2024 Add Health Wave V Documentation

Contextual Despair

Report prepared by

Lauren Gaydosh

Tse-Chuan Yang

Iliya Gutin

Brian Frizzelle

UNC CAROLINA POPULATION CENTER

CAROLINA POPULATION CENTER | CAROLINA SQUARE - SUITE 210 | 123 WEST FRANKLIN STREET | CHAPEL HILL, NC 27516

Add Health is supported by grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations.

https://doi.org/10.17615/eq6d-fs60

Acknowledgments

Add Health is funded by grant P01 HD31921 (Harris) from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Work on the contextual data linkage was supported by grants to Lauren Gaydosh, Tse-Chuan Yang, and Iliya Gutin (P30AG066614, P2CHD042849, P30AG024832) from Center on Aging and Population Sciences and the Population Research Center at the University of Texas at Austin and the Sealy Center on Aging at the University of Texas Medical Branch. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Information on how to obtain the Add Health data files is available on the Add Health website (http://www.cpc.unc.edu/addhealth).

Citation

Citations of this Add Health User Guide should use the following format:

Gaydosh L., Yang, T.C., Gutin, I., Frizzelle, B. Add Health Wave V Documentation: Contextual Despair. 2024, Carolina Population Center, University of North Carolina at Chapel Hill. https://doi.org/10.17615/eq6d-fs60

Introduction

This document provides a summary of contextual variables at the tract, county, and state level that may be relevant to operationalizing different dimensions of "despair" in Add Health respondents' environment, per the "deaths of despair" hypothesis advanced by Case and Deaton (2015; 2020).

Most measures are specific to Wave V data collection, though a number of measures span multi-wave periods (e.g., the number of months between respondents' interview date and a policy/law being enacted). Below, we present each measure based on the contextual level at which it is available (i.e., tract, county, or state), further categorizing each measure based on the dimensions of individuals' context that it reflects and the corresponding data source. Along with the variable name, we provide a brief description of the measure and/or any additional notes that researchers should be aware of in using them for analyses. Citations are provided when appropriate.

Wave V Measures

1) Sociodemographic and Segregation Context [description, variable list]
2) Proximity to and Concentration of Facilities/Businesses Relevant to Substance Use and Access to Firearms [description, variable list]
3) Walkability [description, variable list]
4) Indicators of Poor Health/Health Behaviors and Availability of Health Care [description, variable list]
5) Opioid Dispensing [description, variable list]
6) Social Capital [description, variable list]
7) Comprehensive Set of State Policies and Laws Regulating:
   a) Alcohol Use [description, variable list]
   b) Access to Firearms [description, variable list]

Multi-Wave Measures

8) Cause-Specific Mortality Rates [description, variable list]
9) State Policies on Drugs and Firearms [description, variable list]

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Data Structure and Form

The data file (**w5ctxdsp**) contains a total of 266 variables. The first variable is the respondent identifier (AID), by which these contextual data can be merged with other Add Health data files. The remaining variables include measures across nine domains. A list of all variables can be found in the Data Dictionary section, broken down by domain.

Source Description

1. Sociodemographic and Segregation Measures

Data on individuals' sociodemographic contexts come from the American Community Survey (ACS) 5-Year (2014-2018). The ACS is an annual demographic survey collected by the Census Bureau intended to supplement and provide additional information beyond the decennial census. ACS data are available at geographic areas as small as the block level; however, due to small sample sizes and to ensure stability of estimates, 5-year averaged estimates are typically used in tract- and county-level analyses. As noted below, a number of these measures are currently available in the Add Health Wave V contextual data file, but we include them again here as they are likely to be of interest to researchers examining other contextual attributes included in this ancillary study.

Data on the racial/ethnic composition of and segregation within counties also come from the American Community Survey 5-Year (2014-2018). Segregation refers to the separation between two or more social groups (Massey and Denton 1988) across the subunits (e.g., tract) that consist of a major unit (e.g., county). It comprises 5 dimensions that reflect different spatial patterns: evenness, exposure, concentration, centralization, and clustering. We consider two groups: non-Hispanic White and non-Hispanic non-White. Each dimension can be measured with different indices (Iceland et al. 2002). Duncan's dissimilarity index captures the evenness dimension and ranges between 0 and 1. Higher values indicate higher levels of segregation. Hoover's delta index is a measure of concentration and it assess the proportion of non-Hispanic non-White members living in subunits with above average density of non-Hispanic non-White members. It ranges from 0 to 1 and higher values suggest higher segregation. The absolute centralization index calculates the distribution of non-Hispanic non-White members around the center of a main area. It varies between -1 and 1. Positive values indicate a clustering around the center, whereas negative values indicate spread in outlying areas. The isolation index (exposure dimension) gauges the extent to which non-Hispanic non-White members are exposed only to one another. Higher values indicate higher levels of segregation. The relative clustering index (clustering dimension) compares the average distance among non-Hispanic non-White members to the average distance among non-Hispanic White members. Positive values indicate more clustering among minorities (i.e., non-Hispanic non-White). In addition to these indices, the local indicator of spatial autocorrelation (LISA) is applied to the proportion of non-Hispanic non-White population in US tracts, providing a LISA index for each tract. Positive LISA values/indices suggest that the proportion of non-Hispanic non-White population for a given tract is similar to the average proportion of non-Hispanic non-White population from the neighboring tracts. In other words, this implies a given tract is, indeed, clustered with neighboring tracts. By contrast, negative values indicate the proportion of non-Hispanic non-White population for a given tract is not

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

similar to the average value from the neighboring tracts. Thus, one might consider this tract to be a spatial outlier, per the assumption that clustering is more common than dissimilarity (Anselin 1995; Anselin et al. 2022).

Each LISA value is tested to see whether it is significantly different from 0, based on a permutation test. This derived variable is from GeoDA.

2. Proximity to and Concentration of Facilities/Businesses Relevant to Substance Use and Access to Firearms

Data on respondent-, county- or tract-level proximity to and the concentration of facilities and businesses relevant to substance use behaviors and access to firearms come from multiple data sources. Both behavioral health treatment facilities and the medication-assisted treatment programs were from the Substance Abuse and Mental Health Services Administration (SAMHSA) website (2023). Stores with a federal firearms license are obtained from the Federal Firearms Listings website maintained by the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF 2023). Data on alcohol outlets come from the Dun & Bradstreet Hoover company (2021) and various state authorities in charge of alcoholic beverage control (as of 2021). The addresses of these facilities were first geocoded and then projected with the "USA Contiguous Albers Equal Area Conic USGS" projection. The general process for calculating the density variables is as follows: (a) use spatial join to get the total counts of facilities in a county or tract; (b) calculate the area of county/tract (square mile) and obtain total population (2014-2018 ACS); (c) calculate the area density by dividing the total counts by area; and (d) calculate the population density by dividing the total counts by total population and then multiplying by 1000. For the population-weighted nearest distance, the process is as follows: (a) use the population counts at the block group level (2014-2018 ACS) to obtain the population-weighted mean center for counties/tracts; (b) obtain the coordinates of the population-weighted mean center; and (c) use the "Near" function in ArcToolbox to calculate the distance to the nearest facility. The respondent-level variables were derived by calculating the driving distance between the Wave V respondent locations and each of the facilities or businesses. For these measures, the substance abuse facilities and mental health facilities were treated separately. The county- and tract-level spatial data management processes were implemented in ArcMap 10.6.1. The respondent-level network analyses were implemented in ArcGIS Pro 2.9.

3. Walkability

The National Walkability Index is a weighted score provided by the Environmental Protection Agency based on multiple measures of the built environment in an area affecting individuals' probability of walking as a mode of transportation. More detail on the derivation of the index can be found in the methodology and user guide: https://www.epa.gov/sites/default/files/2021-06/documents/national_walkability_index_methodology_and_user_guide_june2021.pdf.

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

4. Indicators of Poor Health/Health Behaviors and Availability of Health Care

Data on indicators of poor health, the prevalence of health behaviors, and the availability of health care come from the 2020 County Health Rankings & Roadmaps (CHR&R). CHR&R is a program of the University of Wisconsin Population Health Institute, funded by the Robert Wood Johnson Foundation. The research team at CHR&R pools data from multiple national datasets and surveys to multiple dimensions of health – as well as health-relevant social and economic correlates – at the county level for all 50 states. Due to lag in data collection and reporting, the 2020 rankings are based on 2014-2018 data.

5. Opioid Dispensing and Medicare Beneficiary Health

Data on opioid dispensing and select measures of Medicare beneficiary health come from the "Mapping Medicare Disparities by Population" website maintained by the Centers for Medicare & Medicaid Services (CMS 2023) and CDC's US County Opioid Dispensing Rate Map (CDC 2020). All variables are based on 2016 data.

6. Social Capital Index

Data on the social capital index for 2014 were constructed using the methodology from Rupasingha et al. (2006), with access provided by the Northeast Regional Center for Rural Development at Pennsylvania State University. As detailed by Rupasingha et al. (2006), this index combines data on county-level measures of (1) different types of associations (e.g., religious organizations, civic and social associations, business associations, political organizations, etc.), (2) voter turnout, (3) Census response rate, and (4) non-profit organizations to derive a factor score based on a principal component analysis of the above four factors, accounting for population size. This index is commonly used as a proxy indicator of the level of "social capital" in a given US county.

7. State Policies and Laws Regulating Alcohol Use and Access to Firearms

Alcohol Policy Scale

These data come from Blanchette et al. (2020) who derived a state-specific Alcohol Policy Scale (APS) for 2018 based on "based on 29 policies, after weighting each present policy by its efficacy and degree of implementation" (see Blanchette et al. [2020] for more detail on derivation)." The scale is standardized to have a hypothetical range of 0-100.

Alcohol Policy Information System

These data come from the Alcohol Policy Information System (APIS), which is a searchable database of state-specific policies provided by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). APIS is intended to serve as a comprehensive and up-to-date resource for researchers interested in understanding the effects of alcohol and cannabis-related policies in the United States. Specifically, APIS

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

provides information on alcohol-related public policies at the State levels across 10 categories, including 41 specific policy topics. APIS data are "based on legal research conducted by trained attorneys in consultation with public health researchers." We include data on specific policies below, noting if the policy was in place as of January 1st, 2016 (or, in the case of excise taxes, the amount levied as of January 1st, 2016). Generally, we find little to no variation in policies during the 2016-2019 window corresponding with Add Health Wave V data collection; thus, for the sake of parsimony, only 2016 data are reported.

Gifford State Gun Law Scorecard

Data on state gun law "scores" refer to 2016 and come from the Giffords Law Center to Prevent Gun Violence. Legal experts at the Giffords Law Center to Prevent Gun Violence track and analyze gun legislation in all 50 states, assigning laws and policies point values based on their respective strengths or weaknesses. States are then ranked and given letter grades. Please note there are no data on the District of Columbia.

State Firearm Laws

Data on state firearm laws come from the State Firearm Laws Database, headed by Michael Siegel at the Boston University School of Public Health, with funding from the Robert Wood Johnson Foundation and the National Institute of Justice. As detailed in Siegel et al. (2017), the State Firearm Laws Database is compiled by "[u]sing Thomson Reuters Westlaw data to access historical state statutes and session laws" which are then coded to "[indicate] the presence or absence of each of 133 provisions of firearm laws in each state" over time. The included provisions span "14 aspects of state policies, including regulation of the process by which firearm transfers take place, ammunition, firearm possession, firearm storage, firearm trafficking, and liability of firearm manufacturers." We include data on specific policies below, noting if the policy was in place as of 2016 (or, in the case of the number of total laws, how many were in place as of 2016). Generally, we find little to no variation in laws during the 2016-2019 window corresponding with Add Health Wave V data collection; thus, for the sake of parsimony, only 2016 data are reported. Please note there are no data on the District of Columbia.

8. Cause-Specific Mortality Rates

Data on cause-specific mortality rates come from the National Center for Health Statistics (NCHS) Multiple-Cause of Death, Detailed Mortality for All Counties (2000-2020). Data were originally obtained through a restricted-use agreement with NCHS and process of calculating the cause-specific mortality rates is as follows: (a) calculating the total number of deaths for each cause of death by age groups, (b) combining the death counts with population age structure data by age groups, (c) calculating the crude mortality rates, and (d) calculating age-adjusted 5-year average mortality rates with the 2000 population age structure. These data are merged to the county of respondent's residence at Waves III-V. Only those variables with a time period including or preceding the interview years of the Wave were merged on. Specifically, only the 2001-2005 period variables were merged on to Wave III. The variables for 2001-2005 and 2006-2010 were merged on to Wave IV. And all four 5-year periods were merged on to Wave V.

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

We also include measures of the age-adjusted 5-year average proportion of suicides attributable to firearms (i.e., firearm suicides divided by total suicides), which researchers commonly use as a proxy for household gun ownership rates (see Kang and Rasic [2023] for more details on the validity and use of this proxy measure).

9. State Policies on Drugs and Firearms

These measures are merged to Waves I-V of Add Health based on the state of residence. For each policy, we indicate whether the policy is in place in the respondent's state of residence, and if yes, calculate the number of months between when the policy was implemented and the date of the respondent's relevant wave interview. Some variables in the data contain negative values, indicating the number of months *after* the interview that the policy was implemented, up through December 2019. For laws that were not yet implemented anywhere at the time of the survey wave, the variable is excluded.

Opioid-Related Policies

Data on opioid-related policy implementation is derived from Lee et al. (2021), who compiled a data set on 6 opioid-related policies intended to (1) control the supply of prescription opioids and (2) reduce harms and barriers to medical assistance for overdose. Key policies addressing these issues include prescription drug monitoring program (PDMP) access, mandatory PDMPs, pain clinic laws, prescription limit laws, naloxone access laws, and Good Samaritan laws, as described below.

Opioid-Relevant Prescribing Policies

Data on opioid-relevant prescribing policy implementation is derived from Sohn et al. (2023), whose study examines the effectiveness of state policies mandating naloxone co-prescribing with the intent to prevent fatal opioid overdoses. The authors emphasize that the timing of these co-prescribing mandates often differs from the timing of laws/policies authorizing pharmacists to dispense naloxone directly to patients without individual prescriptions, so these are included as well. They also note that marijuana availability may be relevant to understanding the effects prescribing policies via "substitution effects," so information on cannabis dispensaries is also included.

Marijuana Laws

Data on marijuana laws come from the Marijuana Policy Project, an advocacy organization promoting marijuana legalization across U.S. states. As part of their efforts, the Marijuana Policy Project also collects and tracks state-level marijuana use policies, included below.

Prescription Drug Abuse Policy System

Data on drug-related criminal justice laws and policies come from the Prescription Drug Abuse Policy System (PDAPS) administered by the Center for Public Health Law Research at the Temple University Beasley School of Law. PDAPS is funded by the National Institute on Drug Abuse to track key state laws related to prescription drug abuse. Many of the laws tracked by PDAPS are captured by other measures

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

included in this contextual database (e.g., Lee et al. [2021]); consequently, we include additional measures on criminal penalties and detainment associated with substance use.

Firearms Waiting Period Laws

Additional data on firearms waiting period laws come from the RAND Corporation's State Firearm Laws Database, developed as part of its Gun Policy in America initiative. As detailed by Cherney et al. (2018), the objective was "to produce a data set that would be useful to those interested in understanding the effects of several classes of laws over time." Researchers used a two-stage approach to develop the data set. First, they "relied on secondary sources to collect laws that others had identified and classified." Second, they "systematically searched for and reviewed all laws identified in the first stage, as well as laws omitted in the first stage that corresponded to one of the classes of laws we wished to identify." This database tracks changing laws over time, wherein policy/law changes that lead to more/less restrictive firearm environments are noted. Based on an additional RAND report on the types of laws most closely related to suicide mortality among adults (RAND 2023), we selected the following laws on waiting periods below.

Variable Naming Conventions

The first character of the variable name indicates the geographic scale.

- **S** - state-based
- **C** - county-based
- **T** - Census tract-based
- **M** or **N** - respondent-based

If the second character is a number, that indicates that the variable was merged on at multiple waves and the number indicates the wave. If the second character is a letter, then the variable is for Wave V only.

The respondent-based variables were constructed using geographic information systems. Those measures are relative to the respondents' residential locations in each wave.

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Data Dictionary

The tables below contain the algorithm for constructed variables, where appropriate. If a table does not include an *Algorithm* column, it will contain a brief text description of the method used if the variables were constructed. If it contains neither, then the variables were merged on as-is from the source data.

Sociodemographic and Segregation Measures

County-Level Variables

Name	Description	Algorithm
CLESSHGH	Proportion of population age 25+ without a high school diploma*	B12001_002 / B12001_001
CFHFH	Proportion of female headed family households (female headed HH/total HH)	A10008_006 / A10008_001
CUNEMP	Proportion of civilian population age 16+ currently unemployed*	A17005_003 / A17005_001
CPOV	Proportion of impoverished individuals (based on 100% of federal poverty line)*	Σ(A13004_00*i*) / A13004_001 *i=2,3,4*
CLOGINC	Logged median household income*	log(A14006_001)
CDIVORCE	Proportion of divorced individuals among age 15+ population*	A11001_006 / A11001_001
CGINI	Income Gini based on household income distribution	A14028_001
CSINGHH	Proportion of single-person households	A10066_002 / A10066_001
CDRIALON	Proportion of individuals driving to work alone among those working ages 16+	A09005_009 / A09005_001
CRENTER	Proportion of renter-occupied housing units	A10060_003 / A10060_001
COWNER	Proportion of owner-occupied housing units*	1 - (A10060_003 / A10060_001)
CNATDEP	Proportion of population in nature-dependent industry occupations (i.e., farming, fishing, mining, forestry, etc.) among those working ages 16+*	A17004_002 / A17004_001
CMANUFAC	Proportion of population in manufacturing industries among those working ages 16+*	A17004_004 / A17004_001
CWHTECOL	Proportion of population in white-collar occupations (i.e., professional and managerial positions) among those working ages 16+*	Σ(A17004_0*i*) / A17004_001 *i=08,09,10,11*
CDISCNT	Proportion of disconnected youth ages 16-19 (i.e., proportion not enrolled in school and either unemployed or not in labor force)	Σ(B14005_0*i*) / A14005_001 *i=10,11,14,15,24,25,28,29*

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Name	Description	Algorithm
CLANISO	Proportion of linguistically-isolated population, ages 5+*	Σ(B16004_0*i*) / A16004_001 *i=07,08,12,13,17,18,22,23,29,30, 34,35, 39,40,44,45,51,52,56,57, 61,62,66,67*
CDISS	Duncan's dissimilarity index (evenness dimension)	See Iceland et al (2002)
CDISAD	Derived socioeconomic disadvantage score based on factor analysis of CLESSHGH, CFHFH, CUNEMP, CLOGINC, and CPOV	Principal-component factor analysis
CISOINDX	Derived social isolation index based on the average standardized scores of CDISCNT, CLANISO, CDRIALON, and CSINGHH	Average standardized score of CDISCNT, CLANISO, CDRIALON, and CSINGHH
CDELTA	Hoover's delta index (concentration dimension)	See Iceland et al (2002)
CACE	Absolute centralization index (centralization dimension)	See Iceland et al (2002)
CXPX	Isolation index (exposure dimension)	See Iceland et al (2002)
CRCL	Relative clustering index (clustering dimension)	See Iceland et al (2002)

***Note:** This measure is also available in the Add Health Wave V contextual data file with a different variable name.

Tract-Level Variables

Name	Description	Algorithm
TLESSHGH	Proportion of population age 25+ without a high school diploma*	B12001_002 / B12001_001
TFHFH	Proportion of female headed family households (female headed HH/total HH)	A10008_006 / A10008_001
TUNEMP	Proportion of civilian population age 16+ currently unemployed*	A17005_003 / A17005_001
TPOV	Proportion of impoverished individuals (based on 100% of federal poverty line)*	Σ(A13004_00*i*) / A13004_001 *i=2,3,4*
TLOGINC	Logged median household income*	log(A14006_001)
TDIVORCE	Proportion of divorced individuals among age 15+ population*	A11001_006 / A11001_001
TGINI	Income Gini based on household income distribution	A14028_001
TSINGHH	Proportion of single-person households	A10066_002 / A10066_001
TDRIALON	Proportion of individuals driving to work alone among those working ages 16+	A09005_009 / A09005_001

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Name	Description	Algorithm
TRENTER	Proportion of renter-occupied housing units	A10060_003 / A10060_001
TOWNER	Proportion of owner-occupied housing units*	1 - (A10060_003 / A10060_001)
TNATDEP	Proportion of population in nature-dependent industry occupations (i.e., farming, fishing, mining, forestry, etc.) among those working ages 16+*	A17004_002 / A17004_001
TMANUFAC	Proportion of population in manufacturing industries among those working ages 16+*	A17004_004 / A17004_001
TWHTECOL	Proportion of population in white-collar occupations (i.e., professional and managerial positions) among those working ages 16+*	Σ(A17004_0*i*) / A17004_001 *i=08,09,10,11*
TDISCNT	Proportion of disconnected youth ages 16-19 (i.e., proportion not enrolled in school and either unemployed or not in labor force)	Σ(B14005_0*i*) / A14005_001 *i=10,11,14,15,24,25,28,29*
TLANISO	Proportion of linguistically-isolated population, ages 5+*	Σ(B16004_0*i*) / A16004_001 *i=07,08,12,13,17,18,22,23,29,30, 34,35, 39,40,44,45,51,52,56,57, 61,62,66,67*
TDISAD	Derived socioeconomic disadvantage score based on factor analysis of TLESSHGH, TFHFH, TUNEMP, TLOGINC, and TPOV	Principal-component factor analysis
TISOINDX	Derived social isolation index based on the average standardized scores of TDISCNT, TLANISO, TDRIALON, and TSINGHH	Average standardized score of TDISCNT, TLANISO, TDRIALON, and TSINGHH
TLISAP	P-value of local indicator of spatial autocorrelation (LISA) for the proportion of non-Hispanic non-white population	Local Indicators of Spatial Autocorrelation (LISA) statistic
TLISA1	Original LISA index for each tract	Local Indicators of Spatial Autocorrelation (LISA) statistic
TLISA2	LISA index where non-significant (p>0.05) lisa1 is coded 0	Local Indicators of Spatial Autocorrelation (LISA) statistic

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Proximity to and Concentration of Facilities/Businesses Relevant to Substance Use and Access to Firearms

See the source description for an explanation of the construction of the variables in this section.

Name	Geography	Description
CDISTBHT	County	Nearest population-weighted distance (in miles) to a behavior health treatment (BHT) facility
CDISTFFL	County	Nearest population-weighted distance (in miles) to a store with federal firearms license (FFL store)
CDISTMAT	County	Nearest population-weighted distance (in miles) to a medication-assisted treatment (MAT) program/facility
CDISTALC	County	Nearest population-weighted distance (in miles) to an alcohol (ALC) outlet
CBHTCTS	County	Count of BHT facilities in a county
CFFLCTS	County	Count of FFL facilities in a county
CMATCTS	County	Count of MAT facilities in a county
CALCCTS	County	Count of ALC outlets in a county
CADENBHT	County	Area density of BHTs (per square mile)
CADENFFL	County	Area density of FFLs (per square mile)
CADENMAT	County	Area density of MATs (per square mile)
CADENALC	County	Area density of ALCs (per square mile)
CPDENBHT	County	Population density of BHTs (per 1,000 persons)
CPDENFFL	County	Population density of FFLs (per 1,000 persons)
CPDENMAT	County	Population density of MATs (per 1,000 persons)
CPDENALC	County	Population density of ALCs (per 1,000 persons)
TDISTBHT	Tract	Nearest population-weighted distance (in miles) io a behavior health treatment (BHT) facility
TDISTFFL	Tract	Nearest population-weighted distance (in miles) to a store with federal firearms license (FFL store)
TDISTMAT	Tract	Nearest population-weighted distance (in miles) to a medication-assisted treatment (MAT) program/facility
TDISTALC	Tract	Nearest population-weighted distance (in miles) to an alcohol (ALC) outlet
TBHTCTS	Tract	Count of BHT facilities in a tract
TFFLCTS	Tract	Count of FFL facilities in a tract
TMATCTS	Tract	Count of MAT facilities in a tract
TALCCTS	Tract	Count of ALC outlets in a tract
TADENBHT	Tract	Area density of BHTs (per square mile)
TADENFFL	Tract	Area density of FFLs (per square mile)
TADENMAT	Tract	Area density of MATs (per square mile)
TADENALC	Tract	Area density of ALCs (per square mile)
TPDENBHT	Tract	Population density of BHTs (per 1,000 persons)

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Name	Geography	Description
TPDENFFL	Tract	Population density of FFLs (per 1,000 persons)
TPDENMAT	Tract	Population density of MATs (per 1,000 persons)
TPDENALC	Tract	Population density of ALCs (per 1,000 persons)
NALCHMI	Respondent	Number of alcohol outlets within ½ mile
NALC1MI	Respondent	Number of alcohol outlets within 1 mile
NALC2MI	Respondent	Number of alcohol outlets within 2 miles
NALC3MI	Respondent	Number of alcohol outlets within 3 miles
NBMH3MI	Respondent	Number of BHT mental health facilities within 3 miles
NBMH5MI	Respondent	Number of BHT mental health facilities within 5 miles
NBMH10MI	Respondent	Number of BHT mental health facilities within 10 miles
NBMH20MI	Respondent	Number of BHT mental health facilities within 20 miles
NBSA3MI	Respondent	Number of BHT substance abuse facilities within 3 miles
NBSA5MI	Respondent	Number of BHT substance abuse facilities within 5 miles
NBSA10MI	Respondent	Number of BHT substance abuse facilities within 10 miles
NBSA20MI	Respondent	Number of BHT substance abuse facilities within 20 miles
NFFL1MI	Respondent	Number of stores with federal firearms license within 1 mile
NFFL2MI	Respondent	Number of stores with federal firearms license within 2 miles
NFFL3MI	Respondent	Number of stores with federal firearms license within 3 miles
NFFL5MI	Respondent	Number of stores with federal firearms license within 5 miles
NMAT3MI	Respondent	Number of medication-assisted treatment facilities within 3 miles
NMAT5MI	Respondent	Number of medication-assisted treatment facilities within 5 miles
NMAT10MI	Respondent	Number of medication-assisted treatment facilities within 10 miles
NMAT20MI	Respondent	Number of medication-assisted treatment facilities within 20 miles
NEARALC	Respondent	Driving distance (in miles) to the nearest alcohol outlet
MDD3ALC	Respondent	Mean driving distance (in miles) to the 3 nearest alcohol outlets
MDD5ALC	Respondent	Mean driving distance (in miles) to the 5 nearest alcohol outlets
MDD7ALC	Respondent	Mean driving distance (in miles) to the 7 nearest alcohol outlets
NEARBHMH	Respondent	Driving distance (in miles) to the nearest BHT mental health facility
MDD3BHMH	Respondent	Mean driving distance (in miles) to the 3 nearest BHT mental health facilities
MDD5BHMH	Respondent	Mean driving distance (in miles) to the 5 nearest BHT mental health facilities
MDD7BHMH	Respondent	Mean driving distance (in miles) to the 7 nearest BHT mental health facilities
NEARBHMH	Respondent	Driving distance (in miles) to the nearest BHT substance abuse facility
MDD3BHSA	Respondent	Mean driving distance (in miles) to the 3 nearest BHT substance abuse facilities
MDD5BHSA	Respondent	Mean driving distance (in miles) to the 5 nearest BHT substance abuse facilities

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Name	Geography	Description
MDD7BHSA	Respondent	Mean driving distance (in miles) to the 7 nearest BHT substance abuse facilities
NEARFFL	Respondent	Driving distance (in miles) to the nearest store with federal firearms license
MDD3FFL	Respondent	Mean driving distance (in miles) to the 3 nearest stores with federal firearms license
MDD5FFL	Respondent	Mean driving distance (in miles) to the 5 nearest stores with federal firearms license
MDD7FFL	Respondent	Mean driving distance (in miles) to the 7 nearest stores with federal firearms license
NEARMAT	Respondent	Driving distance (in miles) to the nearest medication-assisted treatment facility
MDD3MAT	Respondent	Mean driving distance (in miles) to the 3 nearest medication-assisted treatment facilities
MDD5MAT	Respondent	Mean driving distance (in miles) to the 5 nearest medication-assisted treatment facilities
MDD7MAT	Respondent	Mean driving distance (in miles) to the 7 nearest medication-assisted treatment facilities

Walkability

Name	Geography	Description
TWALK19	Tract	National Walkability Index, 2019

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Indicators of Poor Health/Health Behaviors and Availability of Health Care

Name	Geography	Description
CYPLLR	County	Age-adjusted years of potential life lost (rate per 100,000)
CPCTPSRH	County	Percent population with poor/fair self-rated health
CPPHD	County	Average number of poor physical health days per month
CPMHD	County	Average number of poor mental health days per month
CSMOKER	County	Percent of adult who currently smoke
CAOBESE	County	Percent of adults with obesity
CFEI	County	Derived food environment index, serving as an indicator of access to healthy foods (0 is worst, 10 is best)
CINACTIV	County	Percent of adults that report no leisure-time physical activity
CACCSSEX	County	Percent of the population with access to places for physical activity
CDRINK	County	Percent of adults that report excessive drinking
CUNINSUR	County	Percent of population without health insurance
CPCPRATE	County	Primary care physicians per 100,000 population
CDNTRATE	County	Dentists per 100,000 population
CMHPRATE	County	Mental health providers per 100,000 population
CPREVHSR	County	Discharges for ambulatory care sensitive conditions per 100,000 Medicare enrollees
CSOCASS	County	Number of social membership associations per 10,000 population
CVCR	County	Violent crimes per 100,000 population
CSHOUP	County	Percent of households with at least 1 of 4 housing problems, including: overcrowding, high housing costs, or lack of kitchen or plumbing facilities
CPCTFPD	County	Percent of adults reporting 14 or more days of poor physical health per month
CPCTFMD	County	Percent of adults reporting 14 or more days of poor mental health per month
CPCTDIAB	County	Percent of adults with diabetes
CPCTFINS	County	Percent of food insecure population

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Opioid Dispensing and Medicare Beneficiary Health

Name	Geography	Description
COPIDISR	County	Overall opioid dispensing rate (# of prescriptions per 100 persons)
CPTDOPI	County	Opioid dispensing rate (per 100 claims) among Part D Medicare beneficiaries
CPCTKDNY	County	Percent of Medicare beneficiaries with chronic kidney disease
CPCTCOPD	County	Percent of Medicare beneficiaries with COPD

Social Capital Index

Name	Geography	Description
CSK2014	County	Social capital index, 2014

State Policies and Laws Regulating Alcohol Use and Access to Firearms

Alcohol Policy Scale

Name	Geography	Description
SAPS2018	State	State-specific Alcohol Policy Scale (APS), 2018
SAPSSC18	State	APS score change from 1999 to 2018
SAPSPC18	State	APS percent (%) change from 1999 to 2018

Alcohol Policy Information System

Name	Geography	Description
SFREEBEV	State	As of 2016, the State prohibits on-premises retailers from providing free alcoholic beverages to patrons either as a promotional practice or on a case-by-case basis
SMSONCE	State	As of 2016, the State prohibits on-premises retailers from serving a customer more than one drink at a time without regard to price, as in the retail practice of “lining up” drinks in front of a customer whether or not he/she is paying full price for each drink
SMSPRICE	State	As of 2016, the State prohibits on-premises retailers from serving a customer multiple servings for a single price
SHAPPYHR	State	As of 2016, law exists prohibiting happy hours in the State

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Name	Geography	Description
SUNLMBEV	State	As of 2016, the State prohibits the price promotion practice of allowing patrons to receive an unlimited number of alcoholic drinks for a fixed price or during a fixed period of time
SINCRVOL	State	As of 2016, the State prohibits offering drinks with increased amounts of alcohol at the same price as regular-sized drinks
SCTRLBR	State	As of 2016, a State is classified as a Control State if the State sets the price of and gains profit/revenue directly (rather than solely from taxation) from the wholesale or retail system of distribution for 5% ABV beer
SCTRLWN	State	As of 2016, a State is classified as a Control State if the State sets the price of and gains profit/revenue directly (rather than solely from taxation) from the wholesale or retail system of distribution for 12% ABV wine
SCTRLSP	State	As of 2016, a State is classified as a Control State if the State sets the price of and gains profit/revenue directly (rather than solely from taxation) from the wholesale or retail system of distribution for 40% ABV spirits
STAXBR16	State	The specific excise tax levied on beer of 5% ABV in 2016*
STAXWN16	State	The specific excise tax levied on wine of 12% ABV in 2016*
STAXSP16	State	The specific excise tax levied on spirits of 40% ABV in 2016*
SSUNBAN	State	As of 2016, the State has a Sunday sales ban at retail off-premises locations
SUNRGKEG	State	As of 2016, the State stipulates that a person may not possess an unregistered or unlabeled keg

***Note**: Not applicable to control states.

Gifford State Gun Law Scorecard

Name	Geography	Description
SGIFFGRD	State	Giffords state gun law scorecard grade for 2016
SGIFFRNK	State	Giffords state gun law scorecard rank for 2016

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

State Firearm Laws

Name	Geography	Description
SLAWRFA	State	As of 2016, total number of laws regulating firearms ownership, use, access, and other relevant matters.
SWAITFA	State	As of 2016, there is a mandatory minimum waiting period for purchase of any firearm from a dealer. No exemption for concealed carry or purchase permit holders.
SWAITHG	State	As of 2016, there is a mandatory minimum waiting period for purchase of a handgun (or handguns and assault weapons) from a dealer. No exemption for concealed carry or purchase permit holders.
SPRMTFA	State	As of 2016, all firearms may only be sold to and possessed by individuals with a valid license or permit to possess or carry firearms. This may or may not include requiring a firearm safety certificate and must apply to both licensed dealers and private sellers.
SPRMTHG	State	As of 2016, handguns may only be sold to and possessed by individuals with a valid license or permit to possess or carry handguns. This may or may not include requiring a firearm safety certificate and must apply to both licensed dealers and private sellers.
SPRMTLAW	State	As of 2016, individuals must obtain a permit in order to purchase a firearm through a permit approval process that includes law enforcement personnel. This may not apply to the purchase of long guns.
SINVCMMT	State	As of 2016, law prohibits firearm possession by people who have been involuntarily committed for inpatient mental health treatment
SINVOUT	State	As of 2016, law prohibits firearm possession by people who have been involuntarily committed for outpatient mental health treatment.
SDANGER	State	As of 2016, law prohibits firearm possession by people who have been deemed by a court to be a danger to themselves or others.
SDRUGMIS	State	As of 2016, law prohibits firearm possession by people who have been convicted of a drug-related misdemeanor.
SALCPROB	State	As of 2016, law prohibits firearm possession by people who have received treatment for alcohol-related problems that exceeds a state-defined threshold.
SALCHLSM	State	As of 2016, law prohibits firearm possession by people who have received treatment for alcoholism that exceeds a state-defined threshold.
SRELINQ	State	As of 2016, law requires that upon becoming prohibited from possessing a firearm, a person must relinquish all firearms in their possession. This must be a broad provision that covers most, if not all, categories of prohibited people. For example, if the law only applies to mental health prohibitors, it is not considered to satisfy the requirements for having this

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Name	Geography	Description
		provision. The law must explicitly require the relinquishment of weapons, not merely prohibit the possession of weapons.
SUNVSLFA	State	As of 2016, both licensed dealers and private sellers must conduct background checks at point of purchase for all firearms. This may or may not include exemptions for buyers who have already undergone a background check for a concealed carry permit or other licensing requirements. Background checks must be explicitly required.
SUNVSLHG	State	As of 2016, both licensed dealers and private sellers must conduct background checks at point of purchase for handguns. This may or may not include exemptions for buyers who have already undergone a background check for a concealed carry permit or other licensing requirements. Background checks must be explicitly required.
SGNSHWFA	State	As of 2016, state law requires background checks for all firearm sales at gun shows at point of purchase. This closes the gun show loophole for all firearm sales. Background checks must be explicitly required.
SGNSHWHG	State	As of 2016, state law requires background checks for handgun sales at gun shows at point of purchase. This closes the gun show loophole for handgun sales. Background checks must be explicitly required.
SUVPRMFA	State	As of 2016, individuals must undergo a background check to purchase any type of firearm, either at the point of purchase or through a license/permit application. This may or may not include exemptions for buyers who have already undergone a background check for a concealed carry permit or other licensing requirements. Background checks must be explicitly required.
SUVPRMHG	State	As of 2016, individuals must undergo a background check to purchase handguns, either at the point of purchase or through a license/permit application. This may or may not include exemptions for buyers who have already undergone a background check for a concealed carry permit or other licensing requirements. Background checks must be explicitly required.
S3DAYLMT	State	As of 2016, law requires that individuals undergo a background check when purchasing at least some weapons from private sellers, and extends the period in which a background check can be completed beyond the federal three day limit. May or may not apply to the purchase of handguns and may or may not extend the period beyond three days for licensed dealers.
SMNTHHTH	State	As of 2016, background checks for private sales are required for at least some weapons and there is an explicit requirement for search of Mental health records. This may or may not apply to sales by licensed dealers.

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Name	Geography	Description
SSTCHKFA	State	As of 2016, law requires state to conduct its own background check, not just the NICS check, for all firearm sales or permit applications. If at the point of purchase, must apply to gun show sellers and licensed dealers and may also apply to all other private sellers; if at the point of permit application, must apply to all licensed dealers and private sellers.
SSTCHKHG	State	As of 2016, law requires state to conduct its own background check, not just the NICS check, for handgun sales or permit applications. If at the point of purchase, must apply to gun show sellers and licensed dealers and may also apply to all other private sellers; if at the point of permit application, must apply to all licensed dealers and private sellers.
SAMMOPRM	State	As of 2016, all firearm ammunition may only be sold to individuals who have a valid license or permit for that ammunition. This may or may not include purchase of ammunition from private sellers.
SAMMORES	State	As of 2016, all restrictions that hold for purchase of firearms also hold for purchase of ammunition. Application to restrictions on handguns only or long guns only is OK.
SAMMOBG	State	As of 2016, purchasers of any type of ammunition must undergo a background check, either at the point of purchase or when obtaining a permit for ammunition purchase.

Cause-Specific Mortality Rates

Name	Geography	Description
C*w*SUINF1	County	Suicide rates not involving firearms (per 100,000), 2001-2005 average (ICD10: X60-X84 (excluding X72-X74), Y87.0) - Wave ***w***
C*w*SUINF2	County	Suicide rates not involving firearms (per 100,000), 2006-2010 average (ICD10: X60-X84 (excluding X72-X74), Y87.0) - Wave ***w***
C*w*SUINF3	County	Suicide rates not involving firearms (per 100,000), 2011-2015 average (ICD10: X60-X84 (excluding X72-X74), Y87.0) - Wave ***w***
C*w*SUINF4	County	Suicide rates not involving firearms (per 100,000), 2016-2020 average (ICD10: X60-X84 (excluding X72-X74), Y87.0) - Wave ***w***
C*w*SUI1	County	Suicide rates involving firearms (per 100,000), 2001-2005 average (ICD10: X72-X74) - Wave ***w***
C*w*SUI2	County	Suicide rates involving firearms (per 100,000), 2006-2010 average (ICD10: X72-X74) - Wave ***w***
C*w*SUI3	County	Suicide rates involving firearms (per 100,000), 2011-2015 average (ICD10: X72-X74) - Wave ***w***

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Name	Geography	Description
Cw*SUI4*	County	Suicide rates involving firearms (per 100,000), 2016-2020 average (ICD10: X72-X74) - Wave ***w***
Cw*ALCH1*	County	Alcohol-related mortality (per 100,000), 2001-2005 average (ICD10: F100-F109, K700-K709, X45, Y15, X65, E244, G312, G621, G721, I426, K292, K852, K860, R780) - Wave ***w***
Cw*ALCH2*	County	Alcohol-related mortality (per 100,000), 2006-2010 average (ICD10: F100-F109, K700-K709, X45, Y15, X65, E244, G312, G621, G721, I426, K292, K852, K860, R780) - Wave ***w***
Cw*ALCH3*	County	Alcohol-related mortality (per 100,000), 2011-2015 average (ICD10: F100-F109, K700-K709, X45, Y15, X65, E244, G312, G621, G721, I426, K292, K852, K860, R780) - Wave ***w***
Cw*ALCH4*	County	Alcohol-related mortality (per 100,000), 2016-2020 average (ICD10: F100-F109, K700-K709, X45, Y15, X65, E244, G312, G621, G721, I426, K292, K852, K860, R780) - Wave ***w***
Cw*OPIO1*	County	Opioid-related mortality (per 100,000), 2001-2005 average (ICD10: X40-X44, X60-X64, X85, Y10-Y14, T400-T404, T406) - Wave ***w***
Cw*OPIO2*	County	Opioid-related mortality (per 100,000), 2006-2010 average (ICD10: X40-X44, X60-X64, X85, Y10-Y14, T400-T404, T406) - Wave ***w***
Cw*OPIO3*	County	Opioid-related mortality (per 100,000), 2011-2015 average (ICD10: X40-X44, X60-X64, X85, Y10-Y14, T400-T404, T406) - Wave ***w***
Cw*OPIO4*	County	Opioid-related mortality (per 100,000), 2016-2020 average (ICD10: X40-X44, X60-X64, X85, Y10-Y14, T400-T404, T406) - Wave ***w***
Cw*FAPXY1*	County	Household gun ownership proxy, 2001-2005 average (Firearms suicides / Total suicides) - Wave ***w***
Cw*FAPXY2*	County	Household gun ownership proxy, 2006-2010 average (Firearms suicides / Total suicides) - Wave ***w***
Cw*FAPXY3*	County	Household gun ownership proxy, 2011-2015 average (Firearms suicides / Total suicides) - Wave ***w***
Cw*FAPXY4*	County	Household gun ownership proxy, 2016-2020 average (Firearms suicides / Total suicides) - Wave ***w***

* Note: The ***w*** in the variable name and description will be numeric in the dataset and indicates the wave.

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

State Policies on Drugs and Firearms

Indicators of Poor Health/Health Behaviors and Availability of Health Care

Name	Description	Algorithm
S*w*PDMPAU	Number of months between the interview date and implementation of PDMP access laws that provide access to the PDMP, an electronic database that tracks controlled substance prescriptions in a state - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=PDMP_AUTH*
S*w*PDMPLW	The number of months between the interview date and implementation of mandatory PDMPs that require prescribers under certain circumstances to access the PDMP database prior to prescribing opioids - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=PDMP_LAW*
S*w*RXLIM	The number of months between the interview date and implementation of prescription limit laws that impose limitations on the number of days that medical professionals dispense opioids for acute pain - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=RX_LIMIT*
S*w*PMILL	The number of months between the interview date and implementation of pain clinic laws that regulate the operation of pain clinics - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=PMILL*
S*w*GOODSM	The number of months between the interview date and implementation of Good Samaritan laws that provide immunity or other legal protection for those who call for help during overdose events - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=GOOD_SAM*
S*w*NALXLW	The number of months between the interview date and implementation of naloxone access laws that provide civil or criminal immunity to licensed health care clinicians or lay responders for administration of opioid antagonists, such as naloxone hydrochloride, to reverse overdose - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=NALOX_LAW*
S*w*MEDICD	The number of months between the interview date and state implementation of Medicaid expansion, obtained from the Kaiser Family Foundation - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=MEDICAID*

* Note: The ***w*** in the variable name and description will be numeric in the dataset and indicates the wave.

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Opioid-Relevant Prescribing Policies

Name	Description	Algorithm
S*w*COPMND	The number of months between the interview date and implementation of a statewide standing order that allows pharmacists to prescribe and dispense naloxone to any community member, as well as co-prescribe naloxone or offer a naloxone prescription when writing an opioid analgesic prescription if the patient presents risk factors for opioid overdose - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=COP_MANDATE*
S*w*PHMDSP	The number of months between the interview date and the authorization of pharmacists' authority to initiate naloxone dispensing under protocol - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=PHARM_DISP*
S*w*CANDSP	The number of months between the interview date and permitting for open recreational cannabis dispensaries - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=CAN_DISP*

* Note: The ***w*** in the variable name and description will be numeric in the dataset and indicates the wave.

Marijuana Laws

Name	Description	Algorithm
S*w*MEDMJ	The number of months between the interview date and the legalization of marijuana for medical purposes - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=MED_MJ*
S*w*RECMJ	The number of months between the interview date and the legalization of marijuana for recreational purposes (data from Medical Marijuana Project) - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=REC_MJ*
S*w*RECMJP	The number of months between the interview date and the legalization of marijuana for recreational purposes (data from APIS) - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=REC_MJ_APIS*

* Note: The ***w*** in the variable name and description will be numeric in the dataset and indicates the wave.

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Prescription Drug Abuse Policy System

Name	Description	
S*w*DIHLAW	The number of months between the interview date and the authorization of the prosecution of drug-related deaths as criminal killings. Oftentimes referred to as drug induced homicide laws, these laws establish criminal liability for individuals who furnish or deliver controlled substances to another individual who dies as a result - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=DIH_LAW*
S*w*ICSBST	The number of months between interview date and the authorization of the involuntary arrest, detention, and/or treatment of an individual for substance use. These types of laws determine the circumstances for commitment, the parties authorized to petition for a commitment, the requirement of a clinical assessment, the types of health professionals authorized to perform the assessment, the requirement of judicial review, the duration of the initial commitment, the types of treatments that may be performed without patient consent, and the provision of counsel - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=IC_SUBSTANCE*

* Note: The ***w*** in the variable name and description will be numeric in the dataset and indicates the wave.

Firearms Waiting Period Laws

Name	Description	
S*w*LGWAIT	The number of months between the interview date and the implementation of a law that establishes the minimum amount of time sellers must wait before delivering a long gun to a purchaser; includes waiting periods for permits to purchase where the permit is valid for a short period and only for a single transaction - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=LG_WAIT*
S*w*HGWAIT	The number of months between the interview date and the implementation of a law that establishes the minimum amount of time sellers must wait before delivering a handgun to a purchaser; includes waiting periods for permits to purchase where the permit is valid for a short period and only for a single transaction - Wave ***w***	Date(IMONTH*w*, IYEAR*w*) - Date(*v*_M, *v*_Y) *w=wave number* *v=HG_WAIT*

* Note: The ***w*** in the variable name and description will be numeric in the dataset and indicates the wave.

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Missing codes

The final digit of the missing codes indicates the reason for which they are missing.

Missing codes that end in 0 (e.g., 90, 990) denote that the respondent lives in a state where the law or policy in question was implemented in 2020 or later.

Missing codes that end in 2 (e.g., 92, 992) denote that the respondent was not interviewed in that wave.

Missing codes that end in 6 (e.g., 96, 996) denote that information for that variable was not available in the source dataset.

Missing codes that end in 8 (e.g., 98, 998) denote respondents in Add Health who lack the geocodes necessary for merging the source data to the respondent locations.

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Citations

Anselin, L. (1995). Local indicators of spatial association—LISA. Geographical analysis, 27(2), 93-115.

Anselin, L., Li, X., & Koschinsky, J. (2022). GeoDa, from the desktop to an ecosystem for exploring spatial data. Geographical Analysis, 54(3), 439-466.

Blanchette, J. G., Lira, M. C., Heeren, T. C., & Naimi, T. S. (2020). Alcohol policies in US States, 1999–2018. Journal of Studies on Alcohol and Drugs, 81(1), 58-67.

Bureau of Alcohol, Tobacco, Firearms and Explosives. (2023). Federal Firearms Listings. https://www.atf.gov/firearms/listing-federal-firearms-licensees.

Case, A., & Deaton, A. (2015). Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. Proceedings of the National Academy of Sciences, 112(49), 15078-15083.

Case, A., & Deaton, A. (2020). Deaths of Despair and the Future of Capitalism. Princeton University Press.

Centers for Disease Control and Prevention. (2020). U.S. County Opioid Dispensing Rates, 2016. https://www.cdc.gov/drugoverdose/rxrate-maps/county2016.html.

Centers for Medicaid & Medicare Services. (2023). Mapping Medicare Disparities by Population. https://data.cms.gov/tools/mapping-medicare-disparities-by-population.

Cherney, S., Morral, A. R., Schell, T. L., Smucker, S., & Hoch, E. (2018). Development of the rand state firearm law database and supporting materials. RAND.

Iceland, J., Weinberg, D. H., & Steinmetz, E. (2002). Racial and ethnic residential segregation in the United States 1980-2000 (Vol. 8, No. 3). Bureau of Census.

Lee, B., Zhao, W., Yang, K. C., Ahn, Y. Y., & Perry, B. L. (2021). Systematic evaluation of state policy interventions targeting the US opioid epidemic, 2007-2018. JAMA Network Open, 4(2), e2036687

Massey, D. S., & Denton, N. A. (1988). The dimensions of residential segregation. Social forces, 67(2), 281-315.

Kang, M. S., & Rasich, E. A. (2023). Extending the firearm suicide proxy for household gun ownership. American journal of preventive medicine.

RAND. (2023). How Gun Policies Affect Suicide. https://www.rand.org/research/gun-policy/analysis/suicide.html.

Rupasingha, A., Goetz, S. J., & Freshwater, D. (2006, with updates). The production of social capital in US counties. Journal of Socio-Economics, 35, 83-101. doi:10.1016/j.socec.2005.11.001.

Substance Abuse and Mental Health Services Administration. (2023). Find Substance Use Disorder Treatment. https://www.samhsa.gov/medications-substance-use-disorders/find-substance-use-disorder-treatment.

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.

Siegel, M., Pahn, M., Xuan, Z., Ross, C. S., Galea, S., Kalesan, B., Fleeger, E., & Goss, K. A. (2017). Firearm-related laws in all 50 US states, 1991–2016. American Journal of Public Health, 107(7), 1122-1129.

Sohn, M., Delcher, C., Talbert, J. C., Cheng, Y., Xu, Y., Jadhav, E. D., & Freeman, P. R. (2023). The impact of naloxone coprescribing mandates on opioid-involved overdose deaths. American Journal of Preventive Medicine.

Waves I-V of Add Health were funded by grant P01 HD31921 (Harris) from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill.