed to a common perpetrator or a series of suicides thought to be related).

Year 2024:

- The data file for the 2022 data year includes data from all 50 states, DC, and Puerto Rico.
- Response values for victim and suspect calculated race variables were modified to split the formerly combined Asian and Pacific Islander into separate responses for Asian and Native Hawaiian/Pacific Islander. This change also applied to the combined calculated race and ethnicity variables for victims and suspects.

1.5 NVDRS Data Access

NVDRS data are stored in an incident-based database. Descriptive data can be accessed through the Web-Based Injury Statistics Query and Reporting System (WISQARS): https://wisqars.cdc.gov/nvdrs/.

More detailed data from NVDRS is available through the NVDRS Restricted Access Database (RAD). NVDRS RAD is a de-identified, multi-year, multi-state/-territory/-jurisdiction, case-level dataset comprised of hundreds of unique variables. The dataset is available free of charge to researchers who meet specific criteria. Given that NVDRS collects information from three required sources (death certificates, C/ME reports, and LE reports) data collection takes time. For any given calendar year, all deaths that occur from January 1 to December 31 of that year have at least a 16-month period for data collection. For example, 2022 NVDRS data were closed out on May 1, 2024 and the final dataset was prepared in July, 2024. Given this timeline, NVDRS data for a calendar year of violent deaths are officially released ~18 months after the end of that calendar year (see *1.3.3 Quality Assurance*). Not all variables included in the NVDRS Coding Manual are released through RAD. Some variables are specific to optional modules (e.g., Child Fatality Review, School-Associated Violent Death), are sensitive in nature and/or have high levels of incompleteness and are not suited for release through RAD.

CDC staff facilitate the review of data access proposals and release of NVDRS RAD data for projects relating to national-level NVDRS RAD. External researchers aiming to conduct analysis on an individual state/territory/jurisdiction or a subset of states/territories/jurisdictions will be redirected to reach out to VDRS program staff for project approval and data access to state-/territory-/jurisdiction-level VDRS data.

2. Data Considerations

2.1 Variable Types in NVDRS

Binary: Binary variables have only two possible values (e.g., "yes" or "no"). There are many binary variables in NVDRS, most of which are collected using a "checkbox" format where selecting the checkbox indicates the presence of the variable. Almost all circumstance variables are binary variables (the exception being the "Other Circumstance" text field). Binary variables are assigned a value of 1 if "yes" or present, and 0 if "no" or not known to be present.

Categorical: Categorical (aka 'nominal') variables have different numbered categories, but there is no meaningful numerical order or value to the categories (e.g., death manner, sexual orientation).

Continuous: Continuous variables can take on an infinite number of possible values (e.g., age, height, weight). Please note that NVDRS uses '99', '999', etc., to indicate "unknown" values, and '88,' '888,' etc., to indicate "not applicable" values for some variables. Please review the NVDRS data dictionary for the values used to indicate "unknown" and "not applicable" for specific variables.

Free Text: There are several free text variables in NVDRS. In these fields, data abstractors include information that varies too much from case to case to have predetermined, assigned values. NVDRS free text variables include C/ME and LE narratives, gun access narratives, and a field for "other circumstance(s)."

Gateway: Gateway (aka contingency) variables are those that "lock" or "unlock" access to other variables in NVDRS. One example is the checkboxes indicating that there are circumstances from the LE report and circumstances from the C/ME report. The checkboxes must be checked before individual LE or C/ME circumstances can be entered.

Numeric Identifiers: These include a unique numeric person ID for each victim and a unique incident ID for each incident. These values have no meaning outside the NVDRS system and do not personally identify victims or suspects. The incident ID is repeated for each victim in a multiple-victim incident.

2.2 Availability and Quality of Data

Availability of Data by Year: States/territories/jurisdictions participating in NVDRS joined the system in different years as federal funding for NVDRS increased and participating jurisdictions are only included in the analytic dataset for a year if at least 50% of that jurisdiction's cases had circumstance information collected from the C/ME report or LE report (Table 1, also in Appendix B). Data users should consult the chart below and consider whether to use only consistent jurisdictions for the years of data they wish to examine. It may be important to have a stable set of states/territories/jurisdiction to examine trends (e.g., examining suicide rates over time).

However, this may be less important if the primary goal is to maximize the sample size, particularly when examining death manners or circumstances that may be less common.

Table 1. Availability of State/Territory/Jurisdiction Data for NVDRS WISQARS and RAD

VDRS Program	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Alabama																X	X	X	X	X
Alaska	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Arizona													X	X	X	X	X	X	X	X
Arkansas																		X	X	X
California															Xa	Xb	Xc	Xd	Xe	Xf
Colorado		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Connecticut													X	X	X	X	X	X	X	X
Delaware																X	X	X	X	X
District of Columbia																X	X	X	X	X
Florida																		0g	0g	Xh
Georgia		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hawaii													X	X	0g	0g	X	0g	0g	X
Idaho																		X	X	X
Illinois														Xi	Xj	Xk	Xl	X	X	X
Indiana														X	X	X	X	X	X	X
Iowa														X	X	X	X	X	X	X
Kansas													X	X	X	X	X	X	X	X
Kentucky			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Louisiana																X	X	X	X	X
Maine													X	X	X	X	X	X	X	X
Maryland	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Massachusetts	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Michigan														X	X	X	X	X	X	X
Minnesota														X	X	X	X	X	X	X
Mississippi																		X	X	X
Missouri																X	X	X	X	X
Montana																		X	X	X
Nebraska																X	X	X	X	X
Nevada																	X	X	X	X
New Hampshire													X	X	X	X	X	X	X	X
New Jersey	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
New Mexico			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
New York													X	X	X	X	0g	X	X	X

VDRS Program	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
North Carolina		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
North Dakota																	X	X	X	X
Ohio									X	X	X	X	X	X	X	X	X	X	X	X
Oklahoma		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Oregon	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Pennsylvania														X^m	X^n	X^o	X^p	X	X	X
Puerto Rico															X	X	X	X	X	X
Rhode Island		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
South Carolina	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
South Dakota																		X	X	X
Tennessee																		X	X	X
Texas																		X^q	X^r	X^s
Utah		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Vermont															X	X	X	X	X	X
Virginia	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Washington														X^t	X^u	X	X	X	X	X
West Virginia																	X	X	X	X
Wisconsin		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Wyoming																		X	X	X
TOTAL	7	13	16	16	16	16	16	16	17	17	17	18	27	32	37	41	44	50	50	52

Abbreviations NVDRS: National Violent Death Reporting System; WISQARS: Web-based Injury Statistics Query and Reporting System; RAD: Restricted Access Database; VDRS: [State/Territory/Jurisdiction] Violent Death Reporting System

Key X: Data included. X without a superscripted footnote denotes jurisdiction-wide data collection, which includes data in all counties within that jurisdiction.; 0: No data included.

California

[a]**2017: Four counties:** (Los Angeles, Riverside, San Francisco, and Santa Clara). These 4 counties represented 30.1% of California's population.

[b]**2018: Twenty-one counties:** (Amador, Butte, Fresno, Humboldt, Imperial, Kern, Kings, Lake, Los Angeles, Marin, Mono, Placer, Sacramento, San Benito, San Mateo, San Diego, San Francisco, Shasta, Siskiyou, Ventura, and Yolo). These 21 counties represented 54.0% of California's population.

[c]**2019: Thirty counties:** (Amador, Butte, Colusa, Fresno, Glenn, Humboldt, Imperial, Kern, Kings, Lassen, Lake, Los Angeles, Marin, Modoc, Mono, Orange, Placer, Sacramento, San Benito, San Francisco, San Mateo, Santa Cruz, Shasta, Siskiyou, Solano, Sonoma, Tehama, Trinity, Ventura, and Yolo). These 30 counties represented 57.0% of California's population.

[d]**2020: Thirty-five counties:** (Amador, Butte, Colusa, Contra Costa, Fresno, Glenn, Humboldt, Imperial, Kern, Kings, Lassen, Lake, Los Angeles, Marin, Mendocino, Merced, Modoc, Mono, Orange, Placer, Sacramento, San Benito, San Diego, San Francisco, San Mateo, Santa Cruz, Shasta, Siskiyou, Solano, Sonoma, Stanislaus, Tehama, Trinity, Ventura, and Yolo). These 35 counties represented 70.6% of California's population.

[e]**2021: Thirty-one counties:** (Amador, Butte, Colusa, Fresno, Glenn, Humboldt, Imperial, Kings, Lake, Lassen, Los Angeles, Mendocino, Merced, Modoc, Mono, Orange, Placer, Sacramento, San Benito, San Diego, San Francisco, San Luis Obispo, San Mateo, Santa Cruz, Shasta, Siskiyou, Solano, Sonoma, Tehama, Ventura, and Yolo). These 31 counties represented 63.8% of California's population.

[f]**2022: Thirty-two counties:** (Alpine, Butte, Colusa, Fresno, Glenn, Humboldt, Inyo, Kings, Lake, Lassen, Los Angeles, Mendocino, Merced, Modoc, Mono, Nevada, Orange, Placer, Sacramento, San Benito, San Diego, San Francisco, San Luis Obispo, San Mateo, Santa Clara, Santa Cruz, Shasta, Siskiyou, Solano, Sonoma, Tehama, and Ventura). These 32 counties represented 67.7% of California's population.

Florida, Hawaii, and New York

[g]Data for these data years for these states are excluded because the data did not meet the completeness threshold for circumstances in the National Violent Death Reporting System.

Florida

[h]**2022: Thirty-two counties:** (Alachua, Baker, Bay, Bradford, Broward, Charlotte, Columbia, DeSoto, Flagler, Gilchrist, Hamilton, Hardee, Highlands, Hillsborough, Indian River, Levy, Manatee, Martin, Miami-Dade, Okeechobee, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, Putnam, St. Johns, St. Lucie, Sarasota, Union, and Volusia). These 32 counties represented 70.4% of Florida's population.

Illinois

[i]**2016: Seventeen counties:** (Champaign, Cook, DuPage, Effingham, Kane, Kankakee, Kendall, Lake, McHenry, McLean, Madison, Peoria, St. Clair, Sangamon, Tazewell, Will, and Winnebago). These 17 counties represented 80.9% of Illinois's population.

[j]**2017: Sixteen counties:** (Cook, DuPage, Effingham, Kane, Kankakee, Kendall, Lake, McHenry, McLean, Madison, Peoria, St. Clair, Sangamon, Tazewell, Will, and Winnebago). These 16 counties represented 79.3% of Illinois's population.

[k]**2018: Twenty-eight counties:** (Adams, Boone, Champaign, Cook, DuPage, Effingham, Fulton, Kane, Kankakee, Kendall, Lake, Lasalle, Livingston, Logan, McDonough, McHenry, McLean, Macoupin, Madison, Peoria, Perry, Rock Island, St. Clair, Sangamon, Tazewell, Vermillion, Will, and Winnebago). These 28 counties represent 86.0% of Illinois's population.

[l]**2019: Forty-seven counties: (**Adams, Alexander, Bond, Boone, Brown, Bureau, Champaign, Clay, Cook, DeKalb, Douglas, DuPage, Effingham, Fayette, Fulton, Grundy, Henry, Iroquois, Jackson, Jefferson, Kane, Kankakee, Kendall, Lake, Lasalle, Livingston, Logan, McDonough, McHenry, McLean, Macoupin, Madison, Menard, Peoria, Perry, Piatt, Putnam, Rock Island, St. Clair, Sangamon, Schuyler, Stark, Tazewell, Vermilion, Wayne, Will, and Winnebago). These 47 counties represented 90.0% of Illinois's population.

Pennsylvania

[m]**2016: Twenty-eight counties:** (Adams, Allegheny, Beaver, Berks, Bucks, Cambria, Chester, Cumberland, Dauphin, Delaware, Erie, Fayette, Franklin, Lackawanna, Lancaster, Lawrence, Lebanon, Lehigh, Luzerne, Montgomery, Northampton, Perry, Philadelphia, Schuylkill, Washington, Wayne, Westmoreland, and York). These 28 counties represent 81.6% of Pennsylvania's population.

[n]**2017: Twenty-eight counties:** (Adams, Allegheny, Beaver, Berks, Bucks, Cambria, Chester, Cumberland, Dauphin, Delaware, Erie, Fayette, Franklin, Lackawanna, Lancaster, Lawrence, Lebanon, Lehigh, Luzerne, Montgomery, Northampton, Perry, Philadelphia, Schuylkill, Washington, Wayne, Westmoreland, and York). These 28 counties represent 81.7% of Pennsylvania's population.

[o]**2018: Thirty-nine counties:** (Adams, Allegheny, Armstrong, Beaver, Berks, Blair, Bradford, Bucks, Cambria, Carbon, Centre, Chester, Clarion, Clearfield, Clinton, Columbia, Crawford, Dauphin, Delaware, Fayette, Forest, Greene, Indiana, Jefferson, Lackawanna, Lancaster, Lehigh, Luzerne, Monroe, Montgomery, Montour, Northampton, Philadelphia, Schuylkill, Union, Wayne, Westmoreland, Wyoming, and York). These 39 counties represent 82.2% of Pennsylvania's population.

[p]**2019: Forty counties:** (Adams, Allegheny, Armstrong, Berks, Blair, Bradford, Bucks, Cameron, Cambria, Carbon, Centre, Chester, Clarion, Clearfield, Clinton, Crawford, Dauphin, Delaware, Erie, Fayette, Forest, Greene, Indiana, Jefferson, Lackawanna, Lancaster, Lehigh, Luzerne, Monroe, Montgomery, Northampton, Philadelphia, Schuylkill, Somerset, Sullivan, Susquehanna, Union, Westmoreland, Wyoming, and York). These 40 counties represented 83.0% of Pennsylvania's population.

Texas

[q]**2020: Four counties:** (Bexar, Dallas, Harris, and Tarrant). These four counties represented 39.3% of Texas's population.

[r]**2021: Thirteen counties:** (Bell, Bexar, Collin, Dallas, Denton, El Paso, Fort Bend, Harris, Montgomery, Nueces, Tarrant, Travis, and Williamson). These 13 counties represented 62.9% of Texas's population.

[s]**2022: Thirteen counties:** (Bell, Bexar, Collin, Denton, El Paso, Fort Bend, Dallas, Harris, Montgomery, Nueces, Tarrant, Travis, and Williamson). These 13 counties represented 63.0% of Texas's population.

Washington

[t]**2016: Fifteen counties:** (Clallam, Clark, Cowlitz, Grays Harbor, Island, King, Kitsap, Mason, Pierce, Skagit, Snohomish, Spokane, Thurston, Whatcom, and Yakima). These 15 counties represented 86.3% of Washington's population.

[u]**2017: Twenty-five counties:** (Adams, Benton, Chelan, Clallam, Clark, Cowlitz, Douglas, Franklin, Grant, Grays Harbor, Island, King, Kitsap, Kittitas, Klickitat, Mason, Okanogan, Pierce, Skagit, Snohomish, Spokane, Stevens, Thurston, Whatcom, and Yakima). These 25 counties represented 95.5% of Washington's population.

Availability of Variables: Different variables have been added to NVDRS or (in a few cases) have changed definitions at various times. Data users should refer to the data dictionary for the specific year that variables were added to or changed in NVDRS. Of note, data users may notice that although a variable is documented as having been added a certain year (e.g., 2013), the variable was endorsed for cases occurring earlier than that year (e.g., 2012). This is because the deadline for case completion is 16 months after the calendar year of death. For instance, data abstractors had until the end of April 2023 to complete case entry for 2021 data. When new variables went "live" in the software in 2013, states were still entering 2012 cases at that point in time and could endorse the new variables as soon as they were available in the system. Thus, variables added in 2013 might be endorsed for 2012 cases. This situation is not limited to only the previous year's data but could be endorsed in any earlier incident record that is updated with new information. However, in this scenario we recommend only including the data year that the variable was officially added (2013 in the prior example) and onward in analyses.

Missing Values: Some variables have high levels of missing data. NVDRS variables range in completeness, from close to 100% to less than 10%. Data users should check the completeness of the variables they intend to use in their analysis. Variables currently known to have low completeness (< 40%) include: extended firearm information (e.g., gun model, gun owner, gun stolen, firearm storage-related variables, and gun access narrative), survival time, sexual orientation, and external cause codes.

Circumstance data: Precipitating circumstances related to the violent death(s) captured by standardized coding in NVDRS (see the NVDRS Coding Manual for more details) are influenced by a number of factors: 1) the type and quality of investigation conducted by the coroner/medical examiner and law enforcement, 2) the VDRS program's ability to request and receive complete reports from these agencies, and 3) investigative procedures that vary across cities and counties as well as states/jurisdictions. Comparisons across, among, and between counties, cities, and states/jurisdictions should recognize these limitations. Most suicide deaths contain precipitating circumstance data. Homicide deaths may contain fewer precipitating circumstance data due to ongoing investigations and/or limited findings from the investigation (e.g., body found and circumstances related to death are unknown). All circumstances are coded as "Yes/Present" or "No/Not Present/Unknown." "No" and "Unknown" are grouped together because NVDRS cannot determine if the circumstance did not occur or occurred and was not discovered during the investigation by authorities.

Narrative completeness: Narratives abstracted from the C/ME and LE report are influenced by the same factors influencing coding of circumstance variables. Narratives will provide different levels of detail based on the VDRS program's ability to get complete reports, the investigative processes within the agencies, and the partnerships between the C/ME and LE agencies.

2.3 Description and Use of Key NVDRS Variables

2.3.1 Calculated Variables

Variables followed by an underscore and the letter "c" are calculated variables (e.g., *Argument_c*, *JobProblem_c*). The most common type of calculated variable combines the raw data from multiple data sources (e.g., C/ME and LE reports) to create one calculated variable. For example, the circumstance variable that captures job problems is *JobProblem_c*. *JobProblem_c* is coded 1 ("yes") if a job problem was endorsed based on either the C/ME or LE report. Examples of other calculated variables include the victim's race/ethnicity, age, and manner of death; also for incident category and whether the victim was part of a homicide/suicide incident. Circumstances in the NVDRS web-based system are grouped in these categories:

- Mental Health, Substance Abuse, and other Addiction

- Crime & Criminal Activity
- Relationship & Life Stressors
- Manner Specific Circumstances for Suicide/Undetermined Intent
- Manner Specific Circumstances for Homicide/Legal Intervention
- Manner Specific Circumstances for Unintentional Firearm
- Crisis Circumstances

2.3.2   Manner and Location of Death

Manner of Death: Although there are several variables that capture manner of death (e.g., suicide, homicide) in NVDRS, the variable recommended as the "gold standard" for analytic purposes is *AbstractorDeathManner_c*.

NVDRS contains information on the C/ME, LE, and DC assigned manner of death as well as ICD codes for the cause of death. *DeathMannerAbstractor* is the manner of death the data abstractor selects after reviewing the findings from all available sources of data (i.e., DC, C/ME report, and LE report). *AbstractorDeathManner_c* is the calculated variable, which is always equal to *DeathMannerAbstractor* unless the latter variable has a missing value. In the case of missing data for *DeathMannerAbstractor*, *AbstractorDeathManner_c* is assigned a value for manner of death based on the following priority order of the three source death manner variables: *DeathMannerCME*, *DeathMannerDC*, and *DeathMannerLE*.

Resident and Occurrent Deaths: Participating VDRS programs are required to collect data on all violent deaths occurring within their boundaries irrespective of the decedent's place of residence. This is reflected in the variable *SiteID,* which indicates the VDRS program to which the case "belongs." Based on the users' intended use of the data, it may be important to filter by the victim's residence or by the location where the injury occurred (i.e., *ResidenceState*, *ResidenceFIPS*, *InjuryState*, and *InjuryFIPS*). To calculate population-based rates, resident deaths are used. In a state/territory/jurisdiction resident death, the decedent was an official resident of the state/territory/jurisdiction at the time of injury, according to the DC (i.e., *ResidentState*). Typically, when data users are designing and evaluating prevention efforts focused on a particular community, the variables for occurrent deaths are used. For a state/territory/jurisdiction occurrent death, the initial injury must have occurred within the state/territory/jurisdiction (i.e., *InjuryState*).

2.3.3   Incident Variables

Incident Year: The variable *IncidentYear* indicates the calendar year in which the victim died. For incidents involving a single death, the incident year is the calendar year in which the victim died. If the incident involved multiple victims who died in multiple years, incident year is the first year in which any of the victims in the incident died (see the NVDRS Coding Manual for further details).

Site ID: The variable *SiteID* indicates which VDRS program has abstracted the incident. This may not coincide with both the state/territory/jurisdiction of injury and the state/territory/jurisdiction of residence because residents of one jurisdiction may be fatally injured in another. Depending on the purpose of the analyses, data users may consider restricting analysis to deaths occurring within a single or group of NVDRS states/territories/jurisdictions as indicated by victim residence or injury location.

Incident Number: The variable *IncidentNumber* is an assigned number for each incident within a year and a particular state/territory/jurisdiction. *IncidentNumber* ranges from the value of 1 and increases sequentially until the last incident for a particular state/territory/jurisdiction is entered for the calendar year. This variable is NOT a unique identifier for each incident in the dataset.

Incident ID: The variable *IncidentID* is a unique numeric identifier for each incident in the dataset.

Person ID: The variable *PersonID* is a unique numeric identifier used to identify each victim or victim/suspect across incidents in the dataset. It has no meaning outside the context of NVDRS.

Person Type: The variable *PersonType* is used to identify either a person who is a victim of violence or a person who is both a victim and a suspected perpetrator of a homicide within the same incident. Every NVDRS record, unless data are missing, must be one or the other of these person types.

PersonType = 1 is a victim only. *PersonType* = 3 is both a victim and a suspect. A victim/suspect is a victim of homicide, suicide, legal intervention, or undetermined intent, who also killed someone else in the incident.

Victim/suspects can be excluded from the analysis if their inclusion is not appropriate.

Incident Category: The variable *IncidentCategory_C* is used to capture whether the incident is single or multi-victim and the manners of death represented in the incident.

Homicide/suicide: The variable *HomicideSuicide_c* indicates whether an incident (0) did not include a homicide followed by a suicide, (1) included one homicide followed by a suicide, or (2) included a homicide followed by a suicide with at least one or more additional homicide or suicide victims.

Victim Number: The variable *VictimNumber* is used to identify each victim or victim/suspect within an incident in the dataset. *VictimNumber* starts at a value of 1 and increases sequentially until the last victim or victim/suspect in the incident is entered. Because the majority of violent incidents involve one victim, most incidents will have a *VictimNumber* = 1. In multiple-victim incidents, victim number does not follow a sequential order or prioritization of any kind.

2.3.4   Victim Variables

Victim's Age: The calculated variable *AgeYears_c* describes the victim's age in years. Zero (0) is a valid value for *AgeYears_c* as it identifies victims who are under 1 year of age. For victims whose age is not reported in years, *AgeYears_c* is the converted integer year value. For example, 21 months (i.e., 1.75 years) is converted to integer 1 year. For analyses of victims who are newborn or infant ages, where more precise data is needed, data users must use both variables *Age* and *AgeUnit*. *Age* identifies the number (e.g., 1, 2, 3) and *AgeUnit* identifies the type of unit used (e.g., weeks, months, years). It is recommended that users use the variable *AgeYears_c* unless the core research questions involve infants under 1 year of age.

Race/Ethnicity: Race and ethnicity are extremely valuable variables given the violent death inequities experienced by certain racial and ethnic groups. Researchers should take care to frame racial and ethnicity-related findings within a health equity lens. Providing appropriate contextual information (e.g., regarding historical and ongoing racism and discrimination) can help advance equity and reduce the likelihood of blaming or stigmatizing victims and their communities. See CDC's Health Equity Guiding Principles for Inclusive Communication for more information and resources on best practices.

Ethnicity is a binary variable that identifies a person as either "Hispanic or Latino" or "Not Hispanic or Latino." Persons with unknown ethnicity are assigned a value of "Unknown" for *Ethnicity*.

RaceWhite, *RaceBlack*, *RaceAsian*, *RacePacificIslander*, and *RaceAmericanIndian* variables capture groups of people of a race alone or in combination with one or more races. (For Census background on the measure of race that NVDRS follows, see About the Topic of Race [census.gov].) These race variables are not mutually exclusive and consider race without regard to ethnicity. For this set of variables, if a person's ethnicity is provided in place of their race (e.g., race is given as "Hispanic" and no other valid race value is provided), their race is marked as unspecified (*RaceUnspecified*), and ethnicity is marked as documented in the source document(s).

For example, the variable *RacePacificIslander* includes persons identified as Pacific Islander (including Native Hawaiian persons), regardless of ethnicity and whether any other races were reported. If a person is identified as Pacific Islander and White, then both the *RacePacificIslander* and *RaceWhite* variables would be endorsed. Using these variables, people of more than one race are counted multiple times, depending upon the number of race groups recorded.

The use of these race variables, as opposed to the calculated race variables, can be advantageous when:

- Analyzing data among multi-racial persons;

- Examining a specific racial group, including all persons of a specific race, for cultural, historical, and/or equity reasons;[1] and/or

- Supporting data preservation among smaller racial populations with a proportion of people of Hispanic or Latino ethnicity and/or who are multi-racial and when there are sample size and statistical power challenges when using conventional categorizations of race and ethnicity.[2]

Caution should be exercised in analyses aiming to compare racial groups using this set of race variables as these race variables create non-mutually exclusive race groups. This limits the ability to make direct comparisons (e.g., rate ratios) since multi-racial persons are counted in more than one race group.

> **Calculated variables:** *Race_c* is a calculated variable that is based on the binary responses entered by the data abstractor to 5 different race variables: White, Black or African American, Asian, Native Hawaiian or other Pacific Islander, and American Indian or Alaska Native. An unspecified or unknown race is assigned a value of "Unknown" for *Race_c*. A victim with a "yes" response to more than one race is assigned the value "Two or more races" for *Race_c*. When *Race_c* is "Two or more races," the variable *MultipleRace_c* has a value that describes the specific races.

> The calculated variable, *RaceEthnicity_c*, combines the *Race_c* and *Ethnicity* variables to capture each race category with non-Hispanic ethnicity (e.g., non-Hispanic white, non-Hispanic black) along with persons of Hispanic ethnicity who may be any race.

> (Prior to NVDRS data year 2022, "Asian and Pacific Islander" was combined into a single response for Race_c and RaceEthnicity_c. Beginning with the 2003-2022 NVDRS dataset, "Asian" and "Native Hawaiian/Pacific Islander" are recorded as separate responses for these variables.)

Education Variables: There are two variables *EducationLevel* and *EducationYears* that capture educational attainment. Some states/territories/jurisdictions have both variables, and some have one or the other. Data users may find discrepancies between these two variables (e.g., *EducationLevel* is "8th grade or less" but *EducationYears* is 12). *EducationLevel* should be prioritized over *EducationYears* because *EducationLevel* is directly collected from the death certificate and less prone to entry error. Data users are encouraged to use *EducationYears* only when *EducationLevel* is missing.

Military Status: Military status is collected from the death certificate, which asks, "Ever served in the United States Armed Forces?" and allows responses of either "yes", "no," or "unknown". If the variable is coded "yes", this response can mean several things—served in any service, at any time, served as reserve or on active duty,

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[1] Hatcher SM, Agnew-Brune C, Anderson M, et al. COVID-19 Among American Indian and Alaska Native Persons — 23 States, January 31–July 3, 2020. MMWR Morb Mortal Wkly Rep 2020;69:1166–1169. DOI: http://dx.doi.org/10.15585/mmwr.mm6934e1.

[2] Bowen A, Miller AD, Zambrano LD, Wu MJ, Oster ME, Godfred-Cat S, Belay ED, & Campbell AP. Demographic and Clinical Factors Associated With Death Among Persons <21 Years Old With Multisystem Inflammatory Syndrome in Children—United States, February 2020–March 2021, *Open Forum Infectious Diseases*, Volume 8, Issue 8, August 2021, ofab388, https://doi.org/10.1093/ofid/ofab388.

for any length of service, combat or non-combat, and it includes all types of military discharges, etc. It also includes persons currently on active duty. This variable includes veterans but does not mean that the person is a current veteran (meaning they are no longer in military service) as the Veteran's Administration defines it.

2.3.5 Occupation and Industry Information

Industry and occupation variables followed by an underscore and the letters "DC" (e.g., *Industry_DC*, *UsualOccupation_DC*) are variables abstracted from death certificates. *OccupationCurrentText* is not from the death certificate but is based on information found in other source documents.

In 2020, NVDRS industry and occupation text data for all available data years at the time was coded using the CDC's National Institute for Occupational Safety and Health (NIOSH) Industry and Occupation Computerized Coding System (NIOCCS V4) to assign the following codes: 2012 U.S. Census Industry and Occupation codes, 2012 North American Industry Classification System (NAICS), and 2010 Standard Occupation Classification (SOC).

NIOCCS was updated in 2023 to assign the following codes: to 2017 U.S. Census Industry and Occupation, 2017 North American Industry Classification System (NAICS), and 2018 Standard Occupation Classification (SOC). MST staff used the "crosswalking" function in NIOCCS to convert all NVDRS data with the earlier year codes to the latest years.

The NAICS and SOC are standard classifications used throughout the federal government and regularly updated to account for changes in the structure of the economy and in the needs of data users. The NAICS (https://www.census.gov/naics/) was developed by the United States, Canada, and Mexico to provide comparable industry statistics across the three countries. It is a comprehensive system covering the entire field of economic activities. NAICS is a hierarchical system; all industries within NAICS fall under 20 sectors, and full NAICS codes range from 2-6 digits depending on the level of detail (Sector: 2-digit code; Subsector: 3-digit code; Industry Group: 4-digit code; NAICS Industry: 5-digit code; National Industry: 6-digit code).

- 2017 North American Industry Classification System (NAICS) Sector (*NAICS2017_Sector*)
- 2017 North American Industry Classification System (NAICS) Code (*NAICS2017*)

The SOC (https://www.bls.gov/soc/) is the U.S. federal government's own regularly updated system for classifying occupations, which are grouped according to the nature of the work performed. This system provides a mechanism for cross-referencing and aggregating occupation-related data collected by social and economic statistical reporting programs. Occupations in the SOC are classified at four levels of aggregation: 23 major groups, 97 minor groups, 461 broad occupations, and 840 detailed occupations.

- 2018 Standard Occupation Classification (SOC): Major Group (*SOC2018_MajorGroup*)
- 2018 Standard Occupation Classification (SOC): Minor Group (*SOC2018_MinorGroup*)
- 2018 Standard Occupation Classification (SOC): Broad Occupation (*SOC2018_BroadOccupation*)
- 2018 Standard Occupation Classification (SOC): Detailed Occupation (*SOC2018_DetailedOccupation*)
- Both systems (NAICS and SOC) are adapted by the Census Bureau to create the Census codes and categories https://www.census.gov/topics/employment/industry-occupation/guidance/code-lists.htmlhttps://www.census.gov/topics/employment/industry-occupation/guidance/code-lists.html2017 U.S. Bureau of Census industry codes (*Census2018_Industry*)
- 2017 U.S. Bureau of Census occupation codes (*Census2018_Occupation*)

Note: The 2017 Census industry and occupation variables in NVDRS have 2018 in the variable names because CDC NIOSH modifies the Census codes slightly to include retired persons, military personnel, people unable to work, and other individuals not in the workforce.

2.3.6   Circumstance Variables

Known Circumstances: When analyzing circumstance data, users should first filter cases by the circumstances known variable (i.e., where *CircumstancesKnown_c* = 1). *CircumstancesKnown_c* is a calculated variable that is assigned a value of 1 if *CME_CircumstancesKnown* and/or *LE_CircumstancesKnown* is checked. These two variables are gateway variables that enable the abstractor to check specific circumstances coming from C/ME and LE source documents.

Reasons why circumstances may be unknown vary. For example, circumstances may be unavailable because the investigating agencies chose not to share information, or the investigating agency was unable to determine the circumstances surrounding the death. Consequently, counting all cases in an analysis (including those with unknown circumstances) will result in underreporting of circumstance percentages as the denominator will include deaths with unknown circumstances. The majority of suicides have known circumstances, but a smaller proportion of homicides have known circumstances due to factors such as a lack of witnesses, lack of evidence, or both.

Circumstance variables are endorsed as a checkbox in the NVDRS Web-based System only if the circumstance is present (1=yes). If a circumstance is not endorsed by the VDRS program data abstractor, this does not mean that the circumstance was definitively not present. It means that VDRS program data abstractors cannot make assumptions about circumstances beyond those indicated in the required source documents (i.e., LE report or C/ME report). Therefore, results and findings should be evaluated cautiously. For example, data users could appropriately interpret findings on suicide victims with financial problems like this: "Over 50% of suicides related to financial problems were also precipitated by job problems". However, users cannot appropriately interpret the findings like this: "In around half of suicides precipitated by financial problems, victims were not experiencing job problems."

Manner Specific Circumstances: In addition to the circumstances that can be endorsed for all manners of death, there are some circumstances that can only be endorsed for specific manners of death in NVDRS (e.g., homicide and legal intervention deaths, suicide and deaths of undetermined intent, and unintentional firearm deaths). For example, "History of suicidal thoughts or plans" can only be endorsed for suicide and deaths of undetermined intent, and "Jealousy" can only be endorsed for homicides and deaths by legal intervention. There are several circumstances that only apply to certain manners of death in NVDRS: for further information, see NVDRS Coding Manual.

Crisis Variables: There are two primary NVDRS variables that identify cases where a victim was experiencing a crisis: *AnyCrisis_c* and *CrisisOther_c*. Data users should use *AnyCrisis_c* as their general analytic variable to capture victims experiencing a crisis within two weeks of death.

In 2013, new crisis variables were added to allow data abstractors to indicate when a crisis was associated with a specific standard NVDRS circumstance. For example, if a victim was facing criminal legal problems within two weeks of the incident, both *RecentCriminalLegalProblem_c* and *CrisisCriminal_c* are endorsed. *AnyCrisis_c* is a calculated variable that indicates that at least one crisis variable was endorsed for a particular victim. Data users interested in specific types of crises should analyze the crisis variables associated with specific circumstances.

CrisisOther_c is coded only for other types of crises not associated with a standard NVDRS circumstance. For example, deportation is not a standard NVDRS variable. If a victim was despondent because he was soon to be deported and died by suicide within two weeks of the date he was set to leave the country, *CrisisOther_c* could be coded to indicate that the victim was experiencing a crisis related to a circumstance not captured by a standard NVDRS variable. *AnyCrisis_c* also includes cases where *CrisisOther_c* is indicated as the type of crisis.

Prior to the 2013 data year, there were no specific crisis types in the system. *AnyCrisis_c* is still the best summary crisis variable to use across all data years.

2.3.7   Suspect Variables

Most incidents within NVDRS will include only one victim and one suspect, if any (i.e., a suicide incident does not have a suspect). In these cases, the relationship between the victim and suspect is fairly straightforward. The variable, *PrimaryVicSuspRltnshipSuspect1*, denotes the primary relationship (e.g., spouse, child, co-worker) of the victim to the first suspect (with a possibility of up to 5 suspects indicated for a victim).

Use the following sentence as a guide for selecting the appropriate description of the relationship: "The victim is the _____ of the suspect". For example, when a parent kills a child, the relationship is "Child" not "Parent." ("The victim is the child of the suspect."). Some relationships might not be captured by this sentence (e.g., if the other person is known to the victim or if the victim was a law enforcement officer killed in the line of duty). In addition to the victim's relationship to the suspect, NVDRS collects a variety of other information on suspects, including demographics (age, sex, race/ethnicity), history of abuse of the victim by the suspect, evidence of mental illness, alcohol or substance use, prior contact with LE, etc.

2.3.8   Toxicology Variables

NVDRS provides toxicology data on up to 30 substances per victim. When analyzing toxicology data from the C/ME variables, data users should do one of the following: 1) subset cases by the "tested" variable, or 2) subset cases by both "tested" and "result" variables.

For example, there are two variables related to cocaine use: *CocaineTested* and *CocaineResult*. If *CocaineTested* = 2 ("Not Tested"), the case should be excluded from analyses as counting such a case will result in underreporting of percentages that are positive; the denominator will include decedents that were not tested and thus, will be too large. For this reason, data users should subset the cases where *CocaineTested* = 1 ("Tested"). Similarly, depending on the research question, users may also want to subset cases where *CocaineTested* = 1 ("Tested") and *CocaineResult* = 1 ("Present").

3. Analytic Considerations

3.1   Value Labels

To access the SAS formats that contain value labels, run the code below, inserting the data directory path where the formats catalog file is stored. In the code, the library name "FmtCat" can be any valid SAS name, but it must match the same library name enclosed within parentheses in the "fmtsearch=" option. The formats catalog file name must appear *after* the period. (The *.sas7bcat extension is not needed.) The "compress=yes*" system option compresses character data and should make your analyses run faster.

```
libname FmtCat "Put your data directory path here";
options compress=yes fmtsearch=(FmtCat.nvdrs_formats_2003_2022);
```

For NVDRS RAD users, data is offered in STATA, SPSS, and R (csv) in addition to SAS. RAD users must select only one file format. All file formats except the R (csv) are stored in numeric response options for all non-free text fields (see Data Dictionary) but include formatting that allows users to see the value labels (as shown above). The R (csv) file is stored as the labeled value but can be linked to the underlying numeric response option using the NVDRS_formats_2003_2022 excel sheet provided at data dissemination.

3.2   Descriptive Statistics

Counts, percentages, measures of central tendency (mean and median), and rates (expressed per 100,000 persons) are some commonly used descriptive statistics for analyzing NVDRS data. NVDRS is not a survey, and no sampling methodology is applied. It involves the data collection of all known violent deaths occurring in participating jurisdictions. It is not necessary to report confidence intervals for counts, percentages, and rates.

For NVDRS, the report of counts and rates should be limited to instances where death counts are sufficiently large. Small numbers of events can vary considerably over time, resulting in unstable measurement, and could also pose concerns with respect to confidentiality and identifiable data. Thus, annual counts and rates must be suppressed for cities or counties of fewer than 100,000 people. Table cells showing or derived from fewer than ten deaths must be suppressed, but cells with zero may be shown. Rate calculations require a count of at least 20 events.

It is <u>not</u> appropriate to calculate rates for circumstance variables, because circumstances are not known for all victims. Also, beware of variables with missing/unknown values, as missing data can produce biased rate results.

3.3   Age-Adjusted Rates

Age-adjusted rates are a way to make fairer comparisons between groups with different age distributions. For example, age-adjusted rates are useful when comparing death rates from different populations or in the same population over time.

Age-adjusted rates are calculated by weighting the age-specific rates for a given year by the age distribution of the Year 2000 U.S. Standard Population. The weighted age-specific rates are then summed to produce the adjusted rate for all ages combined.

3.4   Analyze Substance Classes That Caused Death

NVDRS also contains information about whether specific substances (e.g., morphine) led to death, and which general substance class is associated with that specific substance (e.g., opioid). Data users will need to create a new variable to combine this information to reflect general substance classes leading to overdose/poisoning deaths in the system. This type of calculated variable can help users answer questions such as, "How many suicides are due to opioid overdose?" or "What are the most common general substance classes (e.g., alcohol, antidepressants, opioids) leading to overdose deaths in the NVDRS?"

Using an example in which data users calculate a new variable called *Antidepressant_COD* (refers to "Substance Class Antidepressant was Cause of Death"), the logic goes as follows:

If *SubstanceCausedDeath1* = 1 ("Yes") and *SubstanceClass1* = "Antidepressant" then *Antidepressant_COD1* = 1 ("Yes").

This logic communicates to the statistical software that if the first substance (of 30 substances available) indicated for the victim caused the death, and if the substance's class is "Antidepressant," then the new variable indicates that a substance from antidepressant class caused the death.

Data users will then repeat the above step for all variables from *SubstanceCausedDeath2/SubstanceClass2* up to *SubstanceCausedDeath30/SubstanceClass30* for the victim. Then if any one or more of the 30 combinations of

substance caused death =1 and substance class = "Antidepressant' are true the final calculated variable *Antidepressant_COD* = 1("Yes").

Here is an example of SAS code:

```
if
  (substancecauseddeath1=1 and SubstanceClass1='Antidepressant') or
  (substancecauseddeath2=1 and SubstanceClass2='Antidepressant') or
  (substancecauseddeath3=1 and SubstanceClass3='Antidepressant') or
                              etc.
  (substancecauseddeath29=1 and SubstanceClass29='Antidepressant') or
  (substancecauseddeath30=1 and SubstanceClass30='Antidepressant')

then Antidepressant_COD=1;              else Antidepressant_COD=0;
```

More efficient coding is available using SAS macro language, where the macro name *sub* can be any valid SAS name of 32 characters or less:

```
%macro sub;

  %do i=1 %to 29;

    if (substancecauseddeath&i=1 and SubstanceClass&i='Antidepressant') or

  %end;

%mend sub;

%sub

    (substancecauseddeath30=1 and SubstanceClass30='Antidepressant') then
Antidepressant_COD=1;

else Antidepressant_COD=0;
```

Please note that more than one substance from the same class may have caused death. Use the "or" operation to make sure that you are capturing the unique class causing death.

3.5   Group Difference Testing

NVDRS only collects violent death data, which does not allow for a general population control group. Therefore, it is NOT appropriate to examine the relationship between risk factors (i.e., NVDRS precipitating circumstances) and violent deaths. This differs from typical surveys, which usually record variables and later employ statistical modeling to relate risk factors to health outcomes.

However, data users can compare groups within NVDRS victims, most commonly through group differences testing. Table 2 summarizes types of group differences testing methods based on the type of variable used.

Table 2. Group differences testing methods commonly used to analyze NVDRS data by variable type

Group Difference Test	Variable Type	Description	Example
Chi-square test of independence	Categorical	Tests if there is a significant relationship between two categorical variables	Were there differences in suicides by whether decedents ever served in the military?
Fisher's exact test	Categorical	Tests two categorical variables when sample sizes are small (cell expected counts <5)	
Two sample t test	Continuous	Tests whether two population means are significantly different from each other	Were observed differences in age (continuous) between financial-related and non-financial related suicides significant?
Analysis of variance (ANOVA) test	Continuous	Tests group means across multiple levels of categorical variables	Were observed differences in mean number of bullets in firearm deaths different by race?
Kruskal-Wallis test	Continuous	Similar to ANOVA, but used when the continuous variable is non-normally distributed	Were observed differences in mean blood alcohol level across age groups different?
Cochran-Mantel-Haenszel test	Ordinal	Tests group differences on an ordinal variable	Was education (3 ordinal levels) different by marital status?

3.6 Logistic Regression

Multivariable logistic regression analysis is another way to compare groups on categorical variables, while adjusting for demographics and other variables. When performing logistic regression analyses, data users should consider whether demographic differences should be adjusted for or not, whether they provide useful information in the study and think carefully about identifying the reference group for the adjusted odds ratios. When using circumstance variables as the dependent variable in the analyses, users should consider filtering for cases where circumstances are known and pay attention to the year the variable was added to the system.

3.7 Qualitative Analysis

NVDRS narratives provide a description of the events of the fatal incident and may include information to identify special types of cases or to code variables not traditionally captured by NVDRS. For example, NVDRS narratives have been used to identify cancer-related suicides and chronic pain-related suicides, and to code for length of prison sentence in an analysis of suicides among incarcerated persons.

Before conducting qualitative analysis, data users should determine whether existing NVDRS variables provide the information they need to answer their research questions. Qualitative analysis is very labor-intensive, so data users should make sure it is worth their time and effort. Whenever possible, data users are encouraged to use standard NVDRS variables for analysis rather than attempting to code new variables based on narrative review. This is because researchers attempting to code new variables based on the narratives alone are limited by the information in the narratives whereas NVDRS data abstractors have direct access to full DCs, C/ME reports, and LE reports, resulting in a more complete picture of the fatal incident.

If data users choose to conduct a content analysis of the narratives, here are the basic steps:

Determine the NVDRS text fields that will be used for qualitative analysis. Narratives are the most commonly used variables (i.e., *NarrativeCME*, *NarrativeLE*), but other text fields also can be used (e.g., "other circumstance(s)"). A text or word search is a technique used to scan different NVDRS variables for a list of search terms and to narrow down the dataset to cases identified by those terms. Data users may consider using statistical software (i.e., SPSS, SAS) to make this process easier.

Narrow the study sample using existing variables. For example, in the cancer-related suicides study, to identify suicide victims in NVDRS who were reported to have had cancer, the dataset was first restricted to suicides. Because cancer is not a standard variable collected in NVDRS, the cases were then narrowed down by the 'Contributing physical health problem' circumstance variable before employing text-searches on the narratives. 'Contributing physical health problem' is a standard NVDRS variable that indicates that any physical health condition, including cancer, was determined to be a contributing factor. By narrowing down the cases in this way, researchers for this study were able to save time by conducting text-searches on narratives for a subset of cases rather than the entire dataset.

Refine search terms using an iterative process. Data users may consider piloting some terms and reviewing a subset of cases to determine the percentage of true cases versus false positives. Data users may define search terms based on knowledge of the subject, findings from previous literature, review of cases/variables in NVDRS, and/or brainstorming with collaborators. Text searches should account for variations and likely misspellings of terms. It is recommended that different variations of search terms and/or the smallest unique fragment of the word (i.e., stem) be used. For example, searching for "constab" as the stem for the word, "constable," would capture misspellings of the word (e.g., constabel).

Review narratives or other variables that were used to conduct the content analyses. Once data users have performed their search, they are encouraged to review narratives or the other variables they have used to ensure they are getting the information needed. When using this approach for case finding or coding new variables, data users should develop a case definition and coding guidance to ensure that variables are coded consistently.

Evaluate measures of agreement between coders. Once data users have coded a few cases, they should consider "double coding" (having two raters code the same variables for the same cases and then compare their level of agreement) a subset of cases to check inter-rater reliability. Cohen's Kappa is a commonly used statistical measure to examine the agreement between two raters. It is considered a more robust measure than a simple percent agreement calculation since Kappa accounts for possibility of the agreement occurring by chance. Discrepancies between coders should be discussed and coding guidance should be clarified when needed. Data users should continue double coding a subset of cases until they have reached a high level of reliability (typically defined as .80 or higher).

To ensure anonymity, the NVDRS team has compiled the following basic guidelines regarding use of narratives to illustrate case examples in presentations and papers (see *4. Confidentiality Considerations)*.

3.8   Data Linkages

3.8.1   Personally Identifiable Information

Personal identifiers (e.g., victim names, initials, date of birth) are **NOT** entered into the NVDRS dataset. Individual VDRS programs maintain identifiers at the local level to track document requests to different

agencies, or for linkage to additional data sources that may be available to the program (e.g., Child Fatality Review, Supplemental Homicide Report, Emergency Department records). These identifiers are not available to external researchers.

Probabilistic matching has been successfully used to link NVDRS with other data sources. For external researchers, proposals that include any potential linking of NVDRS data with another data source that contains personally identifiable information require a signed copy of approval from the home institution/organization's Institutional Review Board (IRB).

3.8.2   Geographic variables

Understanding data on social determinants of health, such as income, educational level, and employment, can help focus efforts to prevent violence and violent deaths. NVDRS RAD currently has the following sub-state geographic variables available to external researchers for linkage to other data sources such as the US Census Bureau's American Community Survey.

- County of injury occurrence (InjuryFIPS)
- City of injury occurrence (InjuryCityState)
- ZIP code of injury occurrence (InjuryZip)
- County of residence (ResidenceFIPS)
- City of residence (ResidenceCityState)
- ZIP code of residence (ResidenceZip)
- County in which death occurred (DeathFIPS)

3.9   Limitations

Below is a brief summary of some system and data limitations of NVDRS:

- The system is not nationally representative because data are not yet available for all counties in all 50 states. Moreover, participating states/territories/jurisdictions have varied over time.
- Circumstances are not known or available for all cases, which may be due to sparse or preliminary reporting in the source documents.
- Toxicology testing is not performed on all decedents and testing practices may vary by states/territories/jurisdictions.
- Mental and physical health variables are often based on reports from people who knew the victim, rather than health care professionals or official medical records.
- Some variables have high levels of missing data. (See Nguyen et al., 2024, for more information: https://www.cdc.gov/mmwr/volumes/73/ss/ss7305a1.htm.)

4. Confidentiality Considerations

4.1   Confidentiality and Potentially Sensitive Information

The following data user requirements for safeguarding confidentiality are outlined in the Data Sharing Agreement that each NVDRS data user must sign in order to access the NVDRS Restricted Access Database (line-level data). NVDRS data will be used solely for statistical analyses related to the approved project. No attempt

will be made to identify specific individuals, households, or institutions. Data lists at the individual level will not be published or distributed.

In the event of inadvertent discovery of the identity of any person during the course of the proposed project, the user will: 1) notify the CDC NVDRS program staff which will then route the notification to the CDC National Center for Injury Prevention and Control (NCIPC) Associate Director for Science; 2) safeguard or destroy the identifying information as directed by the CDC; and 3) make no use of knowledge of the discovery. The identifying information must not be disclosed to any other individual or party.

The inadvertent disclosure of potentially identifying information is to be avoided by using the following guidelines for the release of statistics derived from the requested dataset.

For any data release format:

1. Annual counts and rates must be suppressed for cities or counties of fewer than 100,000 people.
2. Cells showing or derived from fewer than 10 deaths must be suppressed, but "zero" cells may be shown. Cell "suppression" will take one of two approaches: 1) combining row or column categories so as to eliminate the small cells, or 2) suppressing the small cell, another cell in the same row, another cell in the same column, and a fourth cell at the intersection of the row and column containing the second and third suppressed cells. Suppression of the second and third additional cells is necessary to prevent derivation of the small cell by subtraction from the row or column totals. Suppression of the fourth cell is necessary to prevent derivation of the second or third cells by subtraction. Beyond these specific guidelines, it must not otherwise be possible to derive identifying information by subtraction or other calculation from a table, or combination of tables, in any release format.
3. Rates are not to be computed for cells containing fewer than 20 deaths (or cases) or with a coefficient of variation that is equal to or greater than 23%, based on the assumptions of a Poisson distribution (due to rate instability).
4. The disclosed data should never permit identification when used in combination with other known data.

4.2 Reporting from NVDRS Narrative Data

Researchers who use NVDRS data should protect the identity of decedents at all times by ensuring anonymity. The process of anonymization is complex and ensuring that names and specific locations are not included in the data (as is standard practice in NVDRS) are only the first steps in a more nuanced process around managing identifying details. Researchers need to maintain the value and integrity of the data while ensuring that individual identities are protected.[3] To ensure anonymity, the NVDRS team has compiled some basic guidelines regarding use of narratives to illustrate case examples in presentations and papers:

- The primary uses of narratives should be to validate cases or code for patterns outside the scope of standard NVDRS variables. The coded data should not provide any information that could be used to identify individuals.
- When providing any qualitative summaries, anonymity should be ensured with all potentially identifiable information removed and any text that may indirectly identify an individual removed so all involved individuals cannot be identified.[4] This may seem obvious; however, a researcher may inadvertently describe a combination of unique details without realizing they are identifying individuals by doing so (e.g., the 17-year-old victim had just broken up with her boyfriend, a local high school

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[3] Saunders B, Kitzinger J, Kitzinger C. Anonymising interview data: challenges and compromise in practice. Qual Res. 2015 Oct;15(5):616-632. https://journals.sagepub.com/doi/10.1177/1468794114550439.

[4] Hennink M., Hutter I., Bailey A. Qualitative Research Methods. 1st ed. London: Sage Publications Ltd; 2011.

basketball player, via social media). Even though there are no names of the victim or place in this example (i.e., school or town), the text itself may identify the individual if this was a high-profile case well-known to a community or by individuals (e.g., family members, close friends, perpetrators) very familiar with the decedent.

- Do not directly "quote" narratives – that is, do not transcribe text from a narrative into a publication or presentation.
- Use a composite or fictional narrative rather than an actual narrative (see below for example). This can be done by taking several narratives and rearranging or modifying the details so that the example borrows details from different narratives and is therefore not reflective of a particular incident. We also recommend including a footnote in your presentation or publication that states/territories/jurisdictions that these narratives are fictional or composites.

Example of how composite and fictional[5] narratives can be constructed:

Here is a fictional example of a composite narrative drawn from three narratives with a common theme, omitting detailed information and further protecting against identification by using information from each:

Theme: Homicides of young people who were intervening in intimate partner violence-related incidents

Original narrative 1: The victim (V), a 13-year-old male, was killed during an argument between his mother and stepfather. The suspect, a 35-year-old male and stepfather to the victim, got into an argument with his wife over some burned food and began to push her. He then picked up a knife from the counter and attempted to strike her with it while threatening to kill her. The V stepped in between the two of them and was fatally stabbed in the chest.

Original narrative 2: The 16-year-old female victim was killed when she attempted to call the police during an argument between her mother and her mother's ex-boyfriend. The V's mother had recently begun dating another man and the ex-boyfriend (the suspect in this incident) became very jealous and had been calling and threatening and harassing her. The suspect was drinking throughout the day and showed up at the home the victim shared with her mother unannounced and forced his way into the home by breaking down the door while yelling at and threatening the V's mother. He was armed with a handgun and fired on the victim and her mother (who was nonfatally injured), when the V called the police.

Original narrative 3: A 15-year-old male was killed when his father (the suspect) began brandishing a firearm and threatening his mother. The V attempted to grab the firearm and was shot by the suspect.

→ *Composite fictional narrative:*

Victim 1 (teenage male) was killed during a domestic incident between his mother and his mother's ex-boyfriend (suspect). The suspect had been drinking and got into an argument with the victim's mother. The argument became physical, and the suspect pulled out a firearm and began threatening the victim's mother; he then shot and wounded her. Victim 1 stepped in between them and was shot in the process.

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[5] Adapted from Smith SG, Fowler KA, Niolon PH. Intimate Partner Homicide and Corollary Victims in 16 States: National Violent Death Reporting System, 2003–2009. Am J Public Health. 2014; 104(3):461-6. https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2013.301582.

5. Publishing NVDRS Data

5.1   General Publishing Guidelines

When publishing reports or other products using NVDRS data, the NVDRS team has suggested language and statements for use in publications.

Suggested text for use when describing the NVDRS: Consistent description of the NVDRS is critical to building a common understanding of NVDRS in the field. Text from the NVDRS webpage is suggested as a source to use when writing descriptions of the system and may be used verbatim citing the following web page: https://www.cdc.gov/nvdrs/about/.

Alternatively, you can use text from recent Morbidity and Mortality Weekly Reports (MMWR) on NVDRS: https://www.cdc.gov/nvdrs/resources/index.html.

Acknowledgements: Contributors to this report included participating Violent Death Reporting System programs based in US states, territories, and jurisdictions; participating state/territory/jurisdiction agencies, including state/territory/jurisdiction health departments, vital registrars' offices, coroners'/medical examiners' offices, crime laboratories, and local and state/territory/jurisdiction law enforcement agencies. NVDRS acknowledges its partner organizations: the Safe States Alliance, American Public Health Association, International Association of Chiefs of Police, National Association of Medical Examiners, National Association for Public Health Statistics and Information Systems, National Violence Prevention Network, Council of State and Territorial Epidemiologists, and Association of State and Territorial Health Officials; federal agencies, including the U.S. Department of Justice, Bureau of Justice Statistics; other stakeholders, researchers, and foundations, including Harvard University Injury Control Research Center and the Joyce Foundation; the National Institute for Occupational Safety and Health and National Center for Health Statistics, CDC.

Suggested disclaimer: *This research uses data from NVDRS, a surveillance system designed by the Centers for Disease Control and Prevention's (CDC) National Center for Injury Prevention and Control. The findings are based, in part, on the contributions of the funded states/territories/jurisdictions that collected violent death data and the contributions of their partners, including personnel from law enforcement, vital records, medical examiners/coroners, and crime laboratories. The analyses, results, and conclusions presented here represent those of the authors and not necessarily reflect those of CDC. Persons interested in obtaining data files from NVDRS should contact CDC's National Center for Injury Prevention and Control, 4770 Buford Hwy, NE, MS 106-10, Atlanta, GA 30341-3717, (800) CDC-INFO (232-4636).*

Suggested citation for the NVDRS Coding Manual: Centers for Disease Control and Prevention. National Violent Death Reporting System (NVDRS) Web Coding Manual [Online] 2022 National Center for Injury Prevention and Control, Centers for Disease Control and Prevention (producer). Available from URL: https://www.cdc.gov/nvdrs/resources/nvdrscodingmanual.pdf.

5.2   Notification of Publications

The lead author and/or primary investigator must notify CDC in advance about when and where the publication of a report or other public disclosure using NVDRS data will appear. In addition, the author(s)/investigator(s) agree to provide CDC a courtesy copy of any manuscript or other public disclosure document in advance of its

publication or release.

6. Conclusion

This document summarizes guidance for use and analysis of NVDRS data. Note that the statistical guidance in this document is not absolute and comprehensive. Depending on subject matter and statistical efficiency, more advanced statistical methods are welcomed. This guidance will be modified and updated on a periodic basis as significant changes occur in the NVDRS data and as additional statistical techniques are introduced.

The NVDRS bibliography (https://www.cdc.gov/nvdrs/resources/index.html) contains published articles, studies, and reports using NVDRS data and may be helpful for researchers to review before they start their analyses.

Any questions pertaining to the use of NVDRS data should be directed to:

Mortality Surveillance Team, NVDRS
Surveillance Branch
Division of Violence Prevention
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention
4770 Buford Highway, S106-10
Atlanta, GA 30341-3717
nvdrs-rad@cdc.gov

Appendix A. NVDRS Variables List

Variables Collected in NVDRS Web System

Note: This list does not include variables from optional modules, which are not currently available for distribution to external researchers.

Data ID and Incident Summary
Incident ID
Year in which the incident occurred
Site ID (state)
Incident number
Incident narrative: CME
Incident narrative: LE
Overall description of whether the incident involved a single or multiple victims and the manner of all the victims' deaths
Homicide/suicide incident
Total number of deaths in the incident
Number of victims in the incident
Number of victim/suspects in the incident
Number of persons who were non-fatally shot in the incident
Related NVDRS incident

Victim Demographics
Person ID (victim)
Victim number
Whether the person was a victim of violence or both a victim and suspect
Sex
Race
Ethnicity
Age
Height
Weight
Marital status
Relationship status at the time of incident
Sex of the victim's partner in relation to the victim's sex
Sexual orientation
Pregnant or recently pregnant at the time of death
Ever served in the U.S. Armed Forces
Residential country
Residential U.S. state or territory
Residential county
Residential city
Residential zip code
Census tract of residence
Census block group of residence
Birth state, territory, or country
Homeless status
Acute or chronic instability in housing situation
Usual business/industry

CDC slightly modified version of 2017 U.S. Census Bureau industry codes
2017 North American Industry Classification System (NAICS): Sector
2017 North American Industry Classification System (NAICS) code
Usual occupation
Current occupation
CDC slightly modified version of 2017 U.S. Census Bureau occupation codes
2018 Standard Occupation Classification (SOC)
Educational level

Injury and Death
Manner of death
State of injury
County of injury
City of injury
ZIP code of injury
Census tract of injury
Census block group of injury
Type of place at which the injury occurred
Date of injury
Time of injury
Injured at work
Injured at victim's residence
Emergency medical services were present at injury scene
Child(ren) present and/or witnessed fatal incident
Victim was in public custody when injury occurred
Death occurred within a month of the decedent being released from or admitted to an institutional setting
Victim suspected of alcohol use preceding the incident
Time of interval between injury and death
Victim was seen in emergency department following incident
Victim admitted to inpatient care
1st external cause of injury code by hospital *(ICD-9- & ICD-10 CM)*
2nd external cause of injury code by hospital *(ICD-9- & ICD-10-CM)*
Underlying cause of death ICD-10 code
ICD 10 4th character
ICD 10 5th character
Immediate cause of death
Cause leading to immediate cause
Next antecedent cause of death
Underlying cause of death
Other significant conditions contributing to death

How injury occurred
Place of death
Date pronounced dead
Date of death
State of death
County of death
Autopsy performed
Multiple conditions on death certificate 1-10

Wound Location Variables
Number of wounds
Number of bullets that hit victim
Wound to the head
Wound to the face
Wound to the neck
Wound to the upper extremity
Wound to the spine
Wound to the thorax
Wound to the abdomen
Wound to the lower extremity

Toxicology Variables
No toxicology report
No substance given as cause of death
Date specimens were collected
Time specimens were collected
Substance name
Description of substance
Substance caused death
Person medication prescribed for
Tested for alcohol
Alcohol test results
Blood alcohol concentration results
Tested for carbon monoxide
Results for carbon monoxide
Carbon monoxide source
Tested for amphetamines
Results for amphetamines
Tested for anticonvulsants
Results for anticonvulsants
Tested for antidepressants
Results for antidepressants
Tested for antipsychotics
Results for antipsychotics
Tested for barbiturates
Results for barbiturates
Tested for benzodiazepines
Results for benzodiazepines
Tested for cocaine
Results for cocaine
Tested for marijuana
Results for marijuana
Tested for muscle relaxant
Results for muscle relaxant

Tested for opiates
Results for opiates
Tested for other substance
Results for other substance
Comments

Suspect Variables
Age of suspect
Sex of suspect
Race of suspect
Ethnicity of suspect
Relationship of victim to suspect
Suspect was also a victim
Suspect attempted suicide after incident
Suspect was caregiver
History of abuse of victim
Suspect was mentally ill
Suspect had developmental disability
Suspected alcohol use by suspect
Suspected substance use by suspect
Suspect had contact with law enforcement
Suspect recently released from institution

Circumstance Variables by Manners of Death
Indicates Crisis Information Collected

All Manners of Death
Current depressed mood
Current diagnosed mental health problem*
Type of mental illness diagnosed
Current treatment for mental illness/substance abuse
Ever treated for mental illness/substance abuse
Non-adherence to treatment for mental illness/substance abuse
Alcohol problem*
Other substance problem*
Other addiction*
Terrorist attack
Family relationship problem*
Family stressor
Other relationship problem*
Abuse or neglect led to death
History of abuse as a child
Perpetrator of violence in the past month
Victim of violence in the past month
Prior Child Protective Services report on the child victim's household
Substance abuse in child victim's household
Living transition/loss of independent living
Household known to local authorities
Victim known to authorities
Non-adherence to mental health/substance abuse treatment
Physical fight (mutual between 2 people)
Argument

Timing of the most recent argument
Precipitated by another crime
Nature of other crime
Crime in progress
Disaster exposure*
Circumstances known
Other circumstance
Crisis in past 2 weeks

Homicide/Legal Intervention Deaths
Intimate partner violence related
Stalking*
Prostitution*
Gang related
Justifiable self-defense/law enforcement
Victim was a police officer on duty
Victim was a bystander
Random violence
Victim was intervener assisting crime victim
Victim used a weapon
Mercy killing
Hate crime
Jealousy (lover's triangle)*
Brawl
Walk-by assault *(homicide only)*
Drive-by shooting *(homicide only)*
Drug involvement
Caregiver use of corporal punishment contributed to the death of the child victim *(homicide only)*

Suicide & Undetermined Deaths
History of suicidal thoughts or plans
History of suicide attempts
History of traumatic brain injury
Recent disclosed suicidal thoughts or intent
Disclosed suicidal intent to whom
Person left a suicide note
Contributing criminal legal problem*
Civil legal problems*
Physical health problem*
Type of physical problem
Job problem*
Financial problem*
School problem*

Eviction/loss of home*
Suicide of a friend or family member*
Other death of friend or family*
Anniversary of traumatic event
Intimate partner problem*
Caregiver burden
History of non-suicidal self-injury/self-harm

Unintentional Firearm Deaths
Hunting
Target shooting
Self-defensive shooting
Celebratory firing
Loading/unloading gun
Cleaning gun
Showing gun to others
Playing with gun
Other context of injury
Thought safety was engaged
Thought unloaded, magazine disengaged
Thought gun was unloaded, other
Unintentionally pulled trigger
Bullet ricochet
Gun defect or malfunction
Fired while holstering/un-holstering
Dropped gun
Fired while operating safety/lock
Gun mistaken for toy
Other mechanism of injury

Weapons
Weapon type
Additional weapon information
Firearm type
Firearm gauge
Firearm caliber
Firearm make
Firearm model
Gun stored loaded
Gun stored locked
Gun owner
Firearm stolen
Gun access narrative
Total number of NVDRS weapons for this victim

Appendix B. Availability of State/Territory/Jurisdiction Data for NVDRS WISQARS and RAD

VDRS Program	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Alabama																X	X	X	X	X
Alaska	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Arizona													X	X	X	X	X	X	X	X
Arkansas																		X	X	X
California															X[a]	X[b]	X[c]	X[d]	X[e]	X[f]
Colorado		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Connecticut													X	X	X	X	X	X	X	X
Delaware																X	X	X	X	X
District of Columbia																X	X	X	X	X
Florida																		0[g]	0[g]	X[h]
Georgia		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hawaii													X	X	0[g]	0[g]	X	0[g]	0[g]	X
Idaho																		X	X	X
Illinois														X[i]	X[j]	X[k]	X[l]	X	X	X
Indiana														X	X	X	X	X	X	X
Iowa														X	X	X	X	X	X	X
Kansas													X	X	X	X	X	X	X	X
Kentucky			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Louisiana																X	X	X	X	X
Maine													X	X	X	X	X	X	X	X
Maryland	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Massachusetts	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Michigan														X	X	X	X	X	X	X
Minnesota														X	X	X	X	X	X	X
Mississippi																		X	X	X
Missouri																X	X	X	X	X
Montana																		X	X	X
Nebraska																	X	X	X	X
Nevada															X	X	X	X	X	X

VDRS Program	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
New Hampshire													X	X	X	X	X	X	X	X
New Jersey	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
New Mexico			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
New York													X	X	X	X	0^g	X	X	X
North Carolina		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
North Dakota																	X	X	X	X
Ohio								X	X	X	X	X	X	X	X	X	X	X	X	X
Oklahoma		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Oregon	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Pennsylvania														X^m	X^n	X^o	X^p	X	X	X
Puerto Rico														X	X	X	X	X	X	X
Rhode Island		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
South Carolina	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
South Dakota																		X	X	X
Tennessee																		X	X	X
Texas																		X^q	X^r	X^s
Utah		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Vermont														X	X	X	X	X	X	X
Virginia	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Washington														X^t	X^u	X	X	X	X	X
West Virginia														X	X	X	X	X	X	X
Wisconsin		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Wyoming																	X	X	X	X
TOTAL	7	13	16	16	16	16	16	16	17	17	17	18	27	32	37	41	44	50	50	52

Abbreviations NVDRS: National Violent Death Reporting System; WISQARS: Web-based Injury Statistics Query and Reporting System; RAD: Restricted Access Database; VDRS: [State/Territory/Jurisdiction] Violent Death Reporting System

Key X: Data included. X without a superscripted footnote denotes jurisdiction-wide data collection, which includes data in all counties within that jurisdiction.; 0: No data included.

California

[a]**2017: Four counties:** (Los Angeles, Riverside, San Francisco, and Santa Clara). These 4 counties represented 30.1% of California's population.

[b]**2018: Twenty-one counties:** (Amador, Butte, Fresno, Humboldt, Imperial, Kern, Kings, Lake, Los Angeles, Marin, Mono, Placer, Sacramento, San Benito, San Mateo, San Diego, San Francisco, Shasta, Siskiyou, Ventura, and Yolo). These 21 counties represented 54.0% of California's population.

[c]**2019: Thirty counties:** (Amador, Butte, Colusa, Fresno, Glenn, Humboldt, Imperial, Kern, Kings, Lassen, Lake, Los Angeles, Marin, Modoc, Mono, Orange, Placer, Sacramento, San Benito, San Francisco, San Mateo, Santa Cruz, Shasta, Siskiyou, Solano, Sonoma, Tehama, Trinity, Ventura, and Yolo). These 30 counties represented 57.0% of California's population.

ᵈ**2020: Thirty-five counties:** (Amador, Butte, Colusa, Contra Costa, Fresno, Glenn, Humboldt, Imperial, Kern, Kings, Lassen, Lake, Los Angeles, Marin, Mendocino, Merced, Modoc, Mono, Orange, Placer, Sacramento, San Benito, San Diego, San Francisco, San Mateo, Santa Cruz, Shasta, Siskiyou, Solano, Sonoma, Stanislaus, Tehama, Trinity, Ventura, and Yolo). These 35 counties represented 70.6% of California's population.

ᵉ**2021: Thirty-one counties:** (Amador, Butte, Colusa, Fresno, Glenn, Humboldt, Imperial, Kings, Lake, Lassen, Los Angeles, Mendocino, Merced, Modoc, Mono, Orange, Placer, Sacramento, San Benito, San Diego, San Francisco, San Luis Obispo, San Mateo, Santa Cruz, Shasta, Siskiyou, Solano, Sonoma, Tehama, Ventura, and Yolo). These 31 counties represented 63.8% of California's population.

ᶠ**2022: Thirty-two counties:** (Alpine, Butte, Colusa, Fresno, Glenn, Humboldt, Inyo, Kings, Lake, Lassen, Los Angeles, Mendocino, Merced, Modoc, Mono, Nevada, Orange, Placer, Sacramento, San Benito, San Diego, San Francisco, San Luis Obispo, San Mateo, Santa Clara, Santa Cruz, Shasta, Siskiyou, Solano, Sonoma, Tehama, and Ventura). These 32 counties represented 67.7% of California's population.

Florida, Hawaii, and New York

ᵍData for these data years for these states are excluded because the data did not meet the completeness threshold for circumstances in the National Violent Death Reporting System.

Florida

ʰ**2022: Thirty-two counties:** (Alachua, Baker, Bay, Bradford, Broward, Charlotte, Columbia, DeSoto, Flagler, Gilchrist, Hamilton, Hardee, Highlands, Hillsborough, Indian River, Levy, Manatee, Martin, Miami-Dade, Okeechobee, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, Putnam, St. Johns, St. Lucie, Sarasota, Union, and Volusia). These 32 counties represented 70.4% of Florida's population.

Illinois

ⁱ**2016: Seventeen counties:** (Champaign, Cook, DuPage, Effingham, Kane, Kankakee, Kendall, Lake, McHenry, McLean, Madison, Peoria, St. Clair, Sangamon, Tazewell, Will, and Winnebago). These 17 counties represented 80.9% of Illinois's population.

ʲ**2017: Sixteen counties:** (Cook, DuPage, Effingham, Kane, Kankakee, Kendall, Lake, McHenry, McLean, Madison, Peoria, St. Clair, Sangamon, Tazewell, Will, and Winnebago). These 16 counties represented 79.3% of Illinois's population.

ᵏ**2018: Twenty-eight counties:** (Adams, Boone, Champaign, Cook, DuPage, Effingham, Fulton, Kane, Kankakee, Kendall, Lake, Lasalle, Livingston, Logan, McDonough, McHenry, McLean, Macoupin, Madison, Peoria, Perry, Rock Island, St. Clair, Sangamon, Tazewell, Vermillion, Will, and Winnebago). These 28 counties represent 86.0% of Illinois's population.

ˡ**2019: Forty-seven counties: (**Adams, Alexander, Bond, Boone, Brown, Bureau, Champaign, Clay, Cook, DeKalb, Douglas, DuPage, Effingham, Fayette, Fulton, Grundy, Henry, Iroquois, Jackson, Jefferson, Kane, Kankakee, Kendall, Lake, Lasalle, Livingston, Logan, McDonough, McHenry, McLean, Macoupin, Madison, Menard, Peoria, Perry, Piatt, Putnam, Rock Island, St. Clair, Sangamon, Schuyler, Stark, Tazewell, Vermilion, Wayne, Will, and Winnebago). These 47 counties represented 90.0% of Illinois's population.

Pennsylvania

ᵐ**2016: Twenty-eight counties:** (Adams, Allegheny, Beaver, Berks, Bucks, Cambria, Chester, Cumberland, Dauphin, Delaware, Erie, Fayette, Franklin, Lackawanna, Lancaster, Lawrence, Lebanon, Lehigh, Luzerne, Montgomery, Northampton, Perry, Philadelphia, Schuylkill, Washington, Wayne, Westmoreland, and York). These 28 counties represent 81.6% of Pennsylvania's population.

ⁿ**2017: Twenty-eight counties:** (Adams, Allegheny, Beaver, Berks, Bucks, Cambria, Chester, Cumberland, Dauphin, Delaware, Erie, Fayette, Franklin, Lackawanna, Lancaster, Lawrence, Lebanon, Lehigh, Luzerne, Montgomery, Northampton, Perry, Philadelphia, Schuylkill, Washington, Wayne, Westmoreland, and York). These 28 counties represent 81.7% of Pennsylvania's population.

ᵒ**2018: Thirty-nine counties:** (Adams, Allegheny, Armstrong, Beaver, Berks, Blair, Bradford, Bucks, Cambria, Carbon, Centre, Chester, Clarion, Clearfield, Clinton, Columbia, Crawford, Dauphin, Delaware, Fayette, Forest, Greene, Indiana, Jefferson, Lackawanna, Lancaster, Lehigh, Luzerne, Monroe, Montgomery, Montour, Northampton, Philadelphia, Schuylkill, Union, Wayne, Westmoreland, Wyoming, and York). These 39 counties represent 82.2% of Pennsylvania's population.

ᵖ**2019: Forty counties:** (Adams, Allegheny, Armstrong, Berks, Blair, Bradford, Bucks, Cameron, Cambria, Carbon, Centre, Chester, Clarion, Clearfield, Clinton, Crawford, Dauphin, Delaware, Erie, Fayette, Forest, Greene, Indiana, Jefferson, Lackawanna, Lancaster, Lehigh, Luzerne, Monroe, Montgomery, Northampton, Philadelphia, Schuylkill, Somerset, Sullivan, Susquehanna, Union, Westmoreland, Wyoming, and York). These 40 counties represented 83.0% of Pennsylvania's population.

Texas

ᑫ**2020: Four counties:** (Bexar, Dallas, Harris, and Tarrant). These four counties represented 39.3% of Texas's population.

ʳ**2021: Thirteen counties:** (Bell, Bexar, Collin, Dallas, Denton, El Paso, Fort Bend, Harris, Montgomery, Nueces, Tarrant, Travis, and Williamson). These 13 counties represented 62.9% of Texas's population.

ˢ**2021: Thirteen counties:** (Bell, Bexar, Collin, Denton, El Paso, Fort Bend, Dallas, Harris, Montgomery, Nueces, Tarrant, Travis, and Williamson). These 13 counties represented 63.0% of Texas's population.

Washington

ᵗ**2016: Fifteen counties:** (Clallam, Clark, Cowlitz, Grays Harbor, Island, King, Kitsap, Mason, Pierce, Skagit, Snohomish, Spokane, Thurston, Whatcom, and Yakima). These 15 counties represented 86.3% of Washington's population.

ᵘ**2017: Twenty-five counties:** (Adams, Benton, Chelan, Clallam, Clark, Cowlitz, Douglas, Franklin, Grant, Grays Harbor, Island, King, Kitsap, Kittitas, Klickitat, Mason, Okanogan, Pierce, Skagit, Snohomish, Spokane, Stevens, Thurston, Whatcom, and Yakima). These 25 counties represented 95.5% of Washington's population.