



## Technical Notes for Early Release of Selected Estimates Based on Data from the National Health Interview Survey

Peter Boersma, M.P.H. and Tina Norris, Ph.D.

Division of Health Interview Statistics, National Center for Health Statistics

### Technical Notes

All estimates presented are based on preliminary data files. The January 2019–September 2022 estimates are being released prior to final data editing and final weighting to provide access to the most recent information from the National Health Interview Survey (NHIS). In the past, differences between estimates calculated using preliminary data files and final data files were typically less than 0.1 percentage point. In 2019, the NHIS underwent a questionnaire redesign to better meet the needs of data users. The aims of the redesign were to improve the measurement of covered health topics, reduce respondent burden by shortening the length of the questionnaire, harmonize overlapping content with other federal surveys, establish a long-term structure of ongoing and periodic topics, and incorporate advances in survey methodology and measurement. For more information about the redesigned NHIS visit the website at:

[https://www.cdc.gov/nchs/nhis/2019\\_quest\\_redesign.htm](https://www.cdc.gov/nchs/nhis/2019_quest_redesign.htm). Following the redesign, the original key health indicators published based on the 1997–2018 NHIS were reevaluated, and a new set was chosen.

The 22 measures include outcomes of health status (disability status, six or more workdays missed due to illness, injury, or disability in the past 12 months, asthma episode in the past 12 months, diagnosed hypertension in the past 12 months, regularly experienced chronic pain, regularly had feelings of worry, nervousness or anxiety, and regularly had feelings of depression); health care service use (doctor visit in the past 12 months, hospital emergency department visit in the past 12 months, counseled by a mental health professional in the past 12 months, dental exam or cleaning in the past 12 months, blood pressure check in the past 12 months, and receipt of influenza vaccination in the past 12 months); health care access (did not get needed medical care due to cost in the past 12 months, did not get needed mental health care due to cost in the past 12 months, and did not take medication as prescribed to reduce costs in the past 12 months); health insurance coverage (for adults aged 18–64: uninsured at time of interview, private health insurance coverage at time of interview, public health plan coverage at time of interview, and exchange-based private health insurance coverage at time of interview); and health behaviors (current cigarette smoking and current electronic cigarette use). Additional indicators may be included in future releases based on changing public health surveillance needs and data availability on the NHIS. Quarterly estimates for January 2019–September 2022 are available in the [NHIS Quarterly Release Tables](#) data query tool, and biannual estimates for January 2019–June 2022 are available in the [NHIS Biannual Release Tables](#) data query tool.

### Data source

Data used to produce this Early Release report are derived from the Sample Adult component from the January 2019–September 2022 NHIS. NHIS is a nationally representative household survey conducted throughout the year to collect information on health status, health-related behaviors, and health care access and utilization. The NHIS interview begins by identifying everyone who usually lives or stays in the household. Then, one “sample adult” aged 18 years or older and one “sample child” aged 17 years or younger (if any children live in the household) are randomly selected. Information about the sample adult is collected from the sample adult themselves unless they are physically or mentally unable to do so, in which case a knowledgeable proxy can answer for the sample adult. Data analysis was based on information collected on 32,391 sample adults in 2019, 31,568 sample adults in 2020, 29,696 sample adults in 2021, and 20,781 sample adults in January–September 2022.

The NHIS contains content that is included in the survey every year (annual core), while other content is scheduled to appear on a periodic basis (rotating core). As a result, not all measures contained in the Early Release have data for every year. Measures that only apply to specific survey years are noted in the Appendix. Visit the

NHIS website at: <https://www.cdc.gov/nchs/nhis.htm> for more information about the design, content, and use of NHIS.

### **Estimation procedures**

NCHS creates survey sampling weights to produce representative national estimates. The base weight is equal to the inverse of the probability of selection of the sample address. These weights are adjusted for household and person-level nonresponse using multilevel models predictive of response propensity. Nonresponse-adjusted weights are further calibrated to U.S. Census Bureau population projections and American Community Survey one-year estimates for age, sex, race and ethnicity, educational attainment, housing tenure, census division and metropolitan statistical area status.

Point estimates and estimates of their variances were calculated using SUDAAN software (RTI International, Research Triangle Park, N.C.) to account for the complex sample design of NHIS, taking into account stratum and primary sampling unit (PSU) identifiers. The Taylor series linearization method was chosen for variance estimation. All estimates shown meet the NCHS standards of reliability as specified in “National Center for Health Statistics Data Presentation Standards for Proportions” (1).

### **Comparison of estimates**

Due to the COVID-19 pandemic, NHIS data collection switched to a telephone-only mode beginning on March 19, 2020. Personal visits to households resumed in selected areas in July 2020 and in all areas of the country in September 2020. However, interviews were still attempted by telephone first and a majority were completed by telephone. Additionally, starting in August and continuing through the end of December, a subsample of adult respondents who completed the NHIS in 2019 were recontacted by telephone and asked to participate again, completing the 2020 NHIS questionnaire. Estimates for 2020 are based on data from both samples.

Since the NHIS did not switch to telephone-only mode until late March, these changes had little impact on Quarter 1 of 2020 (January–March). However, response rates were lower and respondent characteristics were different in April–December 2020. Survey weights were adjusted to account for these changes in respondent characteristics. An evaluation of nonresponse bias following survey weighting is available online ([https://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Dataset\\_Documentation/NHIS/2020/nonresponse-report-508.pdf](https://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2020/nonresponse-report-508.pdf)). It revealed that the weighted 2020 sample still underrepresented adults living alone and adults with family income below the federal poverty level. Caution should be used in interpreting differences observed in estimates between 2020 and other time periods.

The “telephone first” data collection approach that began in July 2020 continued through April 2021. Pre-pandemic interviewing procedures (personal visit first) resumed in May 2021, but the majority of completed NHIS interviews in 2021 were still conducted by telephone. However, analyses of weighted estimates suggest that biases observed in 2020 did not persist in 2021. In the past, differences between estimates in Summary Health Statistics (based on final data files) and those found in NHIS Early Release products (based on preliminary data files) were typically less than 0.3 percentage points. As a result of the impact of the COVID-19 pandemic on data collection, differences between 2021 NHIS estimates in these products may be greater. From January through September 2022, approximately 56% of sample adult interviews were completed by telephone.

### **Did not take medication as prescribed to reduce costs in the past 12 months**

Respondents who took prescription medication in the past 12 months were asked a series of questions about ways in which they may not have taken the medication as prescribed in order to save money. Estimates are based on a positive response to at least one question about skipping medication doses to save money, taking less medicine to save money, or delay filling a prescription to save money. Questions and response options related to this indicator can be found in the Appendix.

### **Disability status**

Disability is defined by the reported level of difficulty (no difficulty, some difficulty, a lot of difficulty, or cannot do at all) in six functioning domains: seeing (even if wearing glasses), hearing (even if wearing hearing aids), mobility (walking or climbing stairs), communication (understanding or being understood by others), cognition (remembering or concentrating), and self-care (such as washing all over or dressing). Sample adults who responded “a lot of difficulty” or “cannot do at all” to at least one question were considered to have a disability.

Questions and response options for the six domains used to construct the disability status composite can be found in the Appendix.

### **Diagnosed hypertension**

Diagnosed hypertension is defined as report of hypertension or high blood pressure in the past 12 months or any medication use prescribed by a doctor for high blood pressure among adults. Questions and response options related to hypertension estimates can be found in the Appendix.

### **Exchange-based private health insurance coverage at time of interview**

Exchange-based coverage is a private health insurance plan purchased through the Health Insurance Marketplace or state-based exchanges that were established as part of the Affordable Care Act (ACA) of 2010 (P.L. 111–148, P.L. 111–152). This measure is limited to adults aged 18–64 as almost all adults aged 65 and over are eligible for Medicare. In general, if an adult reports that they have coverage through the exchange, that report is considered accurate unless there is other information (e.g., plan name or information about premiums) that clearly contradicts that report. Similarly, if an adult does not report having coverage through the exchange, that report is considered accurate unless other information clearly contradicts that report. For a more complete discussion of the procedures used in classifying exchange-based coverage, see <https://www.cdc.gov/nchs/nhis/insurance.htm>.

### **Influenza vaccination**

Receipt of a flu vaccination is defined by report of having received a vaccination in the past 12 months as opposed to during a flu season (see: <https://www.cdc.gov/flu/fluview>). Responses to the influenza vaccination question used to calculate the estimates presented cannot be used to determine when, during the preceding 12 months, the subject received the influenza vaccination. In addition, estimates are subject to recall error, which will vary depending on when the question is asked, because the receipt of an influenza vaccination is seasonal. Questions and response options related to influenza vaccination estimates can be found in the Appendix.

### **Private health insurance coverage at time of interview**

Private health insurance coverage includes any comprehensive private insurance plan (including health maintenance and preferred provider organizations). These plans include those obtained through an employer, purchased directly, purchased through local or community programs, or purchased through the Health Insurance Marketplace or a state-based exchange. Private coverage excludes plans that pay for only one type of service, such as dental or vision care. A small number of people (2–3%) were covered by both public and private plans and were included in both categories. This measure is limited to adults aged 18–64 as almost all adults aged 65 and over are eligible for Medicare. Questions and response options related to this indicator can be found in the Appendix.

### **Public health plan coverage at time of interview**

Public health plan coverage includes Medicaid, Children's Health Insurance Program (CHIP), state-sponsored or other government-sponsored health plan, Medicare, and military plans. A small number of people (2–3%) were covered by both public and private plans and were included in both categories. This measure is limited to adults aged 18–64 as almost all adults aged 65 and over are eligible for Medicare. Questions and response options related to this indicator can be found in the Appendix.

### **Regularly had feelings of depression**

Regularly had feelings of depression is defined as report of a) feeling depressed daily and describing the level of depression as “somewhere in between a little and a lot” or “a lot” or b) feeling depressed weekly and describing the level of depression as “a lot.” Questions and response options related to depression estimates can be found in the Appendix.

### **Regularly had feelings of worry, nervousness, or anxiety**

Regularly had feelings of worry, nervousness, or anxiety is defined as report of a) feeling worried, nervous, or anxious daily and describing the level of those feelings as “somewhere in between a little and a lot” or “a lot” or b) feeling worried, nervous, or anxious weekly and describing the level of those feelings as “a lot.” Questions and response options related to this indicator can be found in the Appendix.

### Six or more workdays missed due to illness, injury or disability in the past 12 months

Six or more workdays missed due to illness, injury, or disability in the past 12 months is defined in 2019–2020 as a report of six or more workdays missed due to illness, injury, or disability by adults who a) worked for pay in the week prior to the interview, b) had a job or business in the week prior to the interview, but were temporarily absent, c) had seasonal or contract work, d) worked at a job or business but not for pay, or e) were not currently working but had some period of employment in the past 12 months. Starting in 2021, this indicator is defined as a report of six or more workdays missed due to illness, injury, or disability by adults who a) worked for pay in the week prior to the interview, b) had a job or business in the week prior to the interview, but were temporarily absent, c) worked at a job or business but not for pay, or d) were not currently working but had some period of employment in the past 12 months. Those who had seasonal or contract work are no longer included in this indicator unless they also worked in the past 12 months. Questions and response options related to estimates of the number of workdays missed can be found in the Appendix.

### Uninsured at time of interview

A person was defined as uninsured if they did not have any private health insurance, Medicare, Medicaid, Children's Health Insurance Program (CHIP), state-sponsored or other government-sponsored health plan, or military plan. A person was also defined as uninsured if they had only Indian Health Service coverage or had only a private plan that paid for one type of service, such as dental or vision care. This measure is limited to adults aged 18–64 as almost all adults aged 65 and over are eligible for Medicare. Questions and response options related to this indicator can be found in the Appendix.

## References

1. Parker JD, Talih M, Malec DJ, et al. National Center for Health Statistics data presentation standards for proportions. National Center for Health Statistics. Vital Health Stat 2(175). 2017. Available from: [https://www.cdc.gov/nchs/data/series/sr\\_02/sr02\\_175.pdf](https://www.cdc.gov/nchs/data/series/sr_02/sr02_175.pdf).

### Suggested Citation

Boersma P, Norris T. Early release of selected estimates based on data from the January 2019–September 2022 National Health Interview Survey. National Center for Health Statistics. January 2023. Available from: <https://www.cdc.gov/nchs/nhis.htm>.

## Appendix. 2019–2022 National Health Interview Survey Questions Used to Define Selected Health Measures

Alphanumeric codes refer directly to the question(s) on the 2019–2022 National Health Interview Survey used to define the health measure.

### Asthma episode in the past 12 months

- |          |   |
|----------|---|
| AST.0010 | Have you ever been told by a doctor or other health professional that you had asthma? |
|          | (1) Yes   |
|          | (2) No  |
|          | (7) Refused   |
|          | (9) Don't know  |
| AST.0030 | During the past 12 months, have you had an episode of asthma or an asthma attack?     |
|          | (1) Yes   |
|          | (2) No  |
|          | (7) Refused   |
|          | (9) Don't know  |

**Blood pressure check in the past 12 months (2019 and 2021 only)**

PRV.0010      When was the last time you had your blood pressure checked by a doctor, nurse, or other health professional?

- (0) Never
- (1) Within the past year (anytime less than 12 months ago)
- (2) Within the last 2 years (1 year but less than 2 years ago)
- (3) Within the last 3 years (2 years but less than 3 years ago)
- (4) Within the last 5 years (3 years but less than 5 years ago)
- (5) Within the last 10 years (5 years but less than 10 years ago)
- (6) 10 years ago or more
- (7) Refused
- (9) Don't know

**Counseled by a mental health professional in the past 12 months**

MHC.0020      During the past 12 months, did you receive counseling or therapy from a mental health professional such as a psychiatrist, psychologist, psychiatric nurse, or clinical social worker?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

**Current cigarette smoking**

CIG.0020      Have you smoked at least 100 cigarettes in your entire life?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

CIG.0030      Do you now smoke cigarettes every day, some days or not at all?

- (1) Every day
- (2) Some days
- (3) Not at all
- (7) Refused
- (9) Don't know

**Current electronic cigarette use**

CIG.0070      Have you used an e-cigarette or other electronic vaping product, even just one time, in your entire life?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

CIG.0080      Do you now use e-cigarettes or other electronic vaping products every day, some days, or not at all?

- (1) Every day
- (2) Some days
- (3) Not at all
- (7) Refused
- (9) Don't know

**Dental exam or cleaning in the past 12 months (2019, 2020, and 2022 only)**

DNC.0020 About how long has it been since you last had a dental examination or cleaning?

- (0) Never
- (1) Within the past year (anytime less than 12 months ago)
- (2) Within the last 2 years (1 year but less than 2 years ago)
- (3) Within the last 3 years (2 years but less than 3 years ago)
- (4) Within the last 5 years (3 years but less than 5 years ago)
- (5) Within the last 10 years (5 years but less than 10 years ago)
- (6) 10 years ago or more
- (7) Refused
- (9) Don't know

**Did not get needed medical care due to cost in the past 12 months**

UTZ.0110 During the past 12 months, was there any time when needed medical care, but did not get it because of the cost?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

**Did not get needed mental health care due to cost in the past 12 months**

MHC.0050 During the past 12 months, was there any time when needed counseling or therapy from a mental health professional, but did not get it because of the cost?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

**Did not take medication as prescribed to reduce cost in the past 12 months**

PMD.0010 At any time in the past 12 months, did you take prescription medication?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

PMD.0020 During the past 12 months, were any of the following true for you? ...You skipped medication doses to save money?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

PMD.0030 During the past 12 months, were any of the following true for you? ...You took less medication to save money?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

PMD.0040 During the past 12 months, were any of the following true for you? ... You delayed filling a prescription to save money?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

**Disability status**

COG.0010 Do you have difficulty remembering or concentrating?

- (1) No difficulty
- (2) Some difficulty
- (3) A lot of difficulty
- (4) Cannot do at all
- (7) Refused
- (9) Don't know

COM.0010 Using your usual language, do you have difficulty communicating, for example, understanding or being understood?

- (1) No difficulty
- (2) Some difficulty
- (3) A lot of difficulty
- (4) Cannot do at all
- (7) Refused
- (9) Don't know

HEA.0030 Do you have difficulty hearing, even when using your hearing aid(s)? Would you say no difficulty, some difficulty, a lot of difficulty, or you cannot do this at all?

- (1) No difficulty
- (2) Some difficulty
- (3) A lot of difficulty
- (4) Cannot do at all
- (7) Refused
- (9) Don't know

MOB.0010 Do you have difficulty walking or climbing steps? Would you say no difficulty, some difficulty, a lot of difficulty, or you cannot do this at all?

- (1) No difficulty
- (2) Some difficulty
- (3) A lot of difficulty
- (4) Cannot do at all
- (7) Refused
- (9) Don't know

UPP.0010 Do you have difficulty with self-care, such as washing all over or dressing? Would you say no difficulty, some difficulty, a lot of difficulty, or you cannot do this at all?

- (1) No difficulty
- (2) Some difficulty
- (3) A lot of difficulty
- (4) Cannot do at all
- (7) Refused
- (9) Don't know



VIS.0030 Do you have difficulty seeing, even when wearing glasses or contact lenses? Would you say no difficulty, some difficulty, a lot of difficulty, or you cannot do this at all?

- (1) No difficulty
- (2) Some difficulty
- (3) A lot of difficulty
- (4) Cannot do at all
- (7) Refused
- (9) Don't know

**Doctor visit in the past 12 months**

UTZ.0020 About how long has it been since you last saw a doctor or other health care professional about your health?

- (0) Never
- (1) Within the past year (anytime less than 12 months ago)
- (2) Within the last 2 years (1 year but less than 2 years ago)
- (3) Within the last 3 years (2 years but less than 3 years ago)
- (4) Within the last 5 years (3 years but less than 5 years ago)
- (5) Within the last 10 years (5 years but less than 10 years ago)
- (6) 10 years ago or more
- (7) Refused
- (9) Don't know

**Health insurance coverage**

INS.0010 The next questions are about health insurance. Include health insurance obtained through employment or purchased directly as well as government programs like Medicare, Medicaid, and the Children's Health Insurance Program that provide medical care or help pay medical bills. Are you covered by any kind of health insurance or some other kind of health care plan?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

INS.0020 What kinds of health insurance or health care coverage do you have? Is it...Private health insurance, Medicare, Medicare supplement, Medicaid, Children's Health Insurance Program or CHIP, military related health care including TRICARE, CHAMPUS, VA health care and CHAMPVA, Indian Health Service, a state-sponsored health plan, or another government program?

- (1) Private health insurance
- (2) Medicare
- (3) Medigap
- (4) Medicaid
- (5) Children's Health Insurance Program (CHIP)
- (6) Military related health care: TRICARE (CHAMPUS) / VA health care / CHAMPVA
- (7) Indian Health Service
- (8) State-sponsored health plan
- (9) Other government program
- (10) No coverage of any type
- (97) Refused
- (99) Don't know



INS.0040      There is a program called Medicaid that pays for health care for persons in need. Are you covered by Medicaid?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

**Hospital emergency department visit in the past 12 months**

UTZ.0080      During the past 12 months, how many times have you gone to a hospital emergency room about your health?

- (00-96) Range of values
- (97) Refused
- (99) Don't know

**Diagnosed hypertension in the past 12 months**

HYP.0020      Have you ever been told by a doctor or other health professional that you had hypertension, also called high blood pressure?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

HYP.0030      Were you told on two or more different visits that you had hypertension or high blood pressure?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

HYP.0040      During the past 12 months, have you had hypertension or high blood pressure?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

HYP.0050      Are you now taking any medication prescribed by a doctor for your high blood pressure?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

**Receipt of influenza vaccination in the past 12 months**

IMS.0030      There are two types of flu vaccinations. One is a shot and the other is a spray, mist, or drop in the nose. During the past 12 months, have you had a flu vaccination?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

**Regularly experienced chronic pain (2019–2021 only)**

PAI.0020 In the past three months, how often did you have pain? Would you say never, some days, most days, or every day?

- (1) Never
- (2) Some days
- (3) Most days
- (4) Every day
- (7) Refused
- (9) Don't know

**Regularly had feelings of depression**

DEP.0010 How often do you feel depressed? Would you say daily, weekly, monthly, a few times a year, or never?

- (1) Daily
- (2) Weekly
- (3) Monthly
- (4) A few times a year
- (5) Never
- (7) Refused
- (9) Don't know

DEP.0030 Thinking about the last time you felt depressed, how depressed did you feel? Would you say a little, a lot, or somewhere in between?

- (1) A little
- (2) A lot
- (3) Somewhere in between a little and a lot
- (7) Refused
- (9) Don't know

**Regularly had feelings of worry, nervousness, or anxiety**

ANX.0010 How often do you feel worried, nervous or anxious? Would you say daily, weekly, monthly, a few times a year, or never?

- (1) Daily
- (2) Weekly
- (3) Monthly
- (4) A few times a year
- (5) Never
- (7) Refused
- (9) Don't know

ANX.0030 Thinking about the last time you felt worried, nervous or anxious, how would you describe the level of these feelings? Would you say a little, a lot, or somewhere in between?

- (1) A little
- (2) A lot
- (3) Somewhere in between a little and a lot
- (7) Refused
- (9) Don't know

**Six or more workdays missed due to illness, injury, or disability in the past 12 months**

EMP.0010 Last week, did you work for pay at a job or business?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

EMP.0020 Did you have a job or business last week, but were temporarily absent due to illness, vacation, family or maternity leave, or some other reason?

- (1) Yes
- (2) No
- (7) Refused
- (9) Don't know

EMP.0050 (2019–2020) What is the main reason you were not working for pay at a job or business last week?  
EMP.0030 (2021–2022)

- (1) Unemployed, laid off, looking for work
- (2) Seasonal/contract work
- (3) Retired
- (4) Unable to work for health reasons/disabled
- (5) Taking care of house or family
- (6) Going to school
- (7) Working at a job or business but not for pay
- (8) Other
- (97) Refused
- (99) Don't Know

EMP.0060 (2019–2020) When was the last time you worked for pay at a job or business, even if only for a few days?

EMP.0040 (2021–2022)

- (1) Within the past 12 months
- (2) 1-5 years ago
- (3) Over 5 years ago
- (4) Never worked
- (7) Refused
- (9) Don't know

EMP.0090 During the past 12 months, about how many days of work did you miss because of illness, injury or disability?

- (000-365) Range of values
- (997) Refused
- (999) Don't know