Technical Notes for Interactive Summary Health Statistics for Teens: National Health Interview Survey-Teen

Introduction

Interactive Summary Health Statistics for Teens is based on the National Health Interview Survey-Teen (NHIS-Teen) and provides selected point estimates of health outcomes and their variance estimates. Estimates for children aged 12-17 from July-2021-December 2022 are presented in tables and charts. NHIS-Teen is a follow-back survey of participants of the NHIS Sample Child interview with the focus of collecting data directly from a national sample of adolescents. The NHIS-Teen invites adolescents from the NHIS Sample Child interview to self-report answers to various health indicators using a web-based survey. This is in addition to the NHIS Sample Child interview, which is completed by a parent. Since 1957, NHIS has been the principal source of information on the health of the civilian noninstitutionalized population of the United States and is one of the major data collection programs of the National Center for Health Statistics (NCHS), an agency of the Centers for Disease Control and Prevention.

The microdata used to produce the estimates are available from the National Center for Health Statistics (NCHS) Research Data Center (RDC) available at: RDC - Research Data Center Homepage (cdc.gov). These data are not available as public use files due to the potential disclosure of confidential information.

These are the first Interactive Summary Health Statistics for Teens to date. Self-reported estimates from NHIS-Teen are presented for selected topics such as bullying, stressful life events, experiences with discrimination, social and emotional support, healthcare access and quality, mental health care and unmet mental health care need, physical activity, sleep, screentime, alternative health, and health status. The selected sociodemographic characteristics are based on parent-reported data from the NHIS Sample Child interviews. Unadjusted (crude) percentages are shown by selected population subgroups, including those defined by sex, age, sexual or gender minority, Hispanic ethnicity, race, number of residential parents, disability status, any developmental disability diagnosis, urbanization level, region of residence, parental education, family income, and health insurance coverage.

Methods

Data Source

NHIS-Teen is a cross-sectional self-administered web-based survey. The target population for NHIS-Teen is the civilian noninstitutionalized population aged 12-17 residing within the 50 states and the District of Columbia at the time of the interview. Invitations to participate in NHIS-Teen are limited to those that have participated in the annual NHIS as the Sample Child. Therefore, the NHIS-Teen universe includes residents of households and noninstitutional group quarters (e.g., homeless shelters, rooming houses, and group homes). For more information on the data source, methods please refer to the 2021 and 2022 NHIS Survey Description Document (1-2).

Unlike the NHIS Sample Child interview, NHIS-Teen was administered using a web-based survey. Teens whose parents who completed the NHIS Sample Child interview and gave permission for their teenager to participate in NHIS-Teen received a web-link and user ID. The survey could be accessed on any device that was able to connect to the internet, such as a tablet, cell phone or computer. For data collected between July-2021-December 2022, most interviews were completed via the web-based survey; paper surveys were also available, but very few were completed by paper (<2%). Further information about the NHIS-Teen methodologies can be found at: https://www.cdc.gov/nchs/data/nhis/teen/NHIS-teen-18m-methodology-report.pdf

NHIS-Teen covers topics such as physical activity, sedentary activity, use of social media and electronic devices, friendships, bullying, symptoms of poor mental health and resilience as reported by adolescents themselves. A major strength of NHIS-Teen lies in the ability to link these health characteristics as reported by the adolescent to many demographic, socioeconomic, and family characteristics as reported by the parent within the NHIS Sample Child interview. As such, the majority of the characteristics of the adolescent that are reported in the Interactive Summary Health Statistics for Teens are based on the parent report (via NHIS Sample Child interview), while the outcomes are entirely based on self-report (via NHIS-Teen). Data from NHIS-Teen may be used by the public health research community for epidemiologic and policy analysis of timely issues, such as characterizing those with various health problems, determining barriers to accessing and using appropriate health care, and evaluating Federal health programs.

Estimation Procedures

NHIS-Teen is a follow-back survey from a household sample survey. Participation is dependent on two factors which can affect the representativeness of the sample. First, the parent needs to give permission for their teenager to be invited to participate. Second, the teenager needs to agree to complete the survey. To account for nonresponse bias, sampling weights are created. These sampling weights are used to produce representative national estimates. The data must be weighted to obtain population estimates for survey outcomes in the population represented by NHIS-Teen. The value of the weight for a given respondent can be interpreted as the number of persons in NHIS-Teen target population represented by that respondent. The sum of the weights over all respondents is used to estimate the size of the total target population. The weights reflect several steps of adjustments starting with the final Sample Child weight. Further information on the Sample Child weight is available in the NHIS Survey Description Document (1-2).

The methodologies for nonresponse adjustment and development of weights for NHIS-Teen include the use of multilevel regression models that include paradata and Sample Child interview variables that are predictive of both survey response and selected key health outcomes, the key criteria for effective bias reduction. The Teen weight was used to produce the national estimates contained in tables and charts (3). Further information on the NHIS-Teen weight is available at: https://www.cdc.gov/nchs/data/nhis/teen/NHIS-teen-weighting-18m-report.pdf

Counts for persons of unknown status (responses coded as “refused,” “don’t know,” or “not ascertained”) with respect to health characteristics of interest are not included in the calculation of percentages (as part of either the denominator or the numerator), to provide a more straightforward presentation of the data. For most health measures in these tables, the percentages with unknown values are typically small (generally less than 1%) and would not support disaggregation by the demographic characteristics included in the table. Most estimates are based on health characteristics with less than 1% missing values, however indictors such bullying,

stressful life events, social support, content of care, mental health care and unmet need, and alternative health had 1%-4.5% missing values.

In addition, some of the sociodemographic variables that are used to delineate various population subgroups have unknown values. For most of these variables, the percentage unknown is small (generally less than 1%). However, in the case of parents' education, nonresponse rates are generally higher. Because it is difficult to interpret the relationship between "unknown" parents' education and the health outcomes displayed in the tables, percentages of children in these unknown categories are not shown in the tables or figures. Children who do not live with parents are not included in these estimates. Because of higher nonresponse, family income estimates are imputed and there are no unknowns for income.

Variance Estimation, Statistical Reliability, and Hypothesis Tests

All estimates shown meet the NCHS standards of reliability as specified in *National Center for Health Statistics Data Presentation Standards for Proportions* (4). Unreliable estimates are indicated with an asterisk (*) and are not shown. Reliable estimates with an unreliable complement are shown but are indicated with two asterisks (**). Complements are calculated as 100 minus the percentage. The standards are applied directly for percentages. Two-sided 95% confidence intervals are calculated using the Clopper-Pearson method adapted for complex surveys by Korn and Graubard (4). Standard errors used in this calculation were obtained using SUDAAN software, which accounts for the complex sampling design of NHIS. The Taylor series linearization method was used for variance estimation in SUDAAN (5).

Definitions of Selected Terms

Demographic Characteristics

Age—Recorded for each person at their last birthday. Age is recorded in single years and grouped into categories depending on the purpose of the table or chart. Age is based on the Sample Child interview.

Any developmental disability— Children were considered to have a developmental disability if they were diagnosed with one or more of the five selected developmental disabilities: Attention-Deficit Disorder (ADD) or Attention-Deficit/Hyperactivity Disorder (ADHD), autism spectrum disorder, intellectual disability, learning disability, or other developmental delay. Any developmental disability is based on the Sample Child interview.

Disability status—Children were considered to have a disability if they were reported to have "a lot of difficulty" or "cannot do at all" at least one of the questions asking about difficulty seeing, hearing, walking, self-care, communication, learning, remembering, concentrating, accepting change, controlling behavior, making friends or who feels anxious, nervous, or worried or depressed "daily". The remaining children, that is those with "some difficulty" or "no difficulty" for at least one question (and did not have responses of "a lot of difficulty" or "cannot do at all" for any of the questions) are classified as without disability. Those with responses of "don't know" or "refused" to all questions are excluded. Disability status is based on the Sample Child interview.

Hispanic or Latino origin—Hispanic includes persons of Mexican, Puerto Rican, Cuban, Central and South American, or Spanish origins. Hispanic or Latino origin and race is based on the Sample Child interview.

Number of residential parents— Categories based on a count of all residential parents (non-foster and foster) in the Sample Child family. Number of residential parents is based on the Sample Child interview.

Race—Race is based on racial background, regardless of Hispanic or Latino origin. Estimates for single race categories, "Asian," "Black or African American," "White," and "All other races" are provided. Other single race categories are not shown separately due to low sample size and statistical unreliability. Race is based on the Sample Child interview.

Sexual or gender minority— Sexual or gender minority is based on responses to questions about sexual orientation and gender identity and was dichotomized to represent two mutually exclusive categories, "not a sexual or gender minority" or "sexual or gender minority". To ascertain sexual minority, teens were asked "Which of the following best represents how you think of yourself?" and answer choices were "Gay or lesbian; Straight, that is not gay or lesbian; Bisexual; Something else; I'm not sure / I don't know the answer". Respondents who answered "Straight, that is not gay or lesbian" were considered to not be a sexual minority. To ascertain gender minority, respondents were asked about gender identity with two questions. First, "What sex were you assigned at birth, on your original birth certificate?" and answer choices were "Male; Female; I don't know". Second, "How do you currently describe yourself?" "Male; Female; Transgender; None of these; I'm not sure / I don't know the answer". Respondents whose sex matched between the two questions were not considered to be a gender minority. Respondents who answered "I don't know" for the first question, and "Male" or "Female" for the second question were considered missing. Sexual or gender minority is based on the Teen interview.

Socio-economic Status

Family income—Presented as percentage of the federal poverty level (FPL), which was derived from the family's income in the previous calendar year, family size, and number of children using the U.S. Census Bureau's poverty thresholds (5). These thresholds were used in creating the poverty ratios for NHIS respondents who provided a dollar amount or supplied sufficient income information in the follow-up income bracketing questions. Family income was imputed when missing using a multiple imputation methodology. Multiple imputation accounts for the extra variability due to imputation in statistical analyses. For technical information about the imputation model, data users can refer to the "Imputed Income Technical Document" available with the 2021–2022 file releases on the NHIS website, under "Using the NHIS." Categories presented are "Less than 200% FPL," "200% to less than 400% FPL," and "400% and greater FPL." Family income is based on the Sample Child interview.

Health insurance coverage—Describes health insurance coverage at the time of interview. Health insurance coverage is based on the Sample Child interview.

Health insurance coverage is presented based on a hierarchy of mutually exclusive categories. Persons with more than one type of health insurance were assigned to the first appropriate category in the following hierarchy: private, Medicaid or other public. Categories of other coverage, or uninsured are not shown due to small sample size and reliability concerns. Health insurance coverage is dichotomized:

Private coverage—Includes persons who had any comprehensive private insurance plan (including health maintenance organizations 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, which were established as part of the Affordable Care Act (ACA) of 2010 (P.L. 111–148, P.L. 111–152).

Medicaid or other public—Includes persons who do not have private coverage, but who have Medicaid or other state-sponsored health plans including CHIP.

Parental education—Reflects highest grade in school completed by the teen's parent(s) who are living in the household, regardless of that parent's age. Information pertaining to parents not living in the household is not obtained. If both parents reside in the household, but information on one parent's education is unknown, then the other parent's education is used. If both parents reside in the household and education is unknown for both or no parents live in the household, then parent education is unknown. Parent's education information is missing for 2% of sample children (unweighted). Parental education is based on the Sample Child interview.

Geographic Characteristics

Region—In the geographic classification of the U.S. population, states are grouped into four regions used by the U.S. Census Bureau:

Region	*States included*
Northeast	Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania
Midwest	Ohio, Illinois, Indiana, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Kansas, and Nebraska
South	Delaware, Maryland, District of Columbia, West Virginia, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Oklahoma, Arkansas, and Texas
West	Washington, Oregon, California, Nevada, New Mexico, Arizona, Idaho, Utah, Colorado, Montana, Wyoming, Alaska, and Hawaii

Urbanicity—Based on the 2013 NCHS Urban-Rural Classification Scheme for Counties which groups U.S. counties and county-equivalent entities into six urban-rural categories: large central metro, large fringe metro, medium metro, small metro, micropolitan, and non-core. For Interactive Summary Health Statistics for Teens, large central metro and large fringe metro are collapsed into a single group, medium and small metro are collapsed into a single group and micropolitan and non-core are collapsed into a single group (nonmetropolitan).

Teen Health Outcomes

Bullying:

Bullied—Respondents were asked how often they were bullied, picked on, or excluded by other youth in the past 12 months. Respondents who reported "1-2 times", "1-2 times per month", "1-2 times per week", or "almost every day" were classified as bullied.

Bullied others— Respondents were asked how often they bullied, picked on, or excluded others in the past 12 months. Respondents who reported "1-2 times", "1-2 times per month", "1-2 times per week", or "almost every day" were classified as bullied others.

Electronically bullied— Respondents were asked if they had been electronically bullied in the past 12 months.

Electronically bullied others— Respondents were asked if they had electronically bullied others in the past 12 months.

Stressful life events:

Death of a parent or guardian— Respondents were asked if they ever had a parent or guardian die.

Divorced or separated parents— Respondents were asked if they ever had a parent or guardian divorce or separate.

Victim or witness of neighborhood violence— Respondents were asked if they ever had been a victim of or witness of neighborhood violence.

Incarcerated parents— Respondents were asked if they have ever been separated from a parent or guardian because they went to jail, prison, or a detention center.

Household member with mental illness— Respondents were asked if they have ever lived with someone who was mentally ill or severely depressed.

Household member with substance abuse— Respondents were asked if they have ever lived with someone who was having a problem with alcohol or drug use.

Experienced emotional abuse— Respondents were asked if they have ever lived with a parent or adult who frequently swore, insulted, or put them down.

Experienced unmet basic needs— Respondents were asked if they ever had a time when their basic needs were not met, such as having enough to eat, being able to go to a doctor when you were sick, or having a safe place to stay.

Experienced discrimination due to race or ethnic group— Respondents were asked if they ever were treated or judged unfairly because of their race or ethnic group.

Experienced discrimination due to sexual orientation or gender identity— Respondents were asked if they ever were treated or judged unfairly because of their sexual orientation or gender identity.

Social and emotional supports:

Social and emotional support—Respondents were asked how often they get the social and emotional support they need. Respondents that reported "always" or "usually" were classified as having social and emotional support.

Peer support— Respondents were asked in separate questions how much they can rely on their friends for help if they have a serious problem and how much can they open up to friends if they need to talk about their worries. Respondents that reported "a lot" to either question were classified as having peer support. Those with responses of "don't know" or "refused" to either question are excluded.

Parent support— Respondents were asked in separate questions how much they can rely on their parents or guardians for help if they have a serious problem and how much can they open up to their parents or guardians if they need to talk about their worries. Respondents that reported "a lot" to either question were classified as having parent support. Those with responses of "don't know" or "refused" to either question are excluded.

Community support— Respondents were asked if there is at least one adult in their school, neighborhood, or community, other than parents or adults living in their home, who make a positive and meaningful difference in their life.

Healthcare access and quality:

Met privately with healthcare professional— Respondents were asked if they had a chance to speak with a doctor or other health professional privately, without a parent or guardian in the room at their last medical care visit or at their last wellness visit. Analyses were based on those the full populations of teens, those that had not reported seeing a doctor or other health professional about their health within the past 12 months were included in the denominator.

Discussed healthcare transition— Respondents were asked if a doctor or other health professional talked to them about understanding the changes in health care that happen at age 18 during the past 12 months. Analyses were based on those the full populations of teens, those that had not reported seeing a doctor or other health professional about their health within the past 12 months were included in the denominator.

Discussed managing health and health care— Respondents were asked if a doctor or other health professional talked to them about gaining skills to manage their health and health care during the past 12 months. Analyses were based on those the full populations of teens, those that had not reported seeing a doctor or other health professional about their health within the past 12 months were included in the denominator.

Discussed tobacco use— Respondents were asked if a doctor or other health professional asked them about using tobacco products or smoking during the past 12 months. Analyses were based on those the full populations of teens, those that had not reported seeing a doctor or other health professional about their health within the past 12 months were included in the denominator.

Discussed mental or emotional health— Respondents were asked if a doctor or other health professional asked them about their mental or emotional health during the past 12 months. Analyses were based on those the full populations of teens, those that had not reported seeing a doctor or other health professional about their health within the past 12 months were included in the denominator.

Discussed puberty and sexual health— Respondents were asked if a doctor or other health professional talked with them about changes to their developing body, or safe sex practices during the past 12 months. Analyses were based on those the full populations of teens, those that had not reported seeing a doctor or other health professional about their health within the past 12 months were included in the denominator.

Mental health and unmet need:

Symptoms of depression— Symptoms of depression is defined by a score of 3 or more based on answers to the two question items known as the Patient Health Questionnaire-2 (PHQ-2). PHQ-2 questions, "Over the last two weeks, how often have you been bothered by having little interest or pleasure in doing things?" and "Over the last two weeks, how often have you been bothered by feeling down, depressed or hopeless?". Response options were "Not at all; Several days; More than half the days; Nearly every day" with scores assigned 0, 1, 2, or 3, respectively.

Symptoms of anxiety— Symptoms of anxiety is defined by a score of 3 or more based on answers to the two question items known as the Generalized Anxiety Disorder (GAD-2). GAD-2 questions, "Over the last two weeks, how often have you been bothered by feeling nervous, anxious, or on edge?" and "Over the last two weeks, how often have you been bothered by not being able to stop or control worrying?". Response options were "Not at all; Several days; More than half the days; Nearly every day" with scores assigned 0, 1, 2, or 3, respectively.

Any prescription medication for mental health—Respondents were asked if they take prescription medication to help with their emotions, concentration, behavior or mental health in the past 12 months.

Any mental health therapy— Respondents were asked if they received counseling or therapy from a mental health professional such as a psychiatrist, psychologist, psychiatric nurse, or clinical social worker during the past 12 months.

Unmet mental health care (composite)— Respondents who needed counseling or therapy from a mental health professional in the past 12 months, but did not get it because of a) cost, b) they were afraid of what others would think of them, or c) they didn't know where to go or how to get help.

Physical Activity:

Sports team participation— Respondents were asked if they played or participated on a sports team or club or took sports lessons either at school or in the community during the past 12 months.

Took physical education class— Respondents were asked if they took a physical education, PE, or gym class during the past 12 months.

Physically active for at least 60 minutes— Respondents were asked how often they exercised, played a sport, or participated in physical activity for at least 60 minutes a day in a typical week during the school year, during the past 12 months. Respondents that reported "most days," or "every day" were classified as physically active for at least 60 minutes.

Strength training— Respondents were asked how often they do exercises to strengthen or tone their muscles, such as sit-ups, push-ups, or weightlifting during day in a typical week during the school year, during the past 12 months. Respondents that reported "most days," or "every day" were classified as strength training.

Walked for at least 10 minutes— Respondents were asked how often they walked for at least 10 minutes at a time in a typical week during the school year, during the past 12 months. Respondents that reported "most days," or "every day" were classified as walked for at least 10 minutes.

Biked for at least 10 minutes— Respondents were asked how often they biked for at least 10 minutes at a time in a typical week during the school year, during the past 12 months. Respondents that reported "most days," or "every day" were classified as biked for at least 10 minutes.

Sleep:

Wake up well-rested— Respondents were asked how often they wake up well-rested in a typical week during the school year. Respondents that reported "most days," or "every day" were classified as wake up well-rested.

Difficulty getting out of bed— Respondents were asked how often they have difficulty getting out of bed in the morning in a typical week during the school year. Respondents that reported "most days," or "every days" were classified as having difficulty getting out of bed.

Complain about being tired— Respondents were asked how often they complain about being tired during the day in a typical week during the school year. Respondents that reported "most days," or "every day" were classified as complain about being tired.

Take naps or fall asleep during the day— Respondents were asked how often they nap or fall asleep during the day, such as in school, watching TV, or riding in a car in a typical week during the school year. Respondents that reported "most days," or "every day" were classified as take naps or fall asleep during the day.

Regular bedtime— Respondents were asked how often they go to bed at the same time in a typical week during the school year. Respondents that reported "most days," or "every day" were classified as having a regular bedtime.

Regular wake time— Respondents were asked how often they wake up at the same time in a typical week during the school year. Respondents that reported "most days," or "every day" were classified as having a regular wake time.

Screentime:

2 or more hours of screentime— Respondents were asked how many hours they spend a day in front of a TV, computer, cellphone, or other electronic device watching programs, playing games, accessing the internet, or using social media on most weekdays. Respondents that reported "2 hours," "3 hours," or "4 or more hours," were classified as having 2 or more hours of screentime.

Alternative Health:

Meditation— Respondents were asked if they had used meditation, such as Mindfulness, Mantra, and Spiritual meditation during the past 12 months.

Yoga— Respondents were asked if they had practiced yoga during the past 12 months.

Chiropractor Visit— Respondents were asked if they saw a chiropractor during the past 12 months.

Health Status:

Concerned about weight—Respondents were asked if they were concerned about their weight, those that said “yes it’s too high” or “yes, it’s too low” were classified as concerned about weight.

Fair or poor health status—Respondents were asked if they would say their health was in general excellent, very good, good, fair, or poor.

Suggested Citations

Recommended citations for specific tables and charts are included in the notes at the end of each page. The citation for the Technical Notes is as follows but should also include the date accessed as it may be edited periodically when new tables are added.

NCHS. Technical Notes for Interactive Summary Health Statistics for Teens: National Health Interview Survey-Teen. Available from: https://wwwn.cdc.gov/NHISDataQueryTool/SHS_teen/SHS_Tech_Notes.pdf

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