

National Wellbeing Survey (NWS), 2023

Methodology Report

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Overview

The National Wellbeing Survey (NWS) is a non-probability cross-sectional survey of non-institutionalized adults aged 18 to 64 in the United States. The 2023 NWS was administered online from June 23 to September 14, 2023. The sample frame included non-institutionalized adults in the United States who ranged in age from 18 to 64 years old and who were able to read English. NWS sample participants were recruited online through Qualtrics Panels. Respondents were asked to complete a 25-minute survey. The survey was available only in English. Survey topics included psychosocial wellbeing, social relationships and support, participation in social activities, physical health, mental health, health behaviors, health care use, employment quality and experiences, COVID-19 experiences, socioeconomic measures, political orientation, and demographic measures. The final sample included 7,105 respondents. The restricted use version of the data includes geographic identifiers for states (N=51) and counties (N=1,746). Survey design and post-stratification weights are included to adjust for the NWS non-probability sampling approach, using a separate large-scale, nationally representative survey (the National Health Interview Survey) as the reference. Additional details about the NWS methodology are provided in the sections below.

Motivation

Although there are several existing national health surveys that collect data from the U.S. working-age population (e.g., Behavioral Risk Factor Surveillance System, National Health Interview Survey, National Survey of Drug Use and Health), none include all three of the following features:

1. A comprehensive array of physical health, mental health, and psychosocial wellbeing measures.
2. A large enough sample of nonmetropolitan respondents to enable metro-nonmetro and within-nonmetro comparisons and a measure to identify a respondent's rural-urban continuum code.
3. State and county geographic identifiers to enable linkage to contextual data.

The NWS includes all three features. The NWS was designed to support research to assess population-level wellbeing, broadly defined (physical health, mental health, psychosocial wellbeing, social relationships, employment quality, financial wellbeing) and identify how wellbeing varies by demographic group and geography. Given that the 2023 NWS was administered in the aftermath of the COVID-19 pandemic, the survey also includes a module to assess respondents experiences during – as well as impacts/consequences of – the pandemic on their lives.

Sampling and Survey Administration

Overview

Respondents were sampled from Qualtrics Panels. The sample source and procedures are described in the following sections. NWS 2023 aimed to have completed surveys from at least 7,000 respondents based on sampling quota described below. The final sample included 7,105 respondents.

Sample Quotas

The target population for the NWS is the U.S. population ages 18-64. To create a demographically representative sample of adults ages 18-64 by age, sex, race, Hispanic

ethnicity, and educational attainment, quotas were determined using the 2017-2021 American Community Survey estimates from the U.S. Census Bureau for each of these demographic characteristics.

In addition, we created quotas to recruit a sufficient sample of nonmetropolitan residents to enable statistical power to conduct robust metro-nonmetro and within-nonmetro analysis. We defined metropolitan status at the county level using the 2013 Rural-Urban Continuum Code (RUCC) classification from the USDA Economic Research Service (<https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/documentation/>). Below is the list of RUCC codes. We merged quotas for RUCCs 4 & 5, 6 & 7, and 8 & 9.

Metro counties:

- 1 Counties in metro areas of 1 million population or more
- 2 Counties in metro areas of 250,000 to 1 million population
- 3 Counties in metro areas of fewer than 250,000 population

Nonmetro counties:

- 4 Counties in nonmetro areas with urban population of 20,000 or more, adjacent to a metro area
- 5 Counties in nonmetro areas with urban population of 20,000 or more, not adjacent to a metro area
- 6 Counties in nonmetro areas with urban population of 2,500 to 19,999, adjacent to a metro area
- 7 Counties in nonmetro areas with urban population of 2,500 to 19,999, not adjacent to a metro area
- 8 Completely rural or less than 2,500 urban population, adjacent to a metro area
- 9 Completely rural or less than 2,500 urban population, not adjacent to a metro area

We sought to include an oversample of residents of nonmetropolitan counties, so that at least 28% of completed surveys would be from residents of nonmetropolitan counties as defined by the U.S. Department of Agriculture Economic Research Service (USDA ERS 2013). The final sample included 1,862 (26%) respondents whose reported county of residence was classified as nonmetropolitan.

Overview of Qualtrics Panels

Qualtrics Panels comprise partner-based databases of several million U.S. adults who volunteer to participate in surveys. Qualtrics recruits participants from various sources, including website intercept recruitment, member referrals, targeted email lists, gaming sites, customer loyalty web portals, permission-based networks, and social media. Consumer panel members' names, addresses, and dates of birth are typically validated via third-party verification measures prior to their joining a panel. Some panel participants (e.g. via B2B) are subject to additional quality control measures such as LinkedIn matching, phone calls to the participant's place of business, and other third-party verification methods (TrueSample, RelevantID, Verity, etc.). Qualtrics compensates respondents in various ways (e.g., airline miles, gift cards) agreed upon when the member joins the panel. Online panels are increasingly used in social science research due to efficiency, cost, timeliness, and data quality (Hays 2015).

Sample Recruitment

Panel members received an email invitation to complete the NWS from Qualtrics. Qualtrics targeted respondents based on demographics to meet our quotas. Qualtrics conducted all respondent recruitment in batches. Qualtrics first targeted populations that are more difficult to

reach via online surveys, including Hispanic and rural respondents. As quotas for these populations were reached, recruitment shifted to easier to reach populations. Participants were only compensated for complete surveys, a condition agreed to before they began the survey. Qualtrics survey administrators determined whether a survey was completed to a satisfactory level to earn compensation.

Survey Administration

Data collection occurred from June 23 to September 14, 2023. The NWS survey was administered via Qualtrics using Syracuse University's branded Qualtrics account. We enabled the "prevent ballot box stuffing" feature to prevent multiple responses from the same device. We also used the "Bot Detection" feature that uses Google's reCAPTCHA to identify and flag responses that are likely generated by bots. Qualtrics removed these responses from the data set. While the Qualtrics platform enables collection of personal and location identifiers, Qualtrics does not share that information with us. This helps protect respondent anonymity.

Sample Quality Control

Qualtrics conducted quality checks at multiple points during survey collection. These included checking for and deleting:

1. Flatliners: This measures for attention by evaluating respondents' selections to matrix style questions. Respondents are flagged for straight-lining when the same answer choice is selected across most or all of the entire grid(s).
2. _____
3. Inattentive: Respondents who take an inordinate amount of time (600+ minutes) completing the survey compared to others, provide signs of contradictory responses, or show signs of excessive selection in a multi-response set are flagged for inattention.
4. Speeder: Respondents who speed through the survey. This includes respondents who took less than the median time to complete the survey (a point set by Qualtrics based upon the median survey completion time during pre-launch – the first 100 surveys).
5. Garbage and Profane Responses: Respondents who entered gibberish (keyboard banging), repetitive verbatims, and profanity to the text response options are flagged for signs of poor quality.
6. Suspicious Responses: Respondents who entered suspicious open-ended responses (e.g. irrelevant or similar responses across multiple text response options).

Qualtrics gives respondents an overall score, or "bad rate" based on the quality checks above. For example, if a respondent showed patterns of straight-lining for grid questions that would be expected to have varying response for the average individual, that offense would contribute to a higher "bad rate" than in a case where it's reasonable that someone might "Agree" with 5 statements in a row.

Following Qualtrics screening, we conducted additional internal data screening that involved identifying mismatches across several groups of items and straightliners in specific sections. We removed from the sample all survey respondents who failed these screenings.

Response Rate

The traditional response rate is not a useful measure for opt-in online panels because they use passive recruitment (e.g., invitation could be embedded in a longer email, repeated invitations are not sent), and the traditional response rate does not account for whether the email was opened or sent to junk folders. Qualtrics sent a request to complete the survey to 167,451 email

addresses. Of those, 38,519 clicked the link to enter to survey landing page. Of those, 20,020 were ineligible to proceed with the survey due to sample quota requirements (i.e., they represented a demographic category for which we had already achieved our sample quota). Therefore, 18,499 people who opened the email were eligible. From there, a total of 14,891 respondents completed the survey. Collectively, Qualtrics and the research team dropped 7,786 surveys due to concerns about data quality (e.g., speeding, straight lining), resulting in 7,105 completed quality surveys. Accordingly, the overall response rate as traditionally defined would be 8.9% (14,891 completed surveys/167,451 email requests). However, the quality survey completion rate among those who accessed the survey landing page *and* were eligible to complete the survey was 38.4% (7,105 quality surveys/18,499).

Survey Design

Overview

The 2023 NWS was designed by Principal Investigator Shannon Monnat and affiliates of the Syracuse University Lerner Center for Public Health Promotion and Population Health. Several survey questions were taken from gold standard surveys, such as the Behavioral Risk Factor Surveillance System, the National Health Interview Survey, and the Survey on Drug Use and Health, enabling comparisons of responses with those other surveys. The final NWS survey instrument was submitted for review (IRB #20-290) to the Institutional Review Board at Syracuse University. It received approval as an Exempt Protocol in December 2020.

Pretesting

We pretested a draft of the survey on a convenience sample of 19 individuals we identified. Pretesters included Syracuse University faculty members, graduate students, staff, and friends and family. We asked pretesters to identify any issues or errors in the survey, including inaccurate skip patterns and confusing questions. Many of the items on the 2023 NWS are the same as those on the 2021 NWS, which we pretested with 50 respondents.

Survey Components

The 2023 NWS is divided into one consent and one screener component and 8 thematic modules (shown below). While demographic information was reserved for the second to last component of the survey, six questions (age, sex, Hispanic ethnicity, race, state of residence, and county of residence) were moved to the screener component to filter respondents based on characteristics that met specific demographic quotas.

Domains

1. *Global Life Satisfaction and Psychological Wellbeing*. Several measures are adapted from “World Values Survey” (Haerpfer et al., 2020), “McArthur Scale of Subjective Social Status” (Adler et al., 2000), “The Cantril Self-Anchoring Striving Scale” (Gallup, 2012), “Gallup” (Gallup, 2018), “The Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985)”, and “The Brief Resilience Scale” (Smith et al., 2008).
2. *Social Relationships and Support*. All measures are adapted from “UCLA 20-Item Loneliness Scale & UCLA 3-Item Loneliness Scale” (Russell, 1996), “Pew Research Center 2014 Religious Landscape Study (RLS-II)” (Pew Research Center, 2022), “Fragile Families and Child Wellbeing Study” (McLanahan & Garfinkel, 2000), “Changing Lives of Older Couples” (Nesse et al., 2003), and “National Social Life, Health, and Aging Project (NSHAP)” (Waite et al., 2011).
3. *Physical and Mental Health*. Several measures are adapted from “Midlife in the United States (MIDUS 2), 2004-2006” (Barger, 2006), “Behavioral Risk Factor Surveillance System”

(Centers for Disease Control and Prevention, 2020), “Canadian Community Health Survey and Medical Expenditure Survey” (Ahmad, Jhaji, Stewart, Burghardt, & Bierman, 2014), “Household Pulse Survey” (Fields et al., 2020), “Health and Retirement Study” (Health and Retirement Study, 2020), and “PHQ-4: The Four-Item Patient Health Questionnaire for Anxiety and Depression” (Kroenke, Spitzer, Williams, & Löwe, 2009).

4. *Health Behaviors*. All measures are adapted from “National Health Interview Survey Adult Questionnaire” (National Center for Health Statistics, 2016; 2019), “National Health and Nutrition Examination Survey (NHANES)” (Centers for Disease Control and Prevention & National Center for Health Statistics, 2020), (Centers for Disease Control and Prevention, 2020), “National Survey on Drug Use and Health” (U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, 2021), and “Health Behavior in School-Aged Children (HBSC), 2005-2006” (Iannotti, 2012).
 5. *Employment and Income*. Several measures are adapted from “2018 National Panel Survey of Demographic, Structural, Cognitive, and Behavioral Characteristics” (Bruce, Wu, Lustig, Russell, & Nemecek, 2019), “Current Population Survey” (U.S. Census Bureau, 2020), “National Health Interview Survey Adult Questionnaire” (National Center for Health Statistics, 2022), “National Compensation Survey” (U.S. Bureau of Labor Statistics, 2022), “Survey of Income and Program Participation” (U.S. Census Bureau, 2022), “The Shift Project” (Schneider & Harknett, 2024), and “American Community Survey” (U.S. Census Bureau, 2022).
 6. *COVID-19*. Several measures are adapted from “Understanding America Study” (Center for Economic and Social Research (CESR), University of Southern California, 2020), “Household Pulse Survey” (Fields et al., 2020), and “Health and Retirement Study” (Health and Retirement Study, 2020).
 7. *Demographic Information*. All measures are adapted from “Behavioral Risk Factor Surveillance System” (Centers for Disease Control and Prevention, 2020), “National Survey of Veterans” (U.S. Department of Veterans Affairs, 2017), “American Community Survey” (U.S. Census Bureau, 2022), “National Health Interview Survey” (National Center for Health Statistics, 2019), and “2018 Pew Research Center’s American Trends Panel” (Pew Research Center, 2018).
- Politics*. Measures are adapted from “General Social Survey” (Davern et al., 2021).

Comparability to Prior Years of the NWS

We repeated several questions from the 2021 NWS and 2022 NWS in the 2023 NWS. However, there are items where the question wording or response set is different across the years. In cases where there is a slight difference in question wording, we maintain the same variable name but include a note with the variable in the codebook to indicate what changed. In cases where there is a large difference in question wording or the response set, we use a different variable name. Users should take caution in combining variables across years when wording or response sets have changed.

Data Cleaning

We completed the following data cleaning procedures:

Removing Potentially Identifiable Text: While the survey did not ask questions intended to elicit identifiable information, it was possible for respondents to insert such information into the textual responses. Therefore, we combed the text responses to delete any such instances should they occur. No identifiable information was provided in any text response.

Recoding Missing Values: For questions that asked responses to ‘select all’ response options that apply to them, we created separate variables for each response option. In most cases, missing values originally indicated that the response was not chosen. We recoded these missing values to 0. In addition, due to skip patterns (see codebook), some questions were not asked of all respondents. In these cases, we assigned a value of ‘96’ to respondents who were outside of the universe (i.e., were not asked the question). In cases where there was a skip pattern for a ‘select all that apply’ question, a ‘96’ indicates the respondent is outside of the universe, and a ‘0’ indicates that the response option was not selected.

Recoding Other Options: For several survey questions, respondents had the option to choose ‘Other’ and provide a follow-up text response. In some cases, the answer provided in the text box clearly aligned with one of the available response options. In these cases, we recoded the respondent’s answer from ‘Other’ to the aligned response option. In all cases where we recoded a respondent from ‘Other’ to an available response option, we created a _FLAG variable, where respondents are coded ‘1’ if we changed the response from ‘Other’ to an available option.

Derived Variables

We created the following additional variables from other information available in the dataset. Additional information about each variable can be found in the codebook.

1. Variable Name: rucc
This variable assigns each respondent a Rural-Urban Continuum Code (USDA ERS 2013 designations) based on their responses to the state and county of residence questions.
2. Variable Name: racerec
This variable used responses to the HISPANIC and RACE_ questions to create a combined Race/Ethnicity variable.
3. Variable Names: fips, stfips, stfips_preCOVID, fips_preCOVID
These variables were created to allow users to link respondents to other county- and state-level datasets. These variables are available only in the restricted use version of the data.
4. Variable Name: county_state
This variable allows respondents to see the full county and state names associated with each respondent’s residence. This variable is available only in the restricted use version of the data.
5. Variable Name: rucc_preCOVID
This variable assigns each respondent a Rural-Urban Continuum Code (USDA ERS 2013 designations) based on their responses to their state and county of residence in early March 2020.

Weights and Sample Representativeness

Qualtrics-Derived Post-Stratification Weight (original_weight)

Screening questions were used to ensure a demographically representative sample by age, sex, race, Hispanic ethnicity, and education. However, because we oversampled nonmetropolitan residents, Qualtrics created a survey weight (original_weight). When the weight is applied to the analysis, the results are *demographically* representative of the U.S. population ages 18-64 by age, sex, race/ethnicity, educational attainment, and RUCC. This was the only weight available until May 2025. Therefore, papers published in 2025 or earlier used this weight. While demographically representative, this weight does not account for any bias or non-representativeness introduced from the NWS being a non-probability sample. A separate weight – which we recommend users incorporate in their analyses – was derived in May 2025 to

correct for the NWS survey design (`final_weight`). The rationale for and derivation of this weight is described below, as well as guidance on how users should incorporate it in their analyses.

Final Global Survey Weight (`final_weight`)

The National Wellbeing Survey (NWS) is a non-probability sample of U.S. adults ages 18-64 with an oversample of respondents living in nonmetropolitan counties. Therefore, unweighted estimates – particularly for the means and prevalence of specific outcomes – may not be generalizable to the underlying population of adults ages 18-64. To help account for potential biases in estimates, we contracted with the University of Michigan Population Dynamics and Health Program (PDHP) to create full-sample, general-purpose survey weights based on a quasi-randomization (QR) approach (Elliott and Valliant 2017). This methodology requires finding a reference sample that: (a) is probability-based with corresponding survey weights; (b) contains key covariates that are shared with the selected sample; and, ideally, (c) arises from the same population as the selected sample. The 2023 National Health Interview Survey (NHIS) was determined to be a reference survey with these key properties, in addition to being a “gold standard” survey in U.S. population health research. In brief, these weights use data from the 2023 NHIS respondents ages 18-64 as a reference to first create a “design weight” (i.e., an estimated probability of selection for each survey respondent) and then calibrate this design weight to reflect differences in the makeup of the NWS and 2021 NHIS (which we use as a stable reference population across all NWS waves). Consequently, the resulting weight serves the dual purpose of helping to correct for the non-probability design of the NWS, as well as maximize national representativeness, based on the sampling design and weighting of the comparable NHIS sample. The steps are detailed below.

Protocol

First, data on key covariates that are shared between NWS and NHIS and are useful predictors of key outcome variables in the NWS were harmonized. Key sociodemographic predictors – including sex, race/ethnicity, educational attainment, employment/work status, poverty ratio, urbanicity, among others (18 total) – were coded to exactly match in both the NWS and NHIS samples.

Second, these harmonized data were “stacked” to create a single dataset with cases from both samples, including original survey weights from the NHIS (coded as “1” for NWS) and an indicator variable of cases belonging to a non-probability sample (i.e., 1 = NWS; 0 = NHIS). These stacked data were used to develop initial design weights, fitting a weighted logistic regression model with membership in the non-probability sample (i.e., the NWS) as the dependent variable. For each of the NWS respondents, this approach computed an estimated probability of the respondent being included in the NWS sample from the common population, based on their observed characteristics, if the NWS had used a probability sampling approach similar to the NHIS. The inverse of each estimated probability from the model then served as the estimated design weight for that case ($\hat{w}_i = 1/\hat{p}_i$). Thus, NWS cases that were estimated to have a lower probability of being included in a probability sample from this population (like the NHIS) received a higher relative weight, and vice versa.

Third, this initial design weight was “calibrated” using a post-stratification adjustment based on covariates that were predictive across five key NWS outcomes of interest (self-rated mental health, self-rated physical health, current smoking, the Cantril Ladder present standing score, and an index of life satisfaction), based on machine learning approaches. Age, educational attainment, and marital status emerged as consistent, significant predictors of these outcomes. Those variables were then cross-classified to create 12 unique post-strata (age: 18-32, 33-47, 48-65; education: four-year college degree or higher, no 4-year college degree; marital status:

currently married, other). The initial design weight was then re-scaled to account for differences in the relative size of the population in each stratum between the two samples (i.e., the ratio of the weighted population in the NHIS to the design weighted population in the NWS). Thus, the final, calibrated NWS weight was estimated by multiplying the initial design weight, \hat{w} , by the stratum-specific scalar. This calibration means that the weighted NWS sample will exactly match the “known” population totals from the NHIS for each individual post-stratum, as well as the estimated population size in total (based on the 2021 NHIS) across the entire dataset. The final calibrated NWS full sample-weight provided in the data is named ‘final_weight’. The weighted percentages and means shown in the NWS codebook are based on the ‘final_weight’.

Replicate Weights (weight1—weight200)

To properly estimate sampling variance for estimates based on the “weighted” NWS sample, a bootstrapping technique was employed that created 200 replicate weights. This bootstrapping process took the original NWS respondents and drew a simple random sample of the same size, with replacement. Each such sample is one replicate sample, which then went through a custom weighting and calibration phase using the bootstrap sample of the NWS and the fixed NHIS sample. Due to sampling with replacement, some cases will not appear in any given bootstrap sample, and some will appear multiple times. However, prior to post-stratification adjustment, each bootstrap sample was weighted back to the original sample size, with cases that were not selected in a specific bootstrap sample given a weight of zero, and those selected multiple times given a weight that is scaled based on the number of times that case was selected in the bootstrap sample. This process was then repeated 200 times per survey wave (year) to result in a set of 200 replicate weights for each case, enabling data users to mimic the sampling variance that would arise from repeating this non-probability sampling and weighting approach many times.

When properly incorporated into an analysis, the final NWS weights (final_weight) enable computation of approximately unbiased point estimates (based on the QR approach), and the replicate weights allow for proper estimation of the *variability* of those weighted estimates, resulting in better estimates of sampling variability that would not be possible with a single weight variable only (Elliott and Valliant, 2017).

Sample code for how to use the full-sample and replicate weights as part of a bootstrapped analysis is:

```
svyset _n [pweight=final_weight], poststrata(stratum_ID) postweight(total_NHIS_weight)
vce(bootstrap) bsrw(weight1-weight200)
```

Estimates obtained using the final, adjusted person-weight alone are comparable – if not almost identical – to those obtained using replicate weights with bootstrapped analysis. Thus, in instances where bootstrapped analysis may not be possible and/or cause issues with estimation, the person-weight may suffice. However, while this is true for estimates of prevalence and/or means, we cannot guarantee this comparability holds for more complex analyses with multiple variables. Users should carefully compare results under different weighting scenarios to ensure consistency in their findings.

Doubly Robust Estimation Technique

The full-sample weights (final_weight) and replicate weights (weight1—weight200) are designed to improve the quality of estimates in most standard design-based analyses of NWS data. However, users should be aware that other methods may be used to obtain outcome-specific estimates, such as the Doubly Robust (DR) estimation technique. This DR estimation technique employs a carefully specified model for the sample selection mechanism and a carefully

specified model for the key outcome of interest, and as long as one of the models is correctly specified, point estimates will be approximately unbiased and have greater efficiency than the QR approach (Chen et al., 2020). The downside of this approach is that it requires a separate model for each individual outcome, unlike the general-purpose weights described above. We generally find that estimates using the general-purpose weights are nearly identical to those obtained from the DR approach; however, users should carefully consider which approach is most appropriate for their research goals.

Pooling NWS Waves

Unique general-purpose weights, and corresponding replicate weights, are included in the data for each wave of NWS. However, users may be interested in pooling data *across* NWS waves (survey years) to increase sample sizes and/or provide multi-year estimates, among other methodological or substantive reasons. In these cases, users should continue to use the wave-specific weights in their analyses, without any additional adjustment.

However, if a user aims to use the NWS data to provide any estimates of “population” totals or counts across years, then additional rescaling of the weights is needed to avoid inflating these totals/counts. We generally do not recommend that NWS data are used for these purposes – and thus offer no specific guidance on rescaling – but users may consult National Health and Nutrition Examination Survey (NHANES) protocols for pooling data across years for the purposes of generating population totals:

<https://wwwn.cdc.gov/nchs/nhanes/analyticguidelines.aspx>.

Sample Representativeness

The sampling frame was adults ages 18-64 residing in the United States. Table 1 presents weighted bootstrapped NWS estimates based on the final survey design weight and replicate weights, as well as the corresponding poststratification weights (applying the sample code shown on page 8). Table 1 shows that, when weighted, the NWS sample is demographically representative of the overall U.S. population ages 18-64, based on weighted 2023 American Community Survey 1-year estimates (we applied ACS person weights and strata). Men are slightly overrepresented and women are slightly underrepresented, but the racial and ethnic composition is highly comparable. With respect to educational attainment, the largest discrepancies are in the “less than high school” category (where NWS respondents are underrepresented) and the “some college/AA” category (where NWS respondents are overrepresented). Educational attainment is not asked identically in the NWS and ACS, so this may account for discrepancies. There are also fewer never married and separated/divorced adults in NWS than ACS, though the lack of a “member of unmarried couple” response in ACS may affect comparisons. Finally, the weighted proportion of rural respondents in NWS is greater, while the proportions in smaller urban areas are smaller.

Table 1. Distribution of NWS (2023) Respondents Compared to Overall U.S. Population ages 18-64

	NWS Unweighted N (%)	NWS Weighted %	U.S. Population (ages 18-64) %
SEX			
Male	3,327 (46.8)	51.0	50.1
Female	3,757 (52.9)	49.0	49.9

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Non-binary	21 (0.3)	0.0	unknown
RACE/ETHNICITY			
Non-Hispanic White	4,276 (60.2)	56.2	56.0
Non-Hispanic Black	912 (12.8)	13.3	12.3
Hispanic	1,328 (18.7)	19.4	19.9
Other Race	577 (8.1)	11.0	11.8
AGE			
18-24	1,076 (15.1)	14.7	15.0
25-34	1,692 (23.8)	22.7	22.3
35-44	1,584 (22.3)	20.6	22.1
45-54	1,418 (20.0)	23.5	20.0
55-64	1,335 (18.8)	18.5	20.6
EDUCATIONAL ATTAINMENT (ages 25-64)			
<High School	615 (10.2)	5.9	9.7
HS Grad	1,659 (27.5)	23.0	24.6
Some College/AA	2,169 (36.0)	34.9	27.7
4-year degree+	1,586 (26.3)	36.1	38.0
MARITAL STATUS			
Never Married	2,944 (41.5)	30.9	38.2
Currently Married	2,263 (31.9)	51.9	48.8
Separated/Divorced	1,038 (14.6)	7.6	11.5
Widowed	211 (3.0)	1.5	1.5
Member of Unmarried Couple	646 (9.1)	8.1	NA ^a
CHILDREN IN HOUSEHOLD			
No children under age 18 in household ^b	4,624 (65.1)	60.9	59.2
RURAL-URBAN CONTINUUM CODE^c			
1 Counties in metro areas of 1 million population or more	3,219 (45.3)	58.1	56.5
2 Counties in metro areas of 250,000 to 1 million population	1,161 (16.3)	16.1	21.0
3 Counties in metro areas of fewer than 250,000 population	863 (12.2)	12.3	8.9
4-5 Counties in nonmetro areas with urban population of 20,000 or more	780 (11.0)	5.9	5.5
6-7 Counties in nonmetro areas with urban population of 2,500 to 19,999	814 (11.5)	5.4	6.5
8-9 Completely rural or less than 2,500 urban population	288 (3.8)	2.2	1.3

Notes: Notes: U.S. population comparisons are based on 2022 American Community Survey 1-year estimates; NWS values are weighted based on the final survey design weight and replicate weights, as well as the corresponding poststratification weights. ACS estimates are weighted based on the person weight and strata.

a. The Census Bureau's marital status distribution does not include a breakdown for members of an unmarried couple.

- b. The NWS asks about the presence of any children under age 18 in the household, while the ACS asks about “own” children. Therefore, the NWS and ACS are not directly comparable.
- c. Population percentages by RUCC are based on the 2017-2021 American Community Survey 5-year estimates merged with the USDA Economic Research Service Rural-Urban Continuum Codes (2013).

Table 2 compares the demographic characteristics (means) between all counties in the U.S. and the 1,746 counties in which NWS (2023) respondents live. Although differences are not large, most differences are statistically significant at $p < .05$. Counties represented by NWS respondents have a higher percentage NH Black population, lower percent Hispanic population, lower percentage age 65+ population, lower percentage with less than high school education, higher percentage with a 4-year college degree or more, higher percentage employed, lower percentage not in the labor force, higher median household income, lower percentage of families in poverty, and lower percentage of owner-occupied housing units.

Table 2. Comparison of Counties Represented in 2023 NWS versus all U.S. Counties

County Characteristic	All U.S. Counties N=3,143 (Means)	Counties Represented in NWS N=1,746 (Means)
<i>Racial/Ethnic Composition</i>		
Percent non-Hispanic White	72.8	72.6
Percent non-Hispanic Black	8.5	10.2*
Percent Hispanic	12.2	10.6*
<i>Age Composition</i>		
Percent under age 18	21.9	21.9
Percent age 65+	20.1	19.2*
<i>Educational Composition</i>		
Percent 25+ with less than high school	9.9	9.6*
Percent 25+ with a 4-year college degree or more	24.1	25.5*
<i>Employment Composition</i>		
Percent employed (among ages 16+)	63.7	64.8*
Percent not in labor force (among ages 16+)	32.8	31.4*
<i>Socioeconomic Composition</i>		
Median household income	\$65,145	\$67,468*
Percent families in poverty	14.3	14.0*
Percent owner-occupied housing units	72.8	71.4*

Note: County characteristics are from the 2019-2023 American Community Survey; *difference is statistically significant at $p < .05$ based on t-test.

Caution against geographic aggregation: Although restricted data users are able to identify respondents' states and counties of residence, data users should not attempt to produce state- or county-level aggregated estimates from the survey data. The sampling procedure was not designed to attain within-state or within-county quotas. The quotas and survey weights are designed to make results demographically representative *only at the national level*. Any state- or county-level estimates derived from the individual-level survey data would be prone to bias.

Comparisons to Other National Surveys

This section summarizes how prevalences of different chronic conditions, mental health and psychosocial wellbeing outcomes, and substance use behaviors in the 2023 NWS compare to similar measures in large nationally representative gold-standard surveys of health in the United States.

The NWS is an annual cross-sectional survey of adults aged 18-64, designed to collect information on working-age adult wellbeing, broadly defined. As such, we limited our comparison to gold-standard national surveys which: (a) use a cross-sectional design; (b) include respondents aged 18-64; (c) collected data in the same year (2023); and (d) have comparable survey items on health and wellbeing. Based on these criteria, we identified the 2023 Behavioral Risk Factor Surveillance System (BRFSS), the 2023 National Health Interview Survey (NHIS), and the 2023 National Survey on Drug Use and Health (NSDUH) as the most suitable datasets for comparison. As described below, these surveys do not use a research design identical to NWS – or each other – but are among the most reputable and most widely used sources of data on U.S. population health patterns and trends. Consequently, they provide a reliable standard to compare against NWS.

The Behavioral Risk Factor Surveillance System (BRFSS) – administered by the Centers for Disease Control and local state agencies – draws on annual telephone surveys from over 400,000 adult respondents to collect state data on U.S. residents' health-related risk behaviors and chronic health conditions, among other measures (National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health, 2024).

The National Health Interview Survey (NHIS) – administered by the National Center for Health Statistics – is a large, annual national survey of health covering all 50 U.S. states, using an in-person household interview survey to provide information on the health of U.S. adults across a broad range of health outcomes (NCHS, 2024).

The National Survey on Drug Use and Health (NSDUH) – administered by the Substance Abuse and Mental Health Services Administration – draws on both in-person household interviews and web-based interviews to provide annual, nationally representative data on substance use, substance use disorders, and mental health issues, among other substance use-related outcomes (Substance Abuse and Mental Health Services Administration, 2024).

Given NWS's focus on *working-age* adult health and wellbeing, we focus our comparison on three broad domains that have been identified as focal areas of population health risk and concern among this population (National Academy of Sciences, Engineering, and Medicine, 2021): chronic conditions, mental health and psychosocial wellbeing, and substance use. Specifically, we limit our comparison to measures that have *at least one* analogous measure in either BRFSS, NHIS, or NSDUH; in some cases, we have multiple measures that we can compare. There are also instances where NWS items are not perfectly comparable to similar measures in these other surveys. When possible, we “harmonized” the data in the NWS and the other survey(s) to facilitate comparisons. Any such harmonizations are documented below. Finally, BRFSS, NHIS, and NSDUH are not explicitly studies of working-age populations; they include adults over the age of 65. Thus, we limited the analytic comparison sample for all three to adults 18-64 years old.

The resulting non-exhaustive set of health and wellbeing measures includes the following, separated across the three domains noted above:

Chronic conditions: self-reported physical health; high blood pressure; high cholesterol; diabetes; heart attack, angina or coronary heart disease; COPD.

Mental health and psychosocial wellbeing: life satisfaction; diagnosed depression; diagnosed anxiety.

Substance use: alcohol consumption status; number of alcoholic drinks; smoking status; marijuana use (lifetime); powder cocaine use (lifetime); crack cocaine use (lifetime); methamphetamine use (lifetime); heroin use (lifetime); opioid misuse (lifetime); tranquilizer misuse (lifetime); sedative misuse (lifetime); stimulant misuse (lifetime).

For each of the measures above, we first provide a summary of the distribution of the survey item in the NWS data, using frequencies, unweighted proportions, and weighted proportions with 95% confidence intervals. **The weighted estimates are bootstrapped estimates based on the final survey design weight and replicate weights, as well as the corresponding poststratification weights (as described in the "Weights and Sample Representativeness" section above).**

For comparability, “refusals” or “don’t know” responses (or their equivalents) were recoded as missing, though it is possible that differences in survey design may affect how/why respondents provide these types of responses. Both unweighted and weighted results are shown. We then provide the identical set of estimates for comparable measures in the comparison survey(s), using the comparison final survey weight provided in those datasets. We briefly discuss similarities and differences in estimates between the NWS and the other survey(s). We also note any additional information that readers should be aware of in comparing the survey items across surveys (e.g., collapsing categories; differences in wording; data availability).

Our goal is for researchers using the NWS data to draw on this document to provide necessary context for their results, especially if/when comparing their findings to similar extant work using other cross-sectional nationally representative survey data.

General Summary of Findings

Direct comparisons were often challenging due to the relatively limited number of identical survey items across these studies. There were often differences based on survey item wording/framing, response options, and survey logic/design (e.g., use of screening questions). However, we tried to harmonize measures across surveys to better understand how NWS compares to three gold standard national random surveys across key metrics. In this section, we provide a high-level overall summary. Users interested in the specific comparisons across individual items should see the sections below. Comparison are not exhaustive of all items in the NWS.

First, working-age adults (ages 18-64) in the NWS generally appear to have *comparable or worse physical health* across multiple chronic conditions than respondents in the BRFSS, NHIS, and NSDUH in the same survey year (2023). NWS respondents report moderately higher prevalences of ever being told they have high blood pressure and diabetes compared to respondents in the other three surveys. High cholesterol, COPD, and heart condition prevalence were more comparable to the other surveys. However, this set of measures was challenging to standardize across surveys.

Second, working-age adults in the NWS also generally have *worse mental health and psychosocial wellbeing outcomes*, though this comparison is mostly limited to NHIS, with a few

comparable items in BRFSS. NWS respondents have a much higher reported prevalence of diagnosed depression and anxiety.

Third, working-age adults in NWS have a *mixed profile on substance use outcomes* compared to their BRFSS, NHIS, and NSDUH counterparts. On the one hand, NWS respondents reported higher prevalences of never drinking. However, the proportion of NWS respondents who occasionally or frequently smoke was greater than in the comparison surveys. Comparisons of drug use behaviors (e.g., marijuana, cocaine, heroin, misuse of prescribed substances) were limited to NSDUH. Lifetime substance use was comparable between NWS and NSDUH across multiple measures, though NWS respondents reported higher (mis)use of crack cocaine, methamphetamines, heroin, tranquilizers, stimulants, and sedatives.

There are plausible explanations for these differences. First, the NWS is not administered to a random sample. Online survey panelists opt-in to complete the survey and may be different in many ways to the overall U.S. population. While we use survey weights to correct for the non-probability design of NWS, these weights cannot entirely correct for the myriad potential differences between the NWS sample and other nationally representative surveys. Second, differences in question wording and response sets across the surveys may have influenced respondents' interpretations and answers.

Differences in prevalence rates across surveys does not suggest that the data are low quality or should not be used. Rather, users should fully describe the data collection and sampling methods in their papers (or point readers to this document) and should acknowledge in their limitations sections how NWS respondents compare to national gold standard random samples (e.g., they appear to have slightly worse physical and mental health) and the potential implications of these differences for the research findings.

Chronic Conditions

Self-reported physical health

In lieu of a single, global measure of self-rated health, NWS respondents are asked about self-reported physical health and self-reported mental health, separately. Thus, a direct comparison between NWS and BRFSS, NHIS, and NSDUH is challenging, as the latter surveys each ask about overall or general health. We felt that physical health was a closer analogue to this overall/general measure used in other surveys. However, the distribution of this measure is much different in NWS than the other three surveys. Approximately 86% of respondents reported good to excellent health in BRFSS, NHIS, and NSDUH – with little variation across surveys – compared to 78% in NWS. Differences in the “Excellent” (i.e., lower among NWS) and “Fair/Poor” (i.e., higher among NWS) response categories are most notable. Lacking a more direct comparison, it is difficult to definitively conclude whether/how NWS differs on self-reported physical health compared to other, large national surveys of adults ages 18-64.

National Wellbeing Survey (2023) - *Self-reported physical health*

“In general, would you say your physical health is: excellent, very good, good, fair, poor.”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>Excellent</i>	642	0.090	0.116	0.104	0.128
<i>Very good</i>	1,819	0.256	0.314	0.296	0.332
<i>Good</i>	2,601	0.366	0.350	0.332	0.368
<i>Fair</i>	1,638	0.231	0.175	0.164	0.188

<i>Poor</i>	405	0.057	0.045	0.039	0.053
<i>Missing</i>	-				
Total	7,105				

Behavioral Risk Factor Surveillance System (2023) - *Self-reported health*

[“In general, would you say your health is: excellent, very good, good, fair, poor.”](#)

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>Excellent</i>	44,261	0.169	0.176	0.173	0.179
<i>Very good</i>	87,613	0.334	0.315	0.315	0.319
<i>Good</i>	85,591	0.327	0.334	0.334	0.338
<i>Fair</i>	34,065	0.130	0.138	0.138	0.141
<i>Poor</i>	10,391	0.040	0.037	0.037	0.039
<i>Missing</i>	579				
Total	262,500				

National Health Interview Survey (2023) - *Self-reported health*

[“Would you say your health in general is excellent, very good, good, fair, or poor?”](#)

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>Excellent</i>	4,755	0.240	0.248	0.241	0.256
<i>Very good</i>	6,953	0.352	0.347	0.338	0.356
<i>Good</i>	5,496	0.278	0.280	0.272	0.288
<i>Fair</i>	2,039	0.103	0.100	0.095	0.105
<i>Poor</i>	530	0.027	0.024	0.022	0.027
<i>Missing</i>	8				
Total	19,781				

National Survey on Drug Use and Health (2023) - *Self-reported health*

[“This question is about your overall health. Would you say your health in general is excellent, very good, good, fair, or poor?”](#)

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>Excellent</i>	8,031	0.200	0.186	0.178	0.195
<i>Very good</i>	14,512	0.362	0.358	0.348	0.368
<i>Good</i>	12,746	0.318	0.319	0.309	0.329
<i>Fair</i>	4,097	0.102	0.115	0.109	0.121
<i>Poor</i>	676	0.017	0.021	0.019	0.024
<i>Missing</i>	11				
Total	40,073				

High blood pressure

Approximately 28% (weighted) of NWS respondents reported having ever received a diagnosis of high blood pressure, which is comparable to BRFSS (26%), slightly higher than NHIS (24%), and much higher than NSDUH (14%). However, a direct comparison to NSDUH is challenging as the questionnaire logic first asks if respondents have had ANY of a list of conditions, before asking about specific diagnoses; consequently, respondents not reporting any condition are also coded as not having a specific condition – in this case, hypertension. The more complicated survey logic may contribute to the lower prevalence in NSDUH.

National Wellbeing Survey (2023) – *high blood pressure*

“Have you ever been told by a health care professional that you have any of the following:
High Blood Pressure?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	4,623	0.684	0.720	0.704	0.736
Yes	2,138	0.316	0.280	0.264	0.296
Missing	344				
Total	7,105				

Behavioral Risk Factor Surveillance System (2023) – *high blood pressure*

“Have you ever been told by a doctor, nurse or other health professional that you have high blood pressure?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	185,840	0.710	0.741	0.738	0.744
Yes	75,810	0.290	0.259	0.256	0.262
Missing	850				
Total	262,500				

National Health Interview Survey (2023) – *high blood pressure*

“Have you ever been told by a doctor or other health professional that you had
...Hypertension, also called high blood pressure?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	14,641	0.741	0.763	0.756	0.770
Yes	5,115	0.259	0.237	0.230	0.244
Missing	25				
Total	19,781				

National Survey on Drug Use and Health (2023) – *high blood pressure*

“Below is a list of health conditions that you may have had during your lifetime.
Please read the list and type in the numbers of all of the conditions that a doctor or other health care professional has ever told you that you had. Ever told had high blood pressure.”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	35,134	0.900	0.860	0.853	0.867
Yes	3,914	0.100	0.140	0.133	0.147
Missing	1,025				
Total	40,073				

High cholesterol

Approximately one-quarter (25%) of NWS respondents reported ever being told by a healthcare provider that they have high cholesterol – comparable to the proportion in NHIS (21%), but lower than the proportion in BRFSS (31%).

National Wellbeing Survey (2023) – *high cholesterol*

“Have you ever been told by a health care professional that you have any of the following:
High Cholesterol?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	5,104	0.757	0.751	0.734	0.767
Yes	1,642	0.243	0.249	0.233	0.266
Missing	359				
Total	7,105				

Behavioral Risk Factor Surveillance System (2023) – *high cholesterol*

“Have you ever been told by a doctor, nurse or other health professional that you have high cholesterol?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	146,052	0.668	0.690	0.686	0.695
Yes	75,81	0.332	0.310	0.305	0.314
Missing	43,959				
Total	262,500				

National Health Interview Survey (2023) – *high cholesterol*

“Have you ever been told by a doctor or other health professional that you had high cholesterol?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	15,238	0.772	0.788	0.782	0.795
Yes	4,512	0.228	0.211	0.205	0.218
Missing	31				
Total	19,781				

Diabetes

Compared to the other three surveys, a larger proportion of NWS respondents reported ever being told by a healthcare provider that they had diabetes: 12% vs. 8.5% in BRFSS, 6.7% in NHIS, and 8.7% in NSDUH. Direct comparisons between the NWS and the BRFSS and NSDUH are complicated on account of: (1) BRFSS providing respondents with a “pre/borderline” diabetes response option; and (2) NSDUH first asking respondents if they have ANY of a list of conditions before specifically asking about diabetes.

National Wellbeing Survey (2023) – *diabetes*

“Have you ever been told by a health care professional that you have any of the following:
Diabetes?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	5,948	0.870	0.877	0.864	0.889
Yes	886	0.130	0.123	0.111	0.136
Missing	271				
Total	7,105				

Behavioral Risk Factor Surveillance System (2023) – *diabetes*

“(Ever told) (you had) diabetes?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	237,419	0.906	0.915	0.913	0.918
Yes	24,588	0.094	0.085	0.08	0.087
Missing	493				
Total	262,500				

National Health Interview Survey (2023) – *diabetes*

“Has a doctor or other health professional ever told you that you had diabetes?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	18,339	0.928	0.933	0.928	0.937
Yes	1,427	0.072	0.067	0.063	0.071
Missing	15				
Total	19,781				

National Survey on Drug Use and Health (2023) – *diabetes*

“Below is a list of health conditions that you may have had during your lifetime. Please read the list and type in the numbers of all of the conditions that a doctor or other health care professional has ever told you that you had. Ever told had diabetes/sugar diabetes.”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	36,729	0.941	0.913	0.907	0.919

Yes	2,319	0.059	0.087	0.081	0.093
Missing	1,025				
Total	40,073				

Heart attack, angina, or coronary heart disease

The proportion of NWS respondents who reported ever having been told by a healthcare provider that they have had a heart attack, angina, or coronary heart disease (3.9%) is lower than NSDUH (6.9%), but comparable to the BRFSS (3.6%) and NHIS (3.2%). However, caution should be taken in comparing these proportions as all four surveys approach this set of conditions differently. Namely, whereas the NWS asks a single question about all three conditions, BRFSS respondents are separately asked about (1) heart attacks and (2) angina or coronary heart disease, NHIS respondents are separately asked about (1) heart attacks, (2) angina, and (3) coronary heart disease, and NSDUH respondents are asked only whether they have been told they have a heart condition, after first being asked if they have ANY condition from a list of conditions. It is unclear how this may affect reported prevalences, though the similar logic in BRFSS and NHIS may help explain the comparable prevalence in those two surveys.

National Wellbeing Survey (2023) – *heart attack, angina, or coronary heart disease*

“Have you ever been told by a health care professional that you have any of the following: Heart Attack, Angina, or Coronary Heart Disease?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	6,491	0.950	0.961	0.955	0.967
Yes	341	0.050	0.039	0.033	0.045
Missing	273				
Total	7,105				

Behavioral Risk Factor Surveillance System (2023) – *heart attack, angina, or coronary heart disease*

“(Ever told) you had a heart attack, also called a myocardial infarction?”; “(Ever told) (you had) angina or coronary heart disease?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	250,253	0.960	0.964	0.963	0.966
Yes	10,448	0.040	0.036	0.034	0.037
Missing	1,799				
Total	262,500				

National Health Interview Survey (2023) – *heart attack, angina, or coronary heart disease*

“Have you ever been told by a doctor or other health professional that you had ...A heart attack, also called myocardial infarction?” “...Angina, also called angina pectoris?” “...Coronary heart disease?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	19,067	0.965	0.967	0.965	0.971
Yes	685	0.035	0.032	0.029	0.035
Missing	29				
Total	19,781				

National Survey on Drug Use and Health (2023) – *heart condition*

“Below is a list of health conditions that you may have had during your lifetime.

Please read the list and type in the numbers of all of the conditions that a doctor or other health care professional has ever told you that you had. Ever told had heart condition.”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	37,132	0.951	0.931	0.925	0.936
Yes	1,916	0.049	0.069	0.064	0.075
Missing	1,025				
Total	40,073				

Chronic obstructive pulmonary disease (COPD)

The proportion of NWS respondents who reported ever being told by a healthcare provider that they have COPD (4.3%) is the same as the reported prevalence in BRFSS (4.3%), but higher than those in the NHIS (2.8%) and NSDUH (2.4%). BRFSS respondents are asked if they have COPD, emphysema, OR chronic bronchitis, rather than exclusively about COPD. Despite their lower prevalence, NSDUH respondents are also asked about COPD OR chronic bronchitis. As with the chronic health conditions discussed earlier, the caveat for interpreting the NSDUH prevalence is the use of an initial screening question for ANY conditions before asking about COPD or chronic bronchitis, specifically.

National Wellbeing Survey (2023) – *Chronic obstructive pulmonary disease (COPD)*

“Have you ever been told by a health care professional that you have any of the following: Chronic Obstructive Pulmonary Disease?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	6,452	0.937	0.957	0.951	0.963
Yes	435	0.063	0.043	0.037	0.049
Missing	218				
Total	7,105				

Behavioral Risk Factor Surveillance System (2023) – *COPD, emphysema, or chronic bronchitis*

“(Ever told) (you had) C.O.P.D. (chronic obstructive pulmonary disease), emphysema or chronic bronchitis?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
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No	248,289	0.949	0.957	0.956	0.959
Yes	13,259	0.051	0.043	0.041	0.044
Missing	952				
Total	262,500				

National Health Interview Survey (2023) – *Chronic obstructive pulmonary disease (COPD)*
 “Have you ever been told by a doctor or other health professional that you had
 ...Chronic Obstructive Pulmonary Disease, C.O.P.D., emphysema, or chronic bronchitis?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	19,142	0.968	0.972	0.969	0.975
Yes	624	0.032	0.028	0.025	0.031
Missing	15				
Total	19,781				

National Survey on Drug Use and Health (2023) – COPD or chronic bronchitis
 “Below is a list of health conditions that you may have had during your lifetime.
 Please read the list and type in the numbers of all of the conditions that a doctor or other
 health care professional has ever told you that you had. Ever told had chronic bronchitis or
 COPD.”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	38,373	0.983	0.976	0.973	0.979
Yes	675	0.017	0.024	0.021	0.027
Missing	1,025				
Total	40,073				

Mental Health and Psychosocial Wellbeing

Life satisfaction

Only NWS and NHIS ask respondents how satisfied they are with their lives. The two surveys use different approaches, making a direct comparison between the two surveys challenging. Namely, NWS respondents are asked whether they agree with the statement “I am satisfied with my life,” with a Likert response scale ranging from strongly disagree to strongly agree. This item is part of a series of items that includes all five items that comprise the Diener Satisfaction with Life Scale. NHIS asks respondents how satisfied they are with their lives, with four response categories: Very satisfied; Satisfied; Dissatisfied; Very dissatisfied.

We created a dichotomous measure from both the NWS and NHIS. For the NWS, we combined strongly agree, somewhat agree, and neither agree nor disagree and we combined strongly disagree and somewhat disagree. For the NHIS respondents, we combined very satisfied with satisfied and combined very dissatisfied with dissatisfied. On these dichotomous measures, 24% of NWS respondents expressed dissatisfaction compared to 4% of NHIS respondents.

National Wellbeing Survey (2023) – *satisfied with life*

“Now please think about your life as a whole. How satisfied are you with it? Please indicate the extent to which you agree with each of the following statements: I am satisfied with my life.”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>Strongly agree, somewhat agree, neither agree nor disagree</i>	4,882	0.688	0.760	0.746	0.774
<i>Strongly disagree, somewhat disagree</i>	2,219	0.312	0.240	0.226	0.254
<i>Missing</i>	4				
Total	7,105				

National Health Interview Survey (2023) – *satisfied with life*

“In general, how satisfied are you with your life? Would you say very satisfied, satisfied, dissatisfied, or very dissatisfied?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>Very satisfied or satisfied</i>	18,896	0.957	0.959	0.955	0.962
<i>Very dissatisfied or dissatisfied</i>	841	0.043	0.041	0.038	0.045
<i>Missing</i>	44				
Total	19,781				

Depression – Diagnoses

The percentage of NWS respondents reporting ever being told by a healthcare provider that they have depression is higher (34%) compared to the percentage of BRFSS respondents (22%) and NHIS respondents (20%). There are some slight differences in the wording and presentation of these items across surveys – with NWS and NHIS explicitly mentioning being told by a healthcare provider, as compared to BRFSS simply asking whether they have been told they have a depressive disorder. However, it does not seem likely that this discrepancy would account for the higher prevalence in NWS.

National Wellbeing Survey (2023) – *diagnosed with depression*

“Have you ever been told by a health care professional that you have any of the following: Depression?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>No</i>	3,905	0.576	0.656	0.640	0.671
<i>Yes</i>	2,870	0.423	0.344	0.329	0.360
<i>Missing</i>	330				
Total	7,105				

Behavioral Risk Factor Surveillance System (2023) – *diagnosed with depression*

“(Ever told) (you had) a depressive disorder (including depression, major depression, dysthymia, or minor depression)?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	198,975	0.762	0.779	0.776	0.782
Yes	62,012	0.238	0.221	0.218	0.224
Missing	1,513				
Total	262,500				

National Health Interview Survey (2023) – *diagnosed with depression*

“Have you ever been told by a doctor or other health professional that you had ...Any type of depression?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	15,640	0.792	0.804	0.796	0.811
Yes	4,115	0.208	0.196	0.189	0.204
Missing	26				
Total	19,781				

Anxiety – Diagnosis

The percentage of NWS respondents reporting ever being told by a healthcare provider that they have anxiety (43%) is over double that among NHIS respondents (20%). In both surveys, respondents are explicitly asked if they have ever been told this information by a healthcare professional/provider.

National Wellbeing Survey (2023) – *diagnosed with anxiety*

“Have you ever been told by a health care professional that you have any of the following: Anxiety?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	3,393	0.496	0.571	0.552	0.589
Yes	3,443	0.504	0.429	0.411	0.448
Missing	269				
Total	7,105				

National Health Interview Survey (2023) – *diagnosed with anxiety*

“Have you ever been told by a doctor or other health professional that you had ...Any type of anxiety disorder?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	15,628	0.791	0.800	0.793	0.807

Yes	4,120	0.209	0.200	0.193	0.207
Missing	33				
Total	19,781				

Substance Use

Alcohol Use

For alcohol use questions, we compared responses from the NWS and NSDUH. The questions and response options differ, which prohibits direct comparison. Namely, the NWS response option for "former" explicitly states 'no longer drink,' while NSDUH has no formal category of "former" drinkers, but instead asks if respondents have used alcohol in the past year. To maximize comparability, we recoded the NWS measure to 'never', 'former', and 'current'. Within the NSDUH, we classified as current drinkers respondents who used alcohol within the past year. We classified as former drinkers respondents who last consumed alcohol more than 12 months ago. This classification may carry some bias, as it is possible that a share of respondents who did not drink in the past year would classify themselves as current drinkers.

A fifth of NWS respondents reported never having consumed alcohol (21%) compared to 15% in the NSDUH. 18% of NWS respondents reported being former drinkers and 62% reported being current drinkers. In the NSDUH, the corresponding percentages are 15% and 70%, respectively.

National Wellbeing Survey (2023) – alcohol use status

"When it comes to alcohol, which of the following best describe you?: I have never drunk alcohol or have only tried it once or twice, I used to drink but no longer drink alcohol, I typically drink alcohol less often than once a month, I typically drink alcohol more than once a month but not weekly, I typically drink alcohol 1-2 days per week, I typically drink alcohol 3-5 days per week, I typically drink alcohol 6-7 days per week."

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>Never</i> ¹	1,469	0.207	0.205	0.190	0.222
<i>Former</i> ²	1,568	0.221	0.179	0.167	0.193
<i>Current</i>	4,064	0.572	0.615	0.597	0.633
Missing	4				
Total	7,105				

¹ I have never drunk alcohol or have only tried it once or twice.

² I used to drink but no longer drink.

National Survey on Drug Use and Health (2023) – alcohol use status

"How long has it been since you last drank an alcoholic beverage?"

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>Never</i>	6,819	0.170	0.147	0.140	0.154
<i>Former</i> ³	5,249	0.131	0.153	0.144	0.162
<i>Current</i> ⁴	27,999	0.699	0.700	0.690	0.710

<i>Missing</i>	6
Total	40,073

³ Consumed alcohol in the past, but not within the past year.

⁴ Consumed alcohol within the past year.

Smoking Status

Smoking status was available in all three comparison surveys. The NWS is nearly directly comparable to BRFSS and NHIS on this measure. The NSDUH does not explicitly ask about former smoking status, so we assumed that anyone not having smoked in the past year was a former smoker. The NSDUH also does not enable distinguishing between daily and occasional smokers, so we combined anyone who reported smoking within the past year into a ‘current smoker’ category. We also coded an alternate version of the NWS smoking status question where we combined occasional and daily smokers into a ‘current smoker’ category for better comparison to NSDUH.

The prevalence of occasional or current smoking is much higher in NWS (29%) compared to BRFSS (12%), NHIS (11%), but closer to NSDUH (21%). About one-fifth of respondents reporting being former smokers in NWS, BRFSS, and NHIS, compared to one-third in NSDUH. The proportion of never smokers in NWS (50%) is closer to NSDUH (45%) than BRFSS (68%) and NHIS (70%).

National Wellbeing Survey (2023) – *smoking status (original)*

“When it comes to smoking, which of the following describe you. Here we are specifically referring to smoking tobacco cigarettes: I have never smoked tobacco/have only tried smoking once or twice, I used to smoke but no longer smoke, I smoke tobacco occasionally (e.g., some days, only when out socially, just on weekends), and I smoke tobacco regularly (e.g., daily or almost daily)”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>Never</i>	3,076	0.433	0.498	0.480	0.515
<i>Former</i>	1,508	0.212	0.213	0.198	0.229
<i>Occasional</i>	671	0.095	0.098	0.088	0.109
<i>Daily</i>	1,844	0.260	0.191	0.179	0.203
<i>Missing</i>	6				
Total	7,105				

National Wellbeing Survey (2023) – *smoking status (recoded)*

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>Never</i>	3,076	0.433	0.498	0.480	0.515
<i>Former</i>	1,508	0.212	0.213	0.198	0.229
<i>Current</i>	2,515	0.354	0.289	0.274	0.304
<i>Missing</i>	6				
Total	7,105				

Behavioral Risk Factor Surveillance Survey (2023) – *smoking status*

“Four-level smoker status: Everyday smoker, Someday smoker, Former smoker, Non-smoker.” Note: this is a constructed variable pulling from other items.

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>Never</i>	161,138	0.649	0.678	0.675	0.682
<i>Former</i>	54,435	0.219	0.197	0.194	0.201
<i>Occasional</i>	10,029	0.040	0.041	0.040	0.043
<i>Current</i>	22,607	0.091	0.083	0.081	0.085
<i>Missing</i>	14,291				
Total	262,500				

National Health Interview Survey (2023) – *smoking status*

“For sample adults 18 and over, this is a recoded variable indicating the respondent's *current* smoking status in categories of current smoker, every day current smoker, some day current smoker, current smoker--unknown frequency of smoking, and also indicates former smoker, never smoked and "has smoked, current smoking status unknown." Note: this is a constructed variable pulling from other items.

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>Never</i>	12,928	0.678	0.699	0.690	0.708
<i>Former</i>	3,814	0.200	0.185	0.179	0.192
<i>Occasional</i>	617	0.032	0.032	0.029	0.035
<i>Current</i>	1,713	0.090	0.083	0.078	0.088
<i>Missing</i>	709				
Total	19,781				

National Survey on Drug Use and Health (2023) – *smoking status*

“Now think about the past 30 days, that is, from [DATEFILL] up to and including today. During the past 30 days, have you smoked part or all of a cigarette? How long has it been since you last smoked part or all of a cigarette?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>Never</i>	19,716	0.492	0.450	0.441	0.459
<i>≤12 months</i>	12,088	0.402	0.342	0.333	0.351
<i>12 months+</i>	8,245	0.206	0.207	0.199	0.216
<i>Missing</i>	24				
Total	40,073				

Marijuana use

The proportion of NWS respondents who reported ever using marijuana (49%), is comparable to NSDUH (53%).

National Wellbeing Survey (2023) – *lifetime marijuana use*

“Have you ever used any of the following substances, even once in your lifetime? Cannabis, marijuana, or hashish”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	3,242	0.457	0.515	0.497	0.533
Yes	3,858	0.543	0.485	0.467	0.503
Missing	5				
Total	7,105				

National Survey on Drug Use and Health (2023) – *lifetime marijuana use*

“Have you ever, even once, used marijuana or any cannabis product?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	18,476	0.461	0.470	0.460	0.480
Yes	21,577	0.539	0.530	0.520	0.540
Missing	20				
Total	40,073				

Cocaine use

17% of NWS respondents reported ever using powder cocaine – the same as the proportion in NSDUH. However, a challenge in making a direct comparison is that NSDUH respondents were first asked about any cocaine use – including powder and crack cocaine – and then probed further on crack use. Thus, it is not possible to distinguish separate instances of powder or crack cocaine use; only whether crack was used *among* those indicating any cocaine use. Thus, for the initial comparison, the NWS items on powder and crack cocaine are combined. A separate comparison is made for crack cocaine, below.

National Wellbeing Survey (2023) – *lifetime cocaine use*

“Have you ever used any of the following substances, even once in your lifetime? Powder cocaine; Crack cocaine”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	5,648	0.796	0.832	0.818	0.845
Yes	1,451	0.204	0.168	0.155	0.182
Missing	6				
Total	7,105				

National Survey on Drug Use and Health (2021) – *lifetime cocaine use*

“Have you ever, even once, used any form of cocaine?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	34,291	0.856	0.828	0.820	0.836

Yes	5,770	0.144	0.172	0.163	0.180
Missing	12				
Total	40,073				

Crack cocaine use

About 7% of respondents in NWS report ever using crack cocaine, compared to 4% in NSDUH.

National Wellbeing Survey (2023) – *lifetime crack cocaine use*

“Have you ever used any of the following substances, even once in your lifetime? Crack cocaine”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	6,407	0.902	0.928	0.919	0.935
Yes	693	0.098	0.072	0.064	0.081
Missing	5				
Total	7,105				

National Survey on Drug Use and Health (2023) – *lifetime crack cocaine use*

“Have you ever, even once, used ‘crack’?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	38,711	0.966	0.957	0.953	0.961
Yes	1,342	0.034	0.043	0.039	0.047
Missing	20				
Total	40,073				

Methamphetamine use

The lifetime prevalence of methamphetamine use is higher in NWS (10%) than in NSDUH (7%).

National Wellbeing Survey (2023) – *lifetime methamphetamine use*

“Have you ever used any of the following substances, even once in your lifetime? Methamphetamine”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	6,074	0.856	0.899	0.889	0.908
Yes	1,023	0.144	0.101	0.092	0.111
Missing	8				
Total	7,105				

National Survey on Drug Use and Health (2023) – *lifetime methamphetamine use*

“Have you ever, even once, used methamphetamine?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	37,826	0.944	0.934	0.930	0.939
Yes	2,223	0.056	0.066	0.061	0.070
Missing	24				
Total	40,073				

Heroin use

The prevalence of lifetime heroin use is higher in NWS (4.9%) and NSDUH (2.8%).

National Wellbeing Survey (2023) – *lifetime heroin use*

“Have you ever used any of the following substances, even once in your lifetime? Heroin”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	6,633	0.935	0.951	0.944	0.957
Yes	463	0.065	0.049	0.043	0.056
Missing	9				
Total	7,105				

National Survey on Drug Use and Health (2023) – *lifetime heroin use*

“Have you ever, even once, used heroin?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	39,086	0.976	0.972	0.969	0.976
Yes	980	0.024	0.028	0.024	0.031
Missing	7				
Total	40,073				

Prescription opioid misuse

The prevalence of lifetime prescription opioid misuse is comparable in NWS (9.4%) and NSDUH (10%), though it should be noted that NSDUH asks about prescription pain relievers rather than the more specific category of prescription opioids asked about in the NWS.

National Wellbeing Survey (2023) – *lifetime prescription opioid misuse*

“Have you ever misused any of the following prescription medications? By misused, we mean used pills that were not prescribed to you or taken them in a way that was not prescribed by a physician. This includes things like taking them more frequently than prescribed, taking them to get high, or crushing them to get the dose faster: Opioids (e.g., oxycodone, hydrocodone, OxyContin, Percocet, Vicodin, Lortab, Dilaudid, methadone).”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	6,270	0.883	0.906	0.897	0.915
Yes	832	0.117	0.094	0.085	0.103

<i>Missing</i>	3
Total	7,105

National Survey on Drug Use and Health (2023) – *lifetime prescription pain relievers misuse*
 “Have you ever, even once, used any prescription pain reliever in any way a doctor did not direct you to use it?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>No</i>	35,848	0.902	0.900	0.894	0.906
<i>Yes</i>	3,880	0.098	0.100	0.094	0.106

<i>Missing</i>	345
Total	40,073

Prescription tranquilizer misuse

The prevalence of lifetime prescription tranquilizer misuse is higher in NWS (6.3%) and NSDUH (4.2%).

National Wellbeing Survey (2023) – *lifetime prescription tranquilizer misuse*
 “Have you ever misused any of the following prescription medications? By misused, we mean used pills that were not prescribed to you or taken them in a way that was not prescribed by a physician. This includes things like taking them more frequently than prescribed, taking them to get high, or crushing them to get the dose faster: Tranquilizers (e.g., Benzodiazepines, Xanax, Ativan, Valium, Klonopin, Clonazepam, Soma).”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>No</i>	6,526	0.919	0.937	0.929	0.944
<i>Yes</i>	575	0.081	0.063	0.056	0.071

<i>Missing</i>	4
Total	7,105

National Survey on Drug Use and Health (2023) – *lifetime prescription tranquilizer misuse*
 “Have you ever, even once, used any prescription tranquilizer in any way a doctor did not direct you to use it?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>No</i>	38,178	0.958	0.958	0.955	0.962
<i>Yes</i>	1,686	0.042	0.042	0.038	0.045

<i>Missing</i>	209
Total	40,073

Prescription sedative misuse

The prevalence of lifetime prescription sedative misuse is comparable in NWS (2.7%) and NSDUH (2.3%).

National Wellbeing Survey (2023) – *lifetime prescription sedative misuse*

“Have you ever misused any of the following prescription medications? By misused, we mean used pills that were not prescribed to you or taken them in a way that was not prescribed by a physician. This includes things like taking them more frequently than prescribed, taking them to get high, or crushing them to get the dose faster: Sedatives (e.g., Methaqualone, Nembutal, Pentobarbital, Phenobarbital)”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	6,889	0.970	0.972	0.966	0.978
Yes	211	0.030	0.027	0.022	0.034
Missing	5				
Total	7,105				

National Survey on Drug Use and Health (2023) – *lifetime prescription sedative misuse*

“Have you ever, even once, used any prescription sedative in any way a doctor did not direct you to use it?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	39,005	0.979	0.977	0.975	0.980
Yes	845	0.021	0.023	0.020	0.025
Missing	223				
Total	40,073				

Prescription stimulant misuse

The prevalence of lifetime prescription stimulant misuse is slightly higher in NWS (6.6%) than NSDUH (4.8%).

National Wellbeing Survey (2023) – *lifetime prescription stimulant misuse*

“Have you ever misused any of the following prescription medications? By misused, we mean used pills that were not prescribed to you or taken them in a way that was not prescribed by a physician. This includes things like taking them more frequently than prescribed, taking them to get high, or crushing them to get the dose faster: Stimulants (e.g., Amphetamines, Methylphenidate, Adderall, Ritalin).”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
No	6,503	0.916	0.934	0.926	0.941
Yes	595	0.084	0.066	0.059	0.074
Missing	7				
Total	7,105				

National Survey on Drug Use and Health (2023) – *lifetime prescription stimulant misuse*
 “Have you ever, even once, used any prescription stimulant in any way a doctor did not direct you to use it?”

	N	Unweighted Proportion	Weighted Proportion	95% Confidence Interval	
<i>No</i>	37,705	0.945	0.952	0.948	0.956
<i>Yes</i>	2,176	0.055	0.048	0.044	0.052
<i>Missing</i>	192				
Total	40,073				

Data Dissemination

The data, questionnaire, and codebook are available through the ICPSR National Addiction & HIV Data Archive Program (NAHDAP). There are two versions of the data available. The public use version does not include any geographic identifiers except the USDA ERS Rural-Urban Continuum Codes (RUCCs). The public-use data files in this collection are available for access by the general public. Access does not require affiliation with an ICPSR member institution. The restricted use version includes state and county identifiers.

References

- Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, White women. *Health Psychology, 19*(6), 586-592.
- Ahmad, F., Jhaji, A. K., Stewart, D. E., Burghardt, M., & Bierman, A. S. (2014). Single item measures of self-rated mental health: a scoping review. *BMC health services research, 14*(1), 1-11.
- Barger, S. D. (2006). Do psychological characteristics explain socioeconomic stratification of self-rated health? *Journal of Health Psychology, 11*(1), 21-35.
- Bruce, L. D., Wu, J. S., Lustig, S. L., Russell, D. W., & Nemecek, D. A. (2019). Loneliness in the United States: A 2018 national panel survey of demographic, structural, cognitive, and behavioral characteristics. *American Journal of Health Promotion, 33*(8), 1123-1133.
- Center for Economic and Social Research (CESR), University of Southern California. (2020). Understanding America Study.
- Centers for Disease Control and Prevention. (2020). *Behavioral risk factor surveillance system survey questionnaire*. Georgia: Atlanta: S Department of Health and Human Services, Centers for Disease Control and Prevention.
- Centers for Disease Control and Prevention, & National Center for Health Statistics. National Health and Nutrition Examination Survey Questionnaire 2007-2008. Retrieved from https://wwwn.cdc.gov/Nchs/Nhanes/2007-2008/SLQ_E.htm#SLQ080
- Chen, Y., Li, P., & Wu, C. (2020). Doubly robust inference with nonprobability survey samples. *Journal of the American Statistical Association, 115*(532), 2011-2021.
- Davern, M., Bautista, R., Freese, J., Morgan, S. L., & Smith, T. W. (2021) General Social Surveys, 1972-2021. *NORC at the University of Chicago*.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of personality assessment, 49*(1), 71-75.
- Elliott, M. R., & Valliant, R. (2017). Inference for Nonprobability Samples. *Statistical science, 32*(2), 249-264.
- Fields, J. F., Hunter-Childs, J., Tersine, A., Sisson, J., Parker, E., Velkoff, V., Logan, C., & Shin, H. (2020). Design and Operation of the 2020 Household Pulse Survey, 2020. *U.S. Census Bureau*.
- Gallup. (2012). Understanding how Gallup uses the Cantril Scale. Retrieved from <https://news.gallup.com/poll/122453/understanding-gallup-uses-cantril-scale.aspx>
- Gallup. (2018). Americans' views on living standards for today's youth vs. their parents (trends). Americans' Views on Living Standards for Today's Youth vs. Their Parents (Trends) on Gallup.com. Retrieved from <https://news.gallup.com/poll/232085/americans-views-living-standards-today-youth-parents-trends.aspx>
- Haerpfer, C., Inglehart, R., Moreno, A., Welzel, C., Kizilova, K., Diez-Medrano J., M. Lagos, P. Norris, E. Ponarin & B. Puranen et al. (eds.). 2020. World Values Survey: Round Seven – Country-Pooled Datafile. Madrid, Spain & Vienna, Austria: JD Systems Institute & WVSA Secretariat.
- Hays, R.D., Honghu, L., & Kapteyn, A. (2015). Use of internet panels to conduct surveys. *Behavior Research Methods 47*(3), 685-90.
- Health and Retirement Study, 2020, public use dataset. (2020). Produced and distributed by the University of Michigan with funding from the National Institute on Aging (grant number NIA U01AG009740). Ann Arbor, MI.
- Iannotti, R. J. (2012). *Health behavior in school-aged children (HBSC), 2005-2006*. Inter-university Consortium for Political and Social Research.

- Kroenke, K., Spitzer, R. L., Williams, J. B., & Löwe, B. (2009). An ultra-brief screening scale for anxiety and depression: the PHQ-4. *Psychosomatics*, 50(6), 613-621.
- National Center for Health Statistics. (2016). Survey description, National Health Interview Survey, 2015. *Hyattsville: National Center for Health Statistics*.
- National Center for Health Statistics. (2019). Survey Description, National Health Interview Survey, 2018. *Hyattsville: National Center for Health Statistics*.
- National Center for Health Statistics. (2022). Survey Description, National Health Interview Survey, 2022. *Hyattsville: National Center for Health Statistics*.
- Nesse, R. M., House, J. S., Kessler, R., Lepkowski, J., & Wortman, C. (2003). Changing lives of older couples (CLOC): A study of spousal bereavement in the Detroit area, 1987-1993.
- McLanahan, S., & Garfinkel, I. (2000). The fragile families and child wellbeing study: Questions, design, and a few preliminary results. Center for Research on Child Wellbeing, Working Paper # 00-07.
- Personal Capital. (2022). Wealth & Wellness Index. Retrieved from <https://www.personalcapital.com/assets/public/src/2022-Wealth-and-Wellness-Index.pdf>
- Pew Research Center. (2018). What unites and divides urban, suburban and rural communities.
- Pew Research Center. (2022). Importance of religion in one's life. Religious Landscape Study. Retrieved from <https://www.pewresearch.org/religion/religious-landscape-study/importance-of-religion-in-ones-life/>
- Russell, D. W. (1996). UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *Journal of personality assessment*, 66(1), 20-40.
- Schneider, D., & Harknett, K. (2024). The Shift Project. <https://shift.hks.harvard.edu/about/>.
- Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: assessing the ability to bounce back. *International journal of behavioral medicine*, 15(3), 194-200.
- U.S. Bureau of Labor Statistics. (2022). National Compensation Survey. <https://www.bls.gov/ebs/publications/september-2022-landing-page-employee-benefits-in-the-united-states-march-2022.htm>
- U.S. Census Bureau. (2022). American Community Survey. Retrieved from <https://www.census.gov/programs-surveys/acs>
- U.S. Census Bureau. (2020). Current Population Survey. Retrieved from <https://www.census.gov/programs-surveys/cps>
- U.S. Census Bureau. (2022). Survey of Income and Program Participation. Retrieved from <https://www.census.gov/programs-surveys/sipp>
- U.S. Department of Agriculture, Economic Research Service. *Rural-Urban Continuum Codes (RUCCs)*, 2013. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/documentation/>.
- U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. (2021). National Survey on Drug Use and Health 2020 (NSDUH-2020-DS0001).
- U.S. Department of Veterans Affairs. (2017). Appendix A: National Survey of Veterans Questionnaire Instruments. Retrieved from <https://www.va.gov/vetdata/docs/SurveysAndStudies/AppendixAQuestionnaires.pdf>
- Waite, L., Cagney, K., Cornwell, B., Dale, W., Huang, E., Laumann, E., & Schumm, L. (2011). National Social Life, Health, and Aging Project (NSHAP) Wave 2 In-Person and Leave-Behind Questionnaires. *Chicago, IL: NORC at the University of Chicago*.