

**Attachment 7b**  
**2021-2022 Adolescent Follow-back Survey (AFS) - Concepts Measured, Duplication, and Proposed Uses of Data**

**General Health and Well-Being**

Self-assessed health status appears on almost all federal and international health surveys and is used as a broad indicator of overall health. Although the question is subjective, there is a strong association between self-rated health status and mortality<sup>1</sup> and morbidity.<sup>2</sup>

Child and adolescent life satisfaction measure have been used on several surveys as a component of overall subjective well-being. Research has linked life satisfaction not only with physical and mental health but also to broader measures of well-being including school engagement and academic achievement.<sup>3</sup> Research has also shown that life satisfaction maybe influenced more by internal factors like self-esteem than external factors and demographic characteristics<sup>4</sup> and could provide additional insight into a youth’s overall well-being.

Concepts to be Measured

| Sample Child Interview | Adolescent Follow-back Survey | Item                        | Variable Name             |
|------------------------|-------------------------------|-----------------------------|---------------------------|
| X                      | X                             | Self-Assessed Health Status | PHSTAT_C<br><i>PHSTAT</i> |
| X                      | X                             | Satisfaction with life      | LSATIS_C<br><u>LSATIS</u> |

*Note: An X in both the SC and AFS boxes means that the same topic will be included in both the parent and adolescent surveys. An X in just the AFS box means that the topic is proposed only for the adolescent survey. Variable names are provided for readers who wish to search for the complete question text in other attachments.*

Duplication and Previous NHIS

- Self-assessed health status is collected by several existing surveys (e.g. Behavioral Risk Factor Surveillance System, Midlife in the United States Cohort, National Health and Nutrition Examination Survey).
- The YRBS has previously collected the Brief Multidimensional Student Life Satisfaction Scale (BMSLSS), which measures an adolescent’s life satisfaction.<sup>5</sup> The Health Behavior of School-Age Children and 2018 Canadian Community Health Survey both include a self-assessed life satisfaction question using an eleven point scale.
- PHSTAT\_C is a long standing NHIS item that is currently asked in the Sample Child interview.
- The life satisfaction item has not been fielded on the NHIS previously.

Proposed Use of Data

These data are intended to (1) produce a new national prevalence estimate of life satisfaction among the adolescent population and (2) provide evidence of the reliability of parent response to an annual core (health status) and sponsored question (life satisfaction) on the NHIS.

- PHSTAT\_C/PHSTAT: According to 2019 NHIS data, approximately 2.47% of children and 3.05% of adolescents were reported to be in “fair” or “poor” health.
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of adolescents reporting fair or poor general health for any subpopulation that is at least 25% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- Satisfaction with Life: Data from the 2006 Health Behavior in School-aged Children (World Health Organization) shows that 82.8% of children perceive themselves as having high life satisfaction (17.2% of children report low life satisfaction).<sup>6</sup>
  - LSATIS: Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of adolescents reporting low life satisfaction for any subpopulation that is at least 4% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.

**Height and Weight**

People with a body mass index (BMI) greater than 30 are considered obese and at increased risk of mortality and morbidity, such as hypertension, type 2 diabetes, and cancer.<sup>7</sup> From survey years 1999-2000 to 2017-2018, the prevalence of obesity and severe obesity has increased from 30.5% to 42.4% and 4.7% to 9.2%, respectively, highlighting a major public health concern.<sup>8</sup>

Questions may be used to identify covariates associated with high BMI and investigate why certain demographic groups are more vulnerable to higher BMI. BMI measures can be used to monitor trends of obesity and related outcomes as well as progress towards national objectives to combat obesity in America.

Concepts to be Measured

| Sample Child Interview | Adolescent Follow-back Survey | Item                 | Variable Name   |
|------------------------|-------------------------------|----------------------|---|
| X                      | X                             | Self-reported height | HEIGHTFT_C<br>HEIGHTIN_C<br>HEIGHTM_C<br>HEIGHTCM_C<br>HEIGHT |

|   |   |                             |                                    |
|---|---|-----------------------------|------------------------------------|
| X | X | Self-reported weight        | WEIGHTLB_C<br>WEIGHTKG_C<br>WEIGHT |
|   | X | Perception of weight status | WEIGHTPER                          |
|   | X | Concern about weight        | WEIGHTCON                          |

### Duplication and Previous NHIS

- While NCHS’s National Health and Examination Survey (NHANES) uses physical measurements, the NHIS asks for self-reports and proxy-reports of participant’s height and weight.<sup>9</sup> The Behavioral Risk Factor Surveillance System (BRFSS) and Youth Risk Behavior Surveillance System (YRBS) also collect self-reported measurements to monitor obesity among adults and youth.
- Before 1997, height and weight were self-reported in selected special topic NHIS questionnaires. The 1998 CAPI instrument allowed respondents to report height and weight in either metric or non-metric measurements. Questions in the BMI section appear in the adult conditions section every year.
- The proposed NHIS items on perception of weight status and concern about weight currently appear on the YRBS. These items have not been fielded on NHIS previously.

### Proposed Use of Data

These data are intended to (1) produce new national prevalence estimates of self-reported concern about weight and perception of weight status among the adolescent population and (2) provide evidence of the reliability of adolescent response to self-reported height and weight questions.

- **HEIGHT\_C/HEIGHT/WEIGHT\_C/WEIGHT:** According to data from the Centers for Disease Control and Prevention, the prevalence of obesity is 18.5% among children, and 20.6% among 12-19 year olds.<sup>10</sup>
  - Based on an expected sample of N~2,400 adolescents, the AFS will be able to produce reliable estimates of self-reported height and weight for adolescents for any subpopulation that is at least 6% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- **WEIGHTPER:** According to 2019 data from the YRBS, 32.4% of adolescents describe themselves as “slightly overweight” or “very overweight”.<sup>11</sup>
  - Based on an expected sample of N~3,600 adolescents, the AFS will be able to produce reliable estimates of adolescents that perceive themselves as overweight for any subpopulation that is at least 3% of the total population.
- **WEIGHTCON:** According to 2019 data from the YRBS, 48.3% of adolescents reported trying to lose weight.<sup>11</sup>

- o Based on an expected sample of N~2,400 adolescents, the AFS will be able to produce reliable estimates of adolescents that perceive themselves as concerned about their weight for any subpopulation that is at least 2% of the total population.

### Health Care Utilization

Access and use of health care services are paramount to a child’s well-being as well as their physical and mental health. The National Health Interview Survey has captured questions pertaining to health care utilization since its inception. The adolescent follow-back survey provides an opportunity to ask questions which an adolescent may in fact be a better reporter of than their parents or guardians. This is may be particularly true of questions pertaining to both the content of care receive and health care transition that occurs when the parent or caregiver is not in the room during a doctor’s appointment. The American Academy of Pediatrics recommends that all adolescents have an annual wellness visit, which should include screening for depression as well as a tobacco use assessment<sup>12</sup> As adolescents approach 18 years of age, it is also recommended that doctors develop a health care transition plan, particularly among adolescents with special health care needs to ensure uninterrupted care.<sup>13</sup>

### Concepts to be Measured

| Sample Child Interview | Adolescent Follow-back Survey | Item   | Variable Name                     |
|------------------------|-------------------------------|--|-----------------------------------|
| X                      | X                             | Time alone with doctor at last medical visit         | <i>TIMEALONE_C, TIMEALONE</i>     |
| X                      | X                             | Time alone with doctor at last physical              | <i>PTIMEALONE_C, PTIMEALONE</i>   |
| X                      | X                             | Personal doctor or nurse                             | <i>PERSONALDOC_C, PERSONALDOC</i> |
| X                      | X                             | Time last saw doctor                                 | <i>LASTDR</i>                     |
| X                      | X                             | Whether last visit was a wellness visit              | <i>WELLNESS</i>                   |
| X                      | X                             | Time since last wellness visit                       | <i>WELLVIS</i>                    |
| X                      | X                             | Usual place of care                                  | <i>USUALPL</i>                    |
| X                      | X                             | Type of place for usual care                         | <i>USPLKIND</i>                   |
|                        | X                             | Discussed upcoming changes at last wellness visit    | <i>NEWCHANGES</i>                 |
|                        | X                             | Discussed gaining skills at last wellness visit      | <i>GAINSKILLS</i>                 |
|                        | X                             | Discussed smoking habits at last wellness visit      | <i>TALKSMK</i>                    |
|                        | X                             | Screened for emotional health at last wellness visit | <i>SCRNMENTAL</i>                 |
|                        | X                             | Talked about sexual health                           | <i>SHEALTH</i>                    |
|                        | X                             | Other visit – parent unaware                         | <i>OTHERVISIT</i>                 |

|  |   |                    |                  |
|--|---|--------------------|------------------|
|  | X | Other visit – type | <i>OTHERTYPE</i> |
|--|---|--------------------|------------------|

### Duplication and Previous NHIS

- A new question to both the sample child interview and the adolescent follow-back survey is whether or not the child has a personal doctor or nurse. This question has appeared in the National Survey of Children’s Health (NSCH) in recent years. In 2018, 71.6% of children had one or more personal doctors or nurses.
- Two additional questions asked both in the sample child interview and adolescent follow-back survey include whether or not the child had a time alone with their doctor at the latest visit and whether they had time alone with their doctor at their last wellness visit. Time alone with the doctor is also asked of parents in the National Survey of Children’s Health. In 2018, 54.3% of children 12-17 were able to have a private conversation with their doctor at their last medical visit. It is unknown what this percentage looks like when restricted to just wellness visits, but in many instances, the last visit an adolescent has is their wellness visit.
- Several utilization questions have previously appeared on the NHIS, including time since last seeing a doctor, whether the last visit was a wellness visit, time since last wellness visit, whether the child has a usual place of care, and what type of place is used for usual care. These questions, however, have not been asked directly of the adolescent before.
- A series of questions to be asked exclusively of adolescents relate to content of care at the last wellness visit, including whether they had a chance to discuss upcoming changes when turning 18, whether they discussed skills to taking charge of one’s health and health care, talked about use of tobacco products and smoking habits, whether they were screened for depression, and whether they had a chance to talk about any concerns or questions they have about their sexual health and development. Some of these questions were asked of parents regarding their adolescents in the 2018 NSCH, with 36.0% of parents indicating their adolescent had worked with their doctor to understand health care changes at 18, and 58.2% indicating their adolescent worked with their doctor to gain skills to manage their health.
- The final set of questions pertain to a doctor visit the adolescent received that the parent may be unaware of. These questions were created specifically for the adolescent follow-back survey to determine the prevalence and types of visits an adolescent has ever gone to without their parents’ or guardians’ knowledge.

### Proposed Use of Data

These data are intended to (1) produce new national prevalence estimates of content of care among the adolescent population and (2) provide evidence of the reliability of parent response to questions on personal doctors and time alone that are regularly fielded on the National Survey of Children’s Health and questions from the NHIS annual core.

- TIMEALONE\_C/TIMEALONE/PTIMEALONE\_C/PTIMEALONE: Research in this area shows that among adolescents aged 12-17 that have had a well visit in the last 12 months, only 40% had time alone with a clinician at their visit.<sup>14</sup>

- Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of adolescents with time alone with a clinician during their last well visit for any subpopulation that is at least 3% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- PERSONALDOC\_C/PERSONALDOC: According to 2018 BRFSS data, 22.8% of adults report not having a personal physician.<sup>15</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of adolescents without a personal physician for any subpopulation that is at least 3% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- LASTDR: According to 2019 data from the NHIS, 6.27% of adolescents have not seen a physician in the last year.
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of adolescents that have not seen a physician in the last year for any subpopulation that is at least 12% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- WELLNESS / WELLVIS: According to 2019 data from the NHIS, 15.03% of adolescents have not received a well visit in the last year.
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of adolescents that have not had a well visit in the last year for any subpopulation that is at least 5% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- USUALPL: According to 2019 data from the NHIS, 3.13% of adolescents do not have a usual place of care.
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of adolescents without a usual place of care for any subpopulation that is at least 24% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.

- USPLKIND: According to 2019 data from the NHIS, 5.57% of adolescents have a usual place of care that is not a doctor's office.
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of adolescents with a usual place of care that is not a doctor's office for any subpopulation that is at least 14% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- NEWCHANGES / GAINSKILLS: According to 2016-17 data from the National Survey of Children's Health, approximately 15% of adolescents received transition guidance from their health care provider.<sup>16</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of adolescents that have received healthcare transition guidance for any subpopulation that is at least 5% of the total population.
- TALKSMK: According to the 2011 National Youth Tobacco Survey, only 32.2% of adolescents were advised about smoking during their last physician visit.<sup>17</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of adolescents that have received smoking guidance from a healthcare provider for any subpopulation that is at least 2% of the total population.
- SCRNMENTAL: A study involving 671 medical professionals in Pennsylvania showed that physicians report completing mental health screenings at 67% of well visits.<sup>18</sup>
  - Based on a sample size of N~3,600 adolescents and a prevalence as low as 33%, the AFS will be able to produce reliable prevalence estimates of adolescents that do not receive mental health screenings from a healthcare provider for any subpopulation that is at least 2% of the total population.
- SHEALTH: 2015-17 data from the National Survey of Family Growth cites that approximately 6% of girls 15-17 received reproductive healthcare.
  - Based on a sample size of N~1800 adolescent girls and a prevalence as low as 6%, the AFS will be able to produce reliable prevalence estimates of sexual health visits for any subpopulation that is at least 25% of the total population.
- OTHERVISIT: A study from 2003-2004 showed that 40% of female adolescents reported receiving sexual health services that their parent or guardian was unaware of.<sup>19</sup>
  - Based on a sample size of N~1800 adolescent girls, the AFS will be able to produce reliable prevalence estimates of received services that parents are unaware of for any subpopulation that is at least 3% of the total population, including adolescents not enrolled in school (5%).

## Complementary or Alternative Medicine

Recent trends from the National Health Interview Survey (NHIS) show an increasing use of complementary and alternative medicine (CAM) techniques (e.g. yoga, meditation, use of a chiropractor).<sup>20</sup> Among children, age-adjusted rates show that in 2017, 8.4% of children participated in yoga, 5.4% meditation, and 3.4% a chiropractor, compared to 3.1%, 0.6%, and 3.5% respectively in 2012.<sup>21</sup>

Use of CAM techniques appears to vary across insurance status and geographic groups. Data from the 2002 and 2012 NHIS show that the use of acupuncture, chiropractic, and massage therapy increased among adults who did not have health insurance coverage for these approaches. Adults who saw practitioners for acupuncture and chiropractic approaches and had insurance, were more likely to have partial coverage than complete.<sup>22</sup> A NHIS data brief from 2012 cites that use of practitioner-based chiropractic or osteopathic manipulation was nearly twice as high in the West North Central region, as in the overall United States, and use of yoga with deep breathing or meditation was approximately 40% higher in the Pacific and Mountain regions than in the United States overall.<sup>23</sup>

It is important to document the use of complementary and alternative medicine approaches to obtain a comprehensive look at healthcare utilization in the United States.

### Concepts to be Measured

| Sample Child Interview | Adolescent Follow-back Survey | Item                                  | Variable Name                 |
|------------------------|-------------------------------|---------------------------------------|-------------------------------|
| X                      | X                             | (Past 12 months) Use of meditation    | MEDITATE_C<br><i>MEDITATE</i> |
| X                      | X                             | (Past 12 months) Practice yoga        | YOGA_C<br><i>YOGA</i>         |
| X                      | X                             | (Past 12 months) Visit a chiropractor | CHIRO_C<br><i>CHIRO</i>       |

### Duplication and Previous NHIS

- The National Health Interview Survey is the only nationally representative data source that collects information about complementary and alternative medicine.
- CHIRO\_C has appeared on the NHIS for decades. Previous versions of the NHIS have used different items to collect similar information to these items (NHIS 2007, 2012). MEDITATE\_A appeared on the NHIS in 2002, 2007, 2012, and 2017. YOGA\_C has appeared on the NHIS previously, along with an item measuring frequency of breathing exercises (2002, 2007, 2012, 2017). All three items were cognitively tested at the National Center for Health Statistics.<sup>24,25</sup>

## Proposed Use of Data

These data are intended (1) to produce new national estimates of the prevalence of complementary and alternative medicine approaches in the U.S. population based on adolescent self-response and (2) provide evidence of the reliability of parent response to three sponsored questions that will appear on the NHIS in 2022.

- **CHIRO\_C/CHIRO:** According to 2017 NHIS data, 3.4% of children used a chiropractor in the past year.
  - Based on an expected sample of N~2,400 adolescents, the AFS will be able to produce reliable prevalence estimates of chiropractor visits for adolescents for any subpopulation that is at least 33% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- **MEDITATE\_C/MEDITATE:** According to 2017 NHIS data, 5.4% of children used meditation in the past year.
  - Based on an expected sample of N~2,400 adolescents, the AFS will be able to produce reliable prevalence estimates of meditation use for adolescents for any subpopulation that is at least 21% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- **YOGA\_C/YOGA:** According to 2017 NHIS data, 8.4% of children used yoga in the past year.
  - Based on an expected sample of N~2,400 adolescents, the AFS will be able to produce reliable prevalence estimates of using yoga for adolescents for any subpopulation that is at least 13% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.

## **Physical Activity**

The prevalence of adequate physical activity has been a great focus in public health since the publication of the 1996 Surgeon General Report, the first report to address physical activity and health.<sup>26</sup> Research since 1996 has provided evidence of the vast benefits of physical activity, including a decreased risk of diabetes, Alzheimer's Disease, and dementia in adults,<sup>27</sup> and cardiovascular disease for both adults<sup>28</sup> and adolescents.<sup>29</sup>

Despite these findings, the United States population lags far behind in respect to meeting its own recommendations for frequency and duration of physical activity. Health and Human Services guidelines published in 2018 state that children and adolescents ages 6-17 years should complete 60 minutes or more of moderate-to-vigorous physical activity daily, including vigorous-intensity aerobic activity, muscle strengthening, and bone-strengthening at least 3 days a week.<sup>30</sup>

Given that the population has yet to meet its physical activity goals, it is important for the National Health Interview Survey (NHIS) to document the prevalence of these behaviors in both adults and children. Research in this area suggests that physical activity levels can vary significantly by differences in the neighborhood<sup>31</sup> environment and may be an important avenue for improving overall quality of life.<sup>32</sup> Thus, the incorporation of these measures on the NHIS will allow for important subgroup analyses on specific subpopulations of interest (e.g. individuals living rural/urban locations, individuals with diabetes, history of heart disease etc.). Because the NHIS is conducted on an annual basis, these items also allow analysts to document prevalence trends in physical activity and potential progress toward meeting recommendations.

### Concepts to be Measured

| <b>Sample Child Interview</b> | <b>Adolescent Follow-back Survey</b> | <b>Item</b>  | <b>Variable Name</b>          |
|-------------------------------|--------------------------------------|--|-------------------------------|
| X                             | X                                    | (Past 12 months) Played on sports teams, took sports lesson in school/community              | SPORT_C<br><i>SPORT</i>       |
| X                             | X                                    | (Past 12 months) Took PE or gym class  | PEGYM_C<br><i>PEGYM</i>       |
| X                             | X                                    | (Typical school week) How often physically active for a total of at least 60 minutes per day | PADAYS_C<br><i>PADAYS</i>     |
| X                             | X                                    | (Typical school week) How often do exercises to strengthen or tone muscles                   | STRENGTH_C<br><i>STRENGTH</i> |
| X                             | X                                    | (Typical school week) How often walks for at least 10 minutes                                | WALK_C<br><i>WALK</i>         |
| X                             | X                                    | (Typical school week) How often rides a bike for at least 10 minutes                         | BIKE_C<br><i>BIKE</i>         |

### Duplication and Previous NHIS

- Several other federal surveys ask questions related to physical activity (e.g. NHANES, BRFSS).
- The physical activity module first appeared on the NHIS in 1975, as part of a special topic supplement. In 1985, this NHIS module became the federal government’s metric for monitoring progress toward National Health Objectives for Physical Activity and was updated to measure the frequency, duration, and intensity of more than 22 leisure-time sports activities. This updated module was fielded in 1985, 1990, 1991, 1995, and 1998 as part of various supplements (Health Promotion and Disease Prevention, Health People). In 1997, the NHIS included questions on usual leisure-time physical activity in the Sample Adult core questionnaire. These questions have been used to monitor progress toward Healthy People objectives since the establishment of Healthy People 2000.<sup>33</sup>

### Proposed Use of Data

The data are intended to (1) produce reliable prevalence estimates of engagement in extracurricular physical activity (e.g. intramural sports), in-school physical activity, physical activity over 60 minutes per day, and walking/biking in children and (2) provide evidence of the reliability of parent response to NHIS rotating core questions.

- Based on an expected sample of N~2,400 adolescents, and a prevalence estimate as low as 24%, the AFS will be able to produce reliable estimates of extracurricular physical activity (SPORT), in-school physical activity (PEGYM), physical activity over 60 minutes per day (PADAYS), strength exercises (STRENGTH), and walking (WALK) or biking (BIKE) in ten minute intervals for adolescents for any subpopulation that is at least 4% of the total population.
- Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.

### Sleep

Sleep is an important indicator of overall well-being and health. Sleep regularity has been associated with several outcomes such as cognitive performance and obesity, although the majority of the research thus far has focused on children or adolescents.<sup>34,35</sup> Subjective measures of sleep have been associated with depression, heart disease, diabetes, mortality in adults.<sup>36</sup> An estimated 30% of the population exhibit symptoms of insomnia, defined as having difficulty initiating or maintaining sleep, suggesting that sleep difficulties are prevalent in the U.S. population.<sup>37</sup> Although the prevalence of severe sleep disorders, including obstructive sleep apnea and restless leg syndrome, are currently estimated between 3-7%<sup>38</sup> and 1.9-7.9% respectively,<sup>39</sup> many cases go undiagnosed, suggesting the need for further surveillance and research on these topics.

### Concepts to be Measured

| Sample Child Interview | Adolescent Follow-back Survey | Item   | Variable Name                 |
|------------------------|-------------------------------|--|-------------------------------|
| X                      | X                             | (Typical school week) How often do you wake up well-rested                           | RESTED_C<br><i>RESTED</i>     |
| X                      | X                             | (Typical school week) How often do you have difficulty getting out of bed in morning | OUTOFBED_C<br><i>OUTOFBED</i> |
| X                      | X                             | (Typical school week) How often do you complain about being tired                    | TIRED_C<br><i>TIRED</i>       |
| X                      | X                             | (Typical school week) How often do you fall asleep during day                        | NAPS_C<br><i>NAPS</i>         |
| X                      | X                             | (Typical school week) How often do you go to bed at same time                        | BEDTIME_C<br><i>BEDTIME</i>   |

|   |   |   |                        |
|---|---|---|------------------------|
| X | X | (Typical school week) How often do you wake up at the same time | WAKETIME_C<br>WAKETIME |
|---|---|---|------------------------|

### Duplication and Previous NHIS

- Items on child sleep behaviors are collected on the National Survey of Children’s Health and the Youth Risk Behavior Survey.
- Variations of sleep-related items on the 2019 Redesign (SLPHOURS\_A, SLPFLL\_A, SLPSTY\_A, SLPMED\_A) have appeared on the NHIS previously. These items have not been fielded on NHIS or other surveys but are based on validated sleep questionnaires such as the Pittsburgh Sleep Quality Index (PSQI) and Medical Outcomes Study-Sleep Scale (MOS-SS). Cognitive testing on items related to child sleep was completed at the National Center for Health Statistics in 2017.<sup>40</sup>

### Proposed Use of Data

The data are intended to (1) produce reliable national estimates of child sleep quality and (2) provide evidence of the reliability of parent response to NHIS rotating core questions.

Estimates from research in Iran show that 25-30% of children and adolescents suffer from sleep difficulties,<sup>41</sup> and a longitudinal study from Germany cites the prevalence at 30-40%.<sup>42</sup> These prevalence estimates suggest NHIS data should allow for many subgroup comparisons.

- Based on an expected sample of N~2,400 adolescents, the AFS will be able to produce reliable estimates of sleep difficulties and quality (RESTED, OUTOFBED, TIRED, NAPS, BEDTIME, WAKETIME) for adolescents for any subpopulation that is at least 3% of the total population.
- Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.

### **Screen Time**

Childhood screen time and media use remains a growing public health concern as the explosion of devices and apps aimed at young children continues to increase. The 2018 NSCH estimates that approximately 64% of children age 17 or younger spend two or more hours in front of a tv, cellphone, or computer on a weekday. Increased screen time has been associated with poor physical health including increased weight gain and loss of sleep,<sup>43</sup> lower psychological well-being,<sup>44</sup> and poorer social interactions.<sup>45</sup>

### Concepts to be Measured

| Sample Child Interview | Adolescent Follow-back Survey | Item                                 | Variable Name |
|------------------------|-------------------------------|--------------------------------------|---------------|
| X                      | X                             | (Typical weekday) Number of hours in | SCREENTIME_C  |

|  |  |  |                   |
|--|--|--|-------------------|
|  |  | front of TV, computer, cellphone, or other electronic device | <i>SCREENTIME</i> |
|--|--|--|-------------------|

### Duplication and Previous NHIS

- Several nationally representative surveys, including the National Survey of Children’s Health and Youth Risk Behavior Survey ask questions on screen time. We consulted these surveys and American Academy of Pediatric recommendations to develop our screen time items.
- Sample Child screen time questions went through multiple rounds of cognitive testing in September of 2017.<sup>46</sup> One question was retained to measure how many children fall within the American Academy of Pediatrics recommendation for screen time. The screen time item was first fielded on the NHIS in 2020.

### Proposed Use of Data

These data are intended to (1) produce reliable national estimates of screen time use for the child population and (2) provide evidence of the reliability of parent response to an NHIS rotating core question.

- Based on a sample size of N~2,400 and a prevalence as low as 64%, the AFS will be able to produce a reliable prevalence estimate of screen time use for adolescents for any subpopulation that is at least 1% of the total population.
- Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.

### **Concussions**

Traumatic Brain Injury (TBI) is a serious public health problem that results in both death and disability for thousands of people per year in the United States. The NCIPC estimates that approximately 2% of the U.S. population is affected by a TBI.<sup>47</sup> Data from the NCIPC shows that there were approximately 2.87 million TBI-related emergency department visits, hospitalizations, and death in 2014, with over 837,000 occurring in children. This number has increased by 53% since 2006.<sup>48</sup> 2018 NSCH shows that 2.7% of children have ever been told they have a brain injury, concussion, or head injury.<sup>49</sup>

### Concepts to be Measured

| <b>Sample Child Interview</b> | <b>Adolescent Follow-back Survey</b> | <b>Item</b>                                     | <b>Variable Name</b>              |
|-------------------------------|--------------------------------------|---|-----------------------------------|
| X                             | X                                    | Due to blow or jolt to head, lost consciousness | TBILOSTCON_C<br><i>TBILOSTCON</i> |

|   |   |   |                                   |
|---|---|---|-----------------------------------|
| X | X | Due to blow or jolt to head, dazed or had gap in memory                                   | TBIDAZED_C<br><i>TBIDAZED</i>     |
| X | X | Due to blow or jolt to head, headaches, vomiting, blurred vision, change in mood/behavior | TBIHEADSYM_C<br><i>TBIHEADSYM</i> |
| X | X | Checked for concussion  | TBCHKCONC_C<br><i>TBCHKCONC</i>   |
| X | X | Diagnosed with concussion   | TBDRCONC_C<br><i>TBDRCONC</i>     |

### Duplication and Previous NHIS

- There are limited national data sources on traumatic brain injuries. The National Center for Injury Prevention and Control (NCIPC) collects data from multiple sources (e.g. the 2014 Healthcare Cost and Utilization Project’s Nationwide Emergency Department Sample, 2014 National Inpatient Sample, National Vital Statistic System’s multiple-cause-of-death files).<sup>50</sup>
- These items were adapted from questions being developed for the National Survey of Children’s Health (NSCH). The NSCH items were cognitively tested in August 2019, and subsequently adapted for an interviewer-administered survey. These items are currently being fielded as part of the emerging content module on the 2020 NHIS.

### Proposed Use of Data

These data are intended to (1) produce reliable national estimates of concussion prevalence (by symptom and diagnosis) for the child population and (2) provide evidence of the reliability of parent response to NHIS emerging content questions.

- Based on a sample of N~3,600 adolescents and a prevalence as low as 2%, the AFS will be able to produce a reliable prevalence estimate of concussion/brain injury for adolescents for any subpopulation that is at least 38% of the total population.
- Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.

### **Cognition and Behavior**

Children with disabilities are more likely to experience poorer physical and mental health where compared to their peers without disabilities.<sup>51,52</sup> Children with disabilities are more likely to struggle at school forming meaningful relationships with their peers and teachers.<sup>53</sup> Capturing data from both a parent and adolescent perspective could be meaningful in identifying specific adolescent challenges a parent may not be aware is occurring.

### Concepts to be Measured

| Sample | Adolescent | Item | Variable Name |
|--------|------------|------|---------------|
|--------|------------|------|---------------|

| Child Interview | Follow-back Survey |  |                                   |
|-----------------|--------------------|--|-----------------------------------|
| X               | X                  | Difficulty learning things                   | LEARNDF_C<br><i>LEARNDF</i>       |
| X               | X                  | Difficulty remembering things                | REMEMBERDF_C<br><i>REMEMBERDF</i> |
| X               | X                  | Difficulty controlling behavior              | BEHDFCNTR_C<br><i>BEHDFCNTR</i>   |
| X               | X                  | Difficulty focusing on an enjoyable activity | BEHDFFCS_C<br><i>BEHDFFCS</i>     |
| X               | X                  | Difficulty accepting changes in routine      | BEHDFCHG_C<br><i>BEHDFCHG</i>     |
| X               | X                  | Difficulty making friends                    | BEHDFMKFR_C<br><i>BEHDFMKFR</i>   |

### Duplication and Previous NHIS

- All six questions appeared on the 2019 NHIS, the prevalence of children who had a lot of difficulty or could not do an activity was 1.9% for learning, 1.3% for remembering, 1.5% for concentrating, 4.0% for accepting change, 3.4% for controlling behavior, 2.4% for making friends. These questions are part of the annual core of the redesigned NHIS.

### Proposed Use of Data

The intended use of these questions is to describe the functional status of children and, when used with other questions on the survey, to evaluate whether children with functional limitations have achieved similar levels of participation and inclusion as children without functional limitations. These questions do not capture all aspects of difficulty in functioning, but rather focus on domains of functioning that are likely to identify the majority of children at risk of participation restrictions in an unaccommodating environment. These questions will also be used to provide evidence of the reliability of parent response to NHIS annual core questions

- LEARNDF\_C/LEARNDF/REMEMBERDF\_C/REMEMBERDF/BEHDFFCS\_C/BEHDFFCS/BEHDFMKFR\_C/BEHDFMKFR: Based on 2019 data from the NHIS, the prevalence of children who had a lot of difficulty/could not complete an activity is estimated at 1.9% for learning, 1.3% for remembering, 1.5% for concentrating, and 2.4% for making friends.
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of these constructs for adolescents for any subpopulation that is at least 60% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.

- BEHDFCNTR\_C/BEHDFCNTR/BEHDFCHG\_C/BEHDFCHG: Based on 2019 data from the NHIS, the prevalence of children who had a lot of difficulty/could not complete an activity is estimated at 3.4% for controlling behavior and 4.0% for accepting change.
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of these constructs for adolescents for any subpopulation that is at least 22% of the total population.

## Depression and Anxiety

In the past few decades, researchers and public health practitioners alike have continued to emphasize the importance of mental health on the overall well-being of the U.S. population., For example, the improvement of mental health and mental health disorders was included in the objectives for Healthy People 2020.<sup>54</sup> Subgroup analyses using the National Health Interview Survey (NHIS) 2015-2017 show that 22.5% of adults with arthritis report symptoms of anxiety, suggesting this may be an especially prevalent problem in certain subgroups, such as individuals with chronic disease.<sup>55</sup> Apart from their own prevalence estimates, anxiety symptoms are often comorbid with other disorders, including substance use disorders, eating disorders, and personality disorders, which can be further detrimental to population health.<sup>56-58</sup> Data from the National Health and Nutrition Examination Survey (2013-16) and the National Health Interview Survey (2010-2011) shows that rates of depression among women can be up to twice as high as rates among men, and decrease as family income level increases.<sup>59-61</sup> The prevalence estimate of depression in individuals with arthritis (12.1%) is also higher than that of the general population.<sup>55</sup>

Despite this growing interest in mental health, there are very few data sources that estimate mental health outcomes from adolescents directly (NSDUH, National Comorbidity Survey), suggesting a need for the incorporation of these items into the NHIS.

### Concepts to be Measured

| Sample Child Interview | Adolescent Follow-back Survey | Item  | Variable Name |
|------------------------|-------------------------------|---|---------------|
|                        | X                             | Little interest or pleasure in doing things in past 2 weeks | <i>PHQ1</i>   |
|                        | X                             | Feeling down, depressed or hopeless in past 2 weeks         | <i>PHQ2</i>   |
|                        | X                             | Feeling nervous, anxious or on edge in past 2 weeks         | <i>GAD1</i>   |
|                        | X                             | Not being able to stop or control worrying in past 2 weeks  | <i>GAD2</i>   |

### Duplication and Previous NHIS

- Variations of the Patient Health Questionnaire (PHQ) and Generalized Anxiety Disorder Scale (GAD) appear on several national surveys, including the Behavioral Risk Factor Surveillance System (BRFSS), National Health and Nutrition Examination Survey (NHANES), Household Pulse Survey, and the National Comorbidity Survey.
- The PHQ-8 and GAD-7 were fielded as rotating adults core content by the NHIS for the first time in 2019.
- These 4 questions comprise the two-item Patient Health Questionnaire (PHQ-2) and the two-item Generalized Anxiety Disorder (GAD-2) scale.

Proposed Use of Data

These data are intended to produce reliable national estimates of the percentage of adolescents who report symptoms of anxiety or depression that have been shown in adults to be associated with diagnoses of generalized anxiety disorder or major depressive disorder. These data will also be used along with parent-reported annual NHIS core data on the frequency of appearing anxious and frequency of appearing sad to provide evidence of the validity of parent response, and along with parent-reported rotating NHIS core data from the Strengths and Difficulties Questionnaire to provide a more complete picture of children’s mental health.

- PHQ1/PHQ2: Based on previous estimates established by the 2017 National Survey on Drug Use and Health, 13.3% of adolescents report a major depressive episode in the last year.<sup>62</sup>
  - Based on a sample size of N~ 3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of symptoms of major depression for adolescents for any subpopulation that is at least 6% of the total population.
- GAD1/GAD2: Based on previous estimates established by the National Comorbidity Survey Adolescent Supplement, an estimated 2.2% of adolescents have GAD.<sup>63</sup>
  - Based on a sample size of N~ 3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of symptoms of GAD for adolescents for any subpopulation that is at least 35% of the total population.

**Mental Health Care Use and Unmet Need**

According to the 2013 Children’s Mental Health Report, 13-20% of children living in the United States (up to 1 out of 5 children) experience a mental disorder each year. Consequently, an estimated \$247 billion is spent each year on childhood mental disorders.<sup>64</sup> Given this prevalence, it is essential to capture information on the utilization of mental health services for children in the United States.

Concepts to be Measured

| Sample Child | Adolescent Follow- | Item | Variable Name |
|--------------|--------------------|------|---------------|
|--------------|--------------------|------|---------------|

| Interview | back Survey |  |                             |
|-----------|-------------|--|-----------------------------|
| X         | X           | (Past 12 months) Prescription medication taken for mental health   | MHRX_C<br><i>MHRX</i>       |
| X         | X           | (Past 12 months) Received counseling or therapy from mental health professional  | MHTHRPY_C<br><i>MHTHRPY</i> |
| X         | X           | (Past 12 months) Any counseling or therapy needed that didn't get due to cost  | MHTHND_C<br><i>MHTHND</i>   |
|           | X           | (Past 12 months) Any counseling or therapy needed that didn't get due to being afraid of what others would think of you        | <i>MHTHNDSGMA</i>           |
|           | X           | (Past 12 months) Any counseling or therapy needed that didn't get because you didn't know where to go to go or how to get help | <i>MHTHNDDKH</i>            |

### Duplication and Previous NHIS

- Several surveys (e.g. BRFSS, National Comorbidity Survey) collect information on mental health service utilization. The NHIS Sample Adult questionnaire currently collects these items on an annual basis, while the Sample Child collects it on a rotating basis.
- Since 1997, the health care access and utilization section asked the sample child whether they had seen a mental health professional (e.g. psychiatrist, psychologist, psychiatric nurse, or clinical social worker) or not received mental health care or counseling due to cost.
- In addition to variations of the 1997 items, the 2019 Redesign includes additional items asking whether the sample child has taken prescription medication for their mental health or delayed counseling or therapy due to cost in the past 12 months.
- Cognitive testing of the first four items (MHRX\_C, MHTHRPY\_C, MHTHDLY\_C, MHTHND\_C) was most recently completed in January 2018. The majority of respondents expressed a straightforward interpretation of the items and understood them as survey planners intended.<sup>65</sup>

### Proposed Use of Data

The data are intended to (1) produce reliable national estimates of mental health care utilization for the child population and (2) provide evidence of the reliability of parent response to NHIS rotating core questions.

- MHRX\_C/MHRX: 2011-2012 NHIS data shows that approximately 7.5% of children aged 6-17 years used prescribed medication during the past 6 months for emotional and behavioral difficulties.<sup>66</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce a reliable national estimate of prescription medication use for mental health for adolescents for any subpopulation that is at least 14% of the total population.

- Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- MHTHRPY\_C/MHTHRPY: According to data from the 2019 NHIS, approximately 12.5% of adolescents aged 12-17 received counseling or therapy from a mental health professional.<sup>67</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce a reliable national estimate of non-medicated services for mental health for adolescents for any subpopulation that is at least 6% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- MHTHDLY\_C/MHTHDNG\_C/MHTHDNG/MHTHNDSGMA/MHTHNDDKH: Relying on data from the National Survey of American Families, researchers showed that approximately 5% of adolescents aged 12-17 demonstrate a need for mental health services but do not receive them.<sup>68</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce a reliable national estimate of unmet mental health service need for adolescents for any subpopulation that is at least 22% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.

## Social Support

The importance of social support, especially in the face of adversity, has been widely recognized in the scientific literature. Findings from the Nurses' Health Study suggest that socially isolated women have an elevated risk of mortality after a breast cancer diagnosis.<sup>69</sup> Social support has also been shown to improve quality of life and mental health outcomes among patients with advanced cancer.<sup>70</sup> Research from the Midlife in the United States (MIDUS) cohort also suggests that midlife self-reported social support may serve as a buffer against premature mortality risks associated with childhood abuse, showing that social support has the potential to serve as an important resilience factor for even early adverse exposures.<sup>71</sup>

### Concepts to be Measured

| Sample Child Interview | Adolescent Follow-back Survey | Item   | Variable             |
|------------------------|-------------------------------|--|----------------------|
| X                      | X                             | Frequency of receiving needed social/emotional support         | SUPPORT_C<br>SUPPORT |
|                        | X                             | How much can you rely on friends if you have a serious problem | FRIENDSHELP          |
|                        | X                             | How much can you open up to friends if you                     | FRIENDSOPEN          |

|   |   |   |                            |
|---|---|---|----------------------------|
|   |   | need to talk about your worries   |                            |
| X | X | Presence of an adult outside the home that has made a positive difference in your life  | COMSUPPORT_C<br>COMSUPPORT |
|   | X | How much can you rely on your parent/guardian if you have a serious problem             | PARENTSHELP                |
|   | X | How much can you open up to your parent/guardian if you need to talk about your worries | PARENTSOPEN                |

### Duplication and Previous NHIS

- The social and emotional support section was first fielded on the Sample Adult NHIS questionnaire in 2020 Q3. These items were originally intended to estimate the prevalence of adults who rarely/never receive needed social support and assist in analyses related to social isolation. SUPPORT\_C is a child version of the adult item.
- Social support was included among the COVID-19-related battery of items added to the 2020 quarter 3 NHIS sample adult interview; these items are continuing through the 2021 NHIS data collection period. During the coronavirus pandemic, individuals lacking social and emotional supports, particularly older adults, may also be at higher risk for being unable to access needed health care.<sup>72</sup>
- The National Longitudinal Study of Adolescent to Adult Health (AddHealth) collected adolescent-reported information on the presence of a supportive adult in their life. COMSUPPORT\_C is adapted from the AddHealth item on the presence of a supportive adult.
- The National Comorbidity Study – Adolescent also collects information on peer support directly from adolescents. FRIENDSHELP, FRIENDSOPEN, PARENTSHELP, and PARENTSOPEN are adapted from these items.
- Items on family and peer connectedness have not been previously fielded on the NHIS.

### Proposed Use of Data

These data are intended to (1) produce reliable national prevalence estimates of social support for the child population and (2) provide evidence of the reliability of parent response to questions similar to content regularly fielded on the National Survey of Children’s Health.

- SUPPORT\_C: Data from a 1999-2002 analysis of NHANES shows that 82.4% of individuals report receiving adequate social support, while 17.6% of individuals report requiring additional social support.<sup>73</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce a reliable prevalence estimate of unmet social support need for adolescents for any subpopulation that is at least 6% of the total population.

- Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- FRIENDSHELP / FRIENDSOPEN: According to a report from the Pew Research Center, 2% of adolescents report not having at least one close friend.
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of adolescents without at least one close friend for any subpopulation that is at least 50% of the total population.
- COMSUPPORT\_C/COMSUPPORT: According to Wave III of AddHealth (ages 18-26), 24.4% of respondents report there not being an adult that has made an important positive difference in their lives at any time since they were 14 years old.<sup>74</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of adolescents without a supportive person in their community for any subpopulation that is at least 3% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- PARENTSHELP / PARENTSOPEN: According to Wave 1 of AddHealth (ages 12-17), 26.06% of adolescents are not satisfied with the way they communicate with their mother, and 48% of adolescents are not satisfied with the way they communicate with their father.<sup>76</sup>
  - Based on a sample size of N~3,600 adolescents and a prevalence as low as 26.06% , the AFS will be able to produce reliable prevalence estimates for adolescents that are not satisfied with the way they communicate with their parent for any subpopulation that is at least 3% of the total population.

### **Stressful Life Events**

Childhood adversity is a prevalent public health problem in the United States. Utilizing data from 23 states administering the 2010 Behavioral Risk Factor Surveillance System (BRFSS) Adverse Childhood Experience (ACE) Module, previous estimates show that 61.5% of the United States population reports experiencing at least one adverse event before the age of eighteen, and 15.8% of the population reports four or more.<sup>77</sup> Analyses from these data and others have also suggested that racial and socioeconomic disparities may exist in respect to the prevalence of childhood adversity.<sup>78</sup> Given the established impact of childhood adversity on long-term health,<sup>79</sup> these items are important to document on a nationally representative survey.

### Concepts to be Measured

| <b>Sample Child Interview</b> | <b>Adolescent Follow-back Survey</b> | <b>Item</b> | <b>Variable Name</b> |
|-------------------------------|--------------------------------------|-------------|----------------------|
|-------------------------------|--------------------------------------|-------------|----------------------|

|   |   |  |                                 |
|---|---|--|---------------------------------|
| X | X | Ever victim of violence or witness any violence in neighborhood  | VIOLENEV_C<br><i>VIOLENEV</i>   |
| X | X | Ever live with a parent or guardian who served time in jail or prison after you were born  | JAILEV1_C<br><i>JAILEV1</i>     |
| X | X | Ever live with anyone who was mentally ill or severely depressed   | MENTDEPEV_C<br><i>MENTDEPEV</i> |
| X | X | Ever live with anyone who had a problem with alcohol or drugs  | ALCDRUGEV_C<br><i>ALCDRUGEV</i> |
|   | X | Ever had a parent or guardian die  | <i>PGDIE</i>                    |
|   | X | Ever had a parent or guardian divorce or separate  | <i>PGDIVSEP</i>                 |
| X | X | Ever judged or treated unfairly because of race or ethnic group  | UNFAIRRE_C<br><i>UNFAIRRE</i>   |
| X | X | Ever judged or treated unfairly because of sexual orientation or gender identity   | UNFAIRSO_C<br><i>UNFAIRSO</i>   |
| X | X | Ever lived with a parent or adult who frequently swore at you, insulted you, or put you down   | PUTDOWN_C<br><i>PUTDOWN</i>     |
| X | X | Ever been a time when basic needs were not met (not having enough to eat, being able to go to a doctor when sick, having a safe place to stay) | BNEEDS_C<br><i>BNEEDS</i>       |

### Duplication and Previous NHIS

- Information on stressful life events is collected by the National Survey of Children’s Health, AddHealth, and the Behavioral Risk Factor Surveillance System.
- The Stressful Life Events module was first included on the NHIS as part of the 2019 Redesign, which originally fielded VIOLENEV\_C, JAILEV\_C, MENTDEPEV\_C, and ALCDRUGEV\_C, adapted from the National Survey of Children’s Health 2011-2012. These adapted items were cognitively tested in September 2017.<sup>40</sup>
- PGDIE, PGDIVSEP, UNFAIRRE, UNFAIRSO are new to the NHIS, but variations of these items have been fielded on the NSCH. PUTDOWN and BNEEDS are also new to the NHIS, but has not been fielded on previously on the NSCH.
- PUTDOWN\_C and BNEEDS\_C are sponsored by the Division of Violence and Prevention, Centers for Disease Control and Prevention.

### Proposed Use of Data

These data are intended to (1) produce reliable national prevalence estimates for additional stressful life events and (2) provide evidence of the consistency of parent and adolescent response to adverse childhood experiences questions that appear on both the NHIS (rotating core) and the National Survey of Children’s Health.

- VIOLENEV\_C/VIOLENEV/JAILEV1\_C/JAILEV1: Data from the 2019 NHIS show that 5.61% of children have experienced neighborhood violence and 5.63% have a parent that served time in jail or prison.
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of VIOLENEV or JAILEV1 for adolescents for any subpopulation that is at least 22% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- MENTDEPEV\_C/MENTDEPEV/ALCDRUGEV\_C/ALCDRUGEV: Data from the 2019 NHIS show that 8.44% of children have lived with an adult suffering from mental illness and 8.58% have lived with an adult a substance abuse.
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of MENTDEPEV or ALCDRUGEV for adolescents for any subpopulation that is at least 14% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- PGDIE: According to 2018 estimates from the NSCH, 3.1% of children have experienced a parent or guardian death.<sup>49</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of PGDIE for adolescents for any subpopulation that is at least 33% of the total population.
- PGDIVSEP: According to 2018 estimates from the NSCH, 23.7% of children have experienced a parental divorce or separation.<sup>49</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of PGDIVSEP for adolescents for any subpopulation that is at least 6% of the total population.
- UNFAIRRE\_C/UNFAIRRE: According to 2018 estimates from the NSCH, 3.9% of children have been judged or treated unfairly because of their race/ethnicity.<sup>49</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of UNFAIRRE for any subpopulation that is at least approximately 33% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- UNFAIRSO\_C/UNFAIRSO: According to Wave IV of AddHealth, 24.8% of respondents report feeling they have been treated with less respect or courtesy than other people “sometimes” or “often”.<sup>74</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of UNFAIRSO for adolescents for any subpopulation that is at least 3% of the total population.

- Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- PUTDOWN\_C/PUTDOWN: A systematic review of child maltreatment prevalence by gender in North America showed that the prevalence of emotional abuse is 28.4% for girls and 13.7% for boys.<sup>80</sup>
  - Based on a sample size of N~3,600 adolescents and a prevalence as low as 13.7%, the AFS will be able to produce reliable prevalence estimates of PUTDOWN for adolescents for any subpopulation that is at least 11% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- BNEEDS\_C/BNEEDS: According to 2018 data from the NSCH, 15.5% of families find it difficult to cover their child’s basic needs “somewhat often” or “very often”.<sup>49</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of BNEEDS for adolescents for any subpopulation that is at least 6% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.

**Everyday Discrimination Scale**

Children who experience discrimination are more likely to be in poorer health.<sup>1</sup> This may be particularly true of children from minority groups.<sup>2</sup> The American Academy of Pediatrics has recently identified racism as a public health problem, indicating its toxic effects.<sup>3</sup>

Concepts to be Measured

| Sample Child Interview | Adolescent Follow-back Survey | Item   | Variable Name      |
|------------------------|-------------------------------|--|--------------------|
|                        | X                             | How often are you treated with less courtesy or respect than other people your age           | <i>RESPECT</i>     |
|                        | X                             | At restaurants or stores, how often do you receive poorer service than other people your age | <i>POORSERVICE</i> |
|                        | X                             | How often do people act as if they think you are not smart                                   | <i>NOTSMART</i>    |

Duplication and Previous NHIS

- The three items included on discrimination come from the short version of the Everyday Discrimination Scale (EDS). The EDS has been found to be reliable and valid and has

been incorporated into a number of large-scale surveys, such as the National Survey of American Life, the National Latino and Asian American Survey (NLAAS), and the ongoing Health and Retirement Study.<sup>94,95</sup> Items from the scale have also been adapted for some adolescent surveys, including AddHealth.

- These questions have not been asked in the NHIS before.

### Proposed Use of the Data

These questions are intended to serve as covariates in various analyses, but not necessarily to be used as standalone nationally representative items of everyday discrimination. For example, these questions may be used as a predictor of the mental and physical well-being of adolescents in the survey.

- According to Wave IV of AddHealth, 24.8% of respondents report feeling they have been treated with less respect or courtesy than other people “sometimes” or “often”.<sup>74</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of these constructs for adolescents for nearly any subpopulation of interest.

### **Bullying**

Previous research shows that both bullying victimization and perpetration are linked to long-term impacts on mental health. Child victims of bullying have an increased risk of receiving psychiatric hospital treatment and psychiatric medications in young adulthood.<sup>81</sup> Victims of bullying in childhood report high levels of psychological distress at age 23 as well as later on in life and age 50.<sup>82</sup> Findings from the Population Assessment of Tobacco and Health have also shown that bullying perpetration is associated with moderate/high lifetime internalizing problems.<sup>83</sup> Given their associations with mental health, it is important to document the prevalence of both bullying victimization and perpetration among both children and adolescents.

### Concepts to be Measured

| <b>Sample Child Interview</b> | <b>Adolescent Follow-back Survey</b> | <b>Item</b>  | <b>Variable Name</b>            |
|-------------------------------|--------------------------------------|--|---------------------------------|
| X                             | X                                    | (Past 12 months) How often were you bullied, picked on, or excluded by others  | BULLYVIC_C<br><i>BULLYVIC</i>   |
| X                             | X                                    | (Past 12 months) Been electronically bullied                                   | CYBERVIC_C<br><i>CYBERVIC</i>   |
| X                             | X                                    | (Past 12 months) How often did you bully others, pick on them, or exclude them | BULLYPERP_C<br><i>BULLYPERP</i> |
|                               | X                                    | (Past 12 months) Electronically bullied others                                 | <i>CYBERPERP</i>                |

### Duplication and Previous NHIS

- The Youth Risk Behavior Survey (2017) collects information on whether adolescents have been bullied on school property or electronically bullied within the past 12 months. The 2018 NSCH also collects information on bully victimization and perpetration.<sup>49</sup>
- Items on bullying have not been asked on the NHIS previously.

Proposed Use of Data

These data are intended to (1) produce reliable national prevalence estimates of bullying victimization and perpetration, and (2) provide evidence of the reliability of parent response to questions regularly fielded on the National Survey of Children’s Health.

- BULLYVIC\_C/BULLYVIC/BULLYPERP\_C/BULLYPERP: According to 2017 data from the YRBS, 19.0% of adolescents report having been bullied on school property within the last year.<sup>84</sup> Several studies in the literature cite that approximately 20% of adolescent and college-aged individuals report being perpetrators of bullying.<sup>49,85,86</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of bullying victimization and perpetration for adolescents for any subpopulation that is at least 6% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.
- CYBERVIC\_C/CYBERVIC/CYBERPERP: According to 2019 data from the YRBS, 15.7% of adolescents report being a victim of electronic bullying.<sup>87</sup>
  - Based on a sample size of N~3,600 adolescents, the AFS will be able to produce reliable prevalence estimates of electronic bullying victimization and perpetration for adolescents for any subpopulation that is at least 6% of the total population.
  - Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the alpha = .05 level.

**Demographics**

Much like the adult population, there are notable disparities as it relates to health outcomes among adolescents, with key differences seen by race and ethnicity.<sup>84</sup> An adolescents’ sexual orientation has also been associated with notable disparities in physical and mental health,<sup>88</sup> including an increased risk of being bullied.<sup>89</sup> Children who are attending public school versus private school may have disproportionate access to health services in schools which may translate to differential reproductive health outcomes.<sup>90</sup> Meanwhile, children who have dropped out of school are at risk for multiple social and health problems.<sup>91</sup>

Concepts to be Measured

| Sample Child Interview | Adolescent Follow-back Survey | Item | Variable Name |
|------------------------|-------------------------------|------|---------------|
|------------------------|-------------------------------|------|---------------|

|   |   |                           |                  |
|---|---|---------------------------|------------------|
| X | X | Race                      | RACE<br>RACE     |
| X | X | Hispanic or Latino origin | NATORG<br>NATORG |
|   | X | Sex at birth              | SEXBIRTH         |
|   | X | Current gender identity   | GENDERID         |
|   | X | Sexual orientation        | ORIENT           |
|   | X | School enrollment         | SCHSTATUS        |

### Duplication and Previous NHIS

- Questions pertaining to race and ethnicity are currently asked in the sample child interview of the NHIS. In 2018, approximately 70% of children were white, 14% were black, and 23% of children were of Hispanic or Latino origin.
- Sexual orientation has not been previously asked in the NHIS in the sample child interview. However, in the 2019 Youth Risk Behavior Survey (YRBS), 84.4% of adolescents reported themselves to be heterosexual or straight while 11.2% reported themselves to be gay, lesbian, or bisexual, and 4.5% of adolescents were not sure.
- Gender identity has also not been previously asked in the NHIS sample child interview. However, in the 2017 YRBS, a piloted question on gender identity found 1.8% of adolescents to be transgendered, but with 1.6% of adolescents being unsure if they were transgendered, and 2.1% not understanding what the question was asking.
- There has not previously been a question about the type of school attended by an adolescent, although whether or not the child has missed school due to an injury, disability or illness, has been asked in the NHIS for several years in the sample child interview. This question is asked of school aged children.

### Proposed Use of Data

All data are intended to be used primarily as covariates for various health outcomes that will be ascertained in the adolescent follow-back survey. The reliability of parent reports of the adolescent's race and ethnicity will also be examined. Assuming an unacceptable or null kappa of .60, the adolescent follow-back survey would have .80 power to detect a good kappa of .80 between parent reports and adolescent reports at the  $\alpha = .05$  level.

### **Respondent Burden and Interview Characteristics**

Several factors contribute to respondent burden including survey length, as well as the difficulty and sensitivity of questions asked.<sup>92</sup> Data quality has been found to be associated with respondent burden,<sup>93</sup> it is therefore in the best interest of researchers to understand the demands a piloted survey places on its participants. Doing such will allow for refinements and modifications to improve future iterations of a given survey.

It is also important to understand the environment in which the participant completes the survey including whether they needed assistance completing the survey itself. Asking such questions will speak to the sensitivity and difficulty of the questions being asked, as well as the required resources needed to complete an interview.

### Concepts to be Measured

| <b>Sample Child Interview</b> | <b>Adolescent Follow-back Survey</b> | <b>Item</b>                             | <b>Variable Name</b> |
|-------------------------------|--------------------------------------|---|----------------------|
|                               | X                                    | Level of burden completing survey       | <i>BURDEN</i>        |
|                               | X                                    | Difficulty of questions                 | <i>DIFFICULTY</i>    |
|                               | X                                    | Sensitivity of questions                | <i>SENSITIVITY</i>   |
|                               | X                                    | Length of survey                        | <i>LENGTH</i>        |
|                               | X                                    | Devices used to complete interview      | <i>DEVICES</i>       |
|                               | X                                    | Interview completed at home             | <i>HOME</i>          |
|                               | X                                    | Received help from others, relationship | <i>HELPER</i>        |
|                               | X                                    | Alone when completing survey            | <i>ALONE</i>         |

### Duplication and Previous NHIS

Questions related to burden have previously been used in the NHIS, namely during a split-sample experiment exploring differences between the old NHIS questionnaire and the redesigned NHIS questionnaire. The remaining questions, including perception of survey length have not previously been fielded in the NHIS and are unique to the adolescent follow-back survey.

### Proposed Use of the Data:

All data are intended to be used internally within the program for data quality purposes. The intention is not to produce national estimates from any of the variables. All questions are asked of the full sample, hopefully allowing for differences to be explored by demographic characteristics including age, race, and sex.

## References:

1. Idler EL, Benyamini Y, Joh, behavior s. Self-rated health and mortality: a review of twenty-seven community studies. 1997;21-37.
2. Latham K, Peek CW, JoGSBPS, Sciences S. Self-rated health and morbidity onset among late midlife US adults. 2013;68(1):107-116.
3. Athay MM, Kelley SD, Dew-Reeves SE. Brief Multidimensional Students' Life Satisfaction Scale-PTPB Version (BMSLSS-PTPB): psychometric properties and relationship with mental health symptom severity over time. *Adm Policy Ment Health*. 2012;39(1-2):30-40.
4. Huebner ES. Research on Assessment of Life Satisfaction of Children and Adolescents. *Social Indicators Research*. 2004;66(1):3-33.
5. Valois RF, Zullig KJ, Huebner ES, Drane JW. Physical Activity Behaviors and Perceived Life Satisfaction Among Public High School Adolescents. 2004;74(2):59-65.
6. Levin KA, Torsheim T, Vollebergh W, et al. National income and income inequality, family affluence and life satisfaction among 13 year old boys and girls: A multilevel study in 35 countries. 2011;104(2):179-194.
7. Identification EPot, Overweight To, Adults Oi, et al. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: the evidence report: National Institutes of Health, National Heart, Lung, and Blood Institute; 1998.
8. National Health and Nutrition Examination Survey (1999-2018). 2020.
9. Overweight & Obesity: Surveillance Systems. 2016; <https://www.cdc.gov/obesity/data/surveillance.html#Nutrition>.
10. Hales CM, Carroll MD, Fryar CD, Ogden CL. Prevalence of Obesity Among Adults and Youth: United States, 2015-2016. *NCHS data brief*. 2017(288):1-8.
11. High School YRBS: Obesity, Overweight, and Weight Control.
12. Green M, Palfrey JJP. eds *Bright Futures: Guidelines for health Supervision of Infants, Children and Adolescents*, Arlington VA: National Center for Education in Maternal and Child Health. Glascoe FP & Dworkin PH 1995 *The Role of Parents in the Detection of Developmental and Behavioral Problems*. 2000;95:829-836.
13. A consensus statement on health care transitions for young adults with special health care needs. *Pediatrics*. 2002;110(6 Pt 2):1304-1306.
14. Ford CA. Which Adolescents Have Opportunities to Talk to Doctors Alone? *Journal of Adolescent Health*. 2010;46(4):307-308.
15. Foundation KF. Kaiser Family Foundation analysis of the Center for Disease Control and Prevention (CDC)'s Behavioral Risk Factor Surveillance System (BRFSS) 2013-2018 Survey Results. 2018; <https://www.kff.org/other/state-indicator/percent-of-adults-reporting-not-having-a-personal-doctor>.
16. Leeb RTJMM, Report MW. Support for Transition from Adolescent to Adult Health Care Among Adolescents With and Without Mental, Behavioral, and Developmental Disorders—United States, 2016–2017. 2020;69.
17. Schauer GL, Agaku IT, King BA, Malarcher AM. Health Care Provider Advice for Adolescent Tobacco Use: Results From the 2011 National Youth Tobacco Survey. 2014;134(3):446-455.
18. Diamond GS, O'Malley A, Wintersteen MB, et al. Attitudes, Practices, and Barriers to Adolescent Suicide and Mental Health Screening: A Survey of Pennsylvania Primary Care Providers. *Journal of Primary Care & Community Health*. 2011;3(1):29-35.

19. Jones RK, Purcell A, Singh S, Finer LB. Adolescents' reports of parental knowledge of adolescents' use of sexual health services and their reactions to mandated parental notification for prescription contraception. *Jama*. 2005;293(3):340-348.
20. Barnes PM, Bloom B, Nahin RL. Complementary and alternative medicine use among adults and children: United States, 2007. *National health statistics reports*. 2008(12):1-23.
21. Black LI, Barnes PM, Clarke TC, Stussman BJ, Nahin RL. Use of Yoga, Meditation, and Chiropractors Among U.S. Children Aged 4-17 Years. *NCHS data brief*. 2018(324):1-8.
22. Nahin RL, Barnes PM, Stussman BJ. Insurance Coverage for Complementary Health Approaches Among Adult Users: United States, 2002 and 2012. *NCHS data brief*. 2016(235):1-8.
23. Peregoy JA, Clarke TC, Jones LI, Stussman BJ, Nahin RL. Regional variation in use of complementary health approaches by U.S. adults. *NCHS data brief*. 2014(146):1-8.
24. Wilson S, Maitland A, Miller K. Cognitive Interviewing Evaluation of the 2007 Complementary and Alternative Medicine Module for the National Health Interview Survey: Results of interviews conducted February 13 – March 1, 2006 National Center for Health Statistics. 2006.
25. Gray C, Chepp V. Cognitive Interviewing Evaluation of the Complementary and Alternative Medicine (CAM) Supplement for the National Health Interview Survey (NHIS) Interviews conducted 2/17/2011 – 3/14/2011. National Center for Health Statistics. 2011.
26. Manley AF. *Physical activity and health: A report of the Surgeon General*: Diane Publishing; 1996.
27. Reiner M, Niermann C, Jekauc D, Woll AJBph. Long-term health benefits of physical activity—a systematic review of longitudinal studies. 2013;13(1):1-9.
28. Stamatakis E, Hillsdon M, Primatesta PJAjopm. Domestic physical activity in relationship to multiple CVD risk factors. 2007;32(4):320-327. e323.
29. Hurtig-Wennlöf A, Ruiz JR, Harro M, Sjöström M. Cardiorespiratory fitness relates more strongly than physical activity to cardiovascular disease risk factors in healthy children and adolescents: the European Youth Heart Study. *J European Journal of Cardiovascular Prevention Rehabilitation* 2007;14(4):575-581.
30. Troiano RP. *Physical Activity Guidelines for Americans* From the US Department of Health and Human Services. 2018.
31. Saelens BE, Sallis JF, Black JB, Chen DJAajoph. Neighborhood-based differences in physical activity: an environment scale evaluation. 2003;93(9):1552-1558.
32. Conn VS, Hafdahl AR, Brown LMJNr. Meta-analysis of quality-of-life outcomes from physical activity interventions. 2009;58(3):175.
33. *National Health Interview Survey: Historical Context, Selected Milestones in Physical Activity Research, Promotion, and Surveillance*. [https://www.cdc.gov/nchs/nhis/physical\\_activity/pa\\_history.htm](https://www.cdc.gov/nchs/nhis/physical_activity/pa_history.htm).
34. Kelly Y, Kelly J, Sacker A. Time for bed: associations with cognitive performance in 7-year-old children: a longitudinal population-based study. *Journal of Epidemiology and Community Health*. 2013;67(11):926.
35. Chuang J, Fehr K, Ievers-Landis C, Narasimhan S, Uli N, O'Riordan MA. Associations of sleep duration and regularity with level of obesity among youth in a weight loss program. *Translational Issues in Psychological Science*. 2015;1:45-56.

36. Buysse DJ. Sleep health: can we define it? Does it matter? *Sleep*. 2014;37(1):9-17.
37. Roth T. Insomnia: definition, prevalence, etiology, and consequences. *J Clin Sleep Med*. 2007;3(5 Suppl):S7-S10.
38. Punjabi NM. The epidemiology of adult obstructive sleep apnea. *Proc Am Thorac Soc*. 2008;5(2):136-143.
39. Ohayon MM, O'Hara R, Vitiello MV. Epidemiology of restless legs syndrome: a synthesis of the literature. *Sleep medicine reviews*. 2012;16(4):283-295.
40. Massey M, Reynolds B, Jamoom E, Creamer L. Results of Cognitive Testing of Questions for the National Health Interview Survey. National Center for Health Statistics. 2017.
41. Ebarhim A, Babak G, Alimohammad A, Shabnam J, Alireza A, Forough F. High Prevalence of Sleep Problems in School- and Preschool-aged Children in Tehran: a Population Based Study. *Iranian journal of pediatrics*. 2013;23(1):45-52.
42. Fricke-Oerkermann L, Plück J, Schredl M, et al. Prevalence and course of sleep problems in childhood. *Sleep*. 2007;30(10):1371-1377.
43. Communications Co, Pediatrics MJ. Media and young minds. 2016;138(5):e20162591.
44. Twenge JM, Campbell WKJPMr. Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study. 2018;12:271-283.
45. Diener E, Suh EM, Lucas RE, Smith HLJPb. Subjective well-being: Three decades of progress. 1999;125(2):276.
46. Massey M, Reynolds B, Jamoom E, Creamer L. National Health Interview Survey 2017 Cognitive Testing Results. 2018; [https://wwwn.cdc.gov/QBank/report/Massey\\_2018\\_NCHS\\_NHIS.pdf](https://wwwn.cdc.gov/QBank/report/Massey_2018_NCHS_NHIS.pdf).
47. Prevention CfDCa. Report to Congress on Traumatic Brain Injury in the United States: Epidemiology and Rehabilitation. In: Prevention NCFIPaCDoUI. Atlanta, GA2015.
48. Prevention CfDCa. TBI-related Emergency Department Visits, Hospitalizations, and Deaths (EDHDs). *Traumatic Brain Injury & Concussion 2019*; <https://www.cdc.gov/traumaticbraininjury/data/tbi-edhd.html>, 2020.
49. Initiative CaAHM. 2018 National Survey of Children's Health (NSCH) data query. 2018; [www.childhealthdata.org](http://www.childhealthdata.org). Accessed 08/18/20.
50. Prevention CfDCa. Surveillance Report of Traumatic Brain Injury-related Emergency Department Visits, Hospitalizations, and Deaths—United States, 2014. In: Centers for Disease Control and Prevention USDoHaHS2019.
51. Houtrow AJ, Okumura MJ, Hilton JF, Rehm RS. Profiling health and health-related services for children with special health care needs with and without disabilities. *Academic pediatrics*. 2011;11(6):508-516.
52. Maag JW, Reid RJJold. Depression among students with learning disabilities: Assessing the risk. 2006;39(1):3-10.
53. Murray C, Greenberg MT. Relationships with teachers and bonds with school: Social emotional adjustment correlates for children with and without disabilities. 2001;38(1):25-41.
54. Promotion OoDPaH. 2020 Topics and Objectives. *Healthy People 2020 2020*; <https://www.healthypeople.gov/2020/topics-objectives>.
55. Guglielmo D, Hootman JM, Boring MA, et al. Symptoms of anxiety and depression among adults with arthritis—United States, 2015–2017. 2018;67(39):1081.

56. Flick SN, Roy-Byrne PP, Cowley DS, Shores MM, Dunner DL. DSM-III-R personality disorders in a mood and anxiety disorders clinic: prevalence, comorbidity, and clinical correlates. *Journal of affective disorders*. 1993;27(2):71-79.
57. Herpertz-Dahlmann BM, Wewetzer C, Schulz E, Remschmidt H. Course and outcome in adolescent anorexia nervosa. *The International journal of eating disorders*. 1996;19(4):335-345.
58. Westermeyer J, Tucker P, Nugent SJAJoA. Comorbid Anxiety Disorder Among Patients with Substance Abuse Disorders: Risk Factors on Initial Evaluation. 1995;4(2):97-106.
59. Brody DJ, Pratt LA, Hughes JP. Prevalence of Depression Among Adults Aged 20 and Over: United States, 2013-2016. *NCHS data brief*. 2018(303):1-8.
60. National Health Interview Survey: 2010 Quality of Life and 2011 Functioning and Disability Supplements. <http://www.cdc.gov/nchs/nhis.htm>.
61. Chiu M, Amartey A, Wang X, Vigod S, Kurdyak P. Trends in objectively measured and perceived mental health and use of mental health services: a population-based study in Ontario, 2002-2014. *CMAJ*. 2020;192(13):E329-E337.
62. (CBHSQ) CfBHSaQ. Results from the 2017 National Survey on Drug Use and Health: Detailed Tables. 2019; <https://www.samhsa.gov/data/sites/default/files/cbhsq-reports/NSDUHDetailedTabs2017/NSDUHDetailedTabs2017.htm#tab8-56A>.
63. Merikangas KR, He JP, Burstein M, et al. Lifetime prevalence of mental disorders in U.S. adolescents: results from the National Comorbidity Survey Replication--Adolescent Supplement (NCS-A). *Journal of the American Academy of Child and Adolescent Psychiatry*. 2010;49(10):980-989.
64. Perou R, Bitsko RH, Blumberg SJ, et al. Mental health surveillance among children--United States, 2005-2011. *MMWR supplements*. 2013;62(2):1-35.
65. Massey M, Reynolds B, Jamoom E, Creamer L. Results of Cognitive Testing of Questions for the National Health Interview Survey. National Center for Health Statistics. 2018.
66. Howie LD, Pastor PN, Lukacs SL. Use of medication prescribed for emotional or behavioral difficulties among children aged 6-17 years in the United States, 2011-2012. *NCHS data brief*. 2014(148):1-8.
67. Zablotsky B, Terlizzi EP. Mental health treatment among children aged 5-17 years: United States, 2019. *NCHS Data Brief*, no 381. Hyattsville, MD: National Center for Health Statistics. 2020. .
68. Sheryl H. Kataoka, M.D., M.S.H.S. , Lily Zhang, M.S. , and, Kenneth B. Wells, M.D., M.P.H. Unmet Need for Mental Health Care Among U.S. Children: Variation by Ethnicity and Insurance Status. 2002;159(9):1548-1555.
69. Kroenke CH, Kubzansky LD, Schernhammer ES, Holmes MD, Kawachi IJJoco. Social networks, social support, and survival after breast cancer diagnosis. 2006;24(7):1105-1111.
70. Applebaum AJ, Stein EM, Lord-Bessen J, Pessin H, Rosenfeld B, Breitbart WJPO. Optimism, social support, and mental health outcomes in patients with advanced cancer. 2014;23(3):299-306.
71. Chiang JJ, Chen E, Miller GE. Midlife self-reported social support as a buffer against premature mortality risks associated with childhood abuse. *Nature Human Behaviour*. 2018;2(4):261-268.
72. Schaffer MA, Lia-Hoagberg BJJJoO, Gynecologic,, Nursing N. Effects of social support on prenatal care and health behaviors of low-income women. 1997;26(4):433-440.

73. White AM, Philogene GS, Fine L, Sinha S. Social support and self-reported health status of older adults in the United States. *Am J Public Health*. 2009;99(10):1872-1878.
74. Harris KM, Halpern CT, Whitsel E, et al. The National Longitudinal Study of Adolescent to Adult Health. 2009; <https://addhealth.cpc.unc.edu/data/>.
75. Initiative CaAHM. 2003 National Survey of Children's Health (NSCH) data query. 2003; [www.childhealthdata.org](http://www.childhealthdata.org). Accessed 08/18/20.
76. Add Health Codebook Explorer. <https://addhealth.cpc.unc.edu/documentation/codebook-explorer/#/>.
77. Merrick MT, Ford DC, Ports KA, Guinn AS. Prevalence of Adverse Childhood Experiences From the 2011-2014 Behavioral Risk Factor Surveillance System in 23 States. *JAMA Pediatrics*. 2018;172(11):1038-1044.
78. Slopen N, Shonkoff JP, Albert MA, et al. Racial Disparities in Child Adversity in the U.S.: Interactions With Family Immigration History and Income. *American Journal of Preventive Medicine*. 2016;50(1):47-56.
79. Felitti VJMD, Faccp, Anda RFMD, et al. Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*. 1998;14(4):245-258.
80. Moody G, Cannings-John R, Hood K, Kemp A, Robling M. Establishing the international prevalence of self-reported child maltreatment: a systematic review by maltreatment type and gender. *BMC Public Health*. 2018;18(1):1164.
81. Sourander A, Ronning J, Brunstein-Klomek A, et al. Childhood bullying behavior and later psychiatric hospital and psychopharmacologic treatment: findings from the Finnish 1981 birth cohort study. 2009;66(9):1005-1012.
82. Takizawa R, Maughan B, Arseneault LJAjop. Adult health outcomes of childhood bullying victimization: evidence from a five-decade longitudinal British birth cohort. 2014;171(7):777-784.
83. Azevedo Da Silva M, Gonzalez JC, Person GL, Martins SS. Bidirectional Association Between Bullying Perpetration and Internalizing Problems Among Youth. *Journal of Adolescent Health*. 2020;66(3):315-322.
84. Kann L, McManus T, Harris WA, et al. Youth Risk Behavior Surveillance - United States, 2017. Morbidity and mortality weekly report. Surveillance summaries (Washington, D.C. : 2002). 2018;67(8):1-114.
85. Hemphill SA, Kotevski A, Herrenkohl TI, et al. Longitudinal consequences of adolescent bullying perpetration and victimisation: a study of students in Victoria, Australia. *Crim Behav Ment Health*. 2011;21(2):107-116.
86. Lund EM, Ross SW. Bullying Perpetration, Victimization, and Demographic Differences in College Students: A Review of the Literature. *Trauma, violence & abuse*. 2017;18(3):348-360.
87. High School YRBS: 2019 Results. <https://nccd.cdc.gov/YouthOnline/App/Results>.
88. Saewyc EM. RESEARCH ON ADOLESCENT SEXUAL ORIENTATION: DEVELOPMENT, HEALTH DISPARITIES, STIGMA AND RESILIENCE. *J Res Adolesc*. 2011;21(1):256-272.
89. Collier KL, van Beusekom G, Bos HMW, Sandfort TGM. Sexual orientation and gender identity/expression related peer victimization in adolescence: a systematic review of associated psychosocial and health outcomes. *J Sex Res*. 2013;50(3-4):299-317.

- 90.** Denny S, Robinson E, Lawler C, et al. Association between availability and quality of health services in schools and reproductive health outcomes among students: a multilevel observational study. *Am J Public Health*. 2012;102(10):e14-e20.
- 91.** McCarty CA, Mason WA, Kosterman R, Hawkins JD, Lengua LJ, McCauley E. Adolescent school failure predicts later depression among girls. *J Adolesc Health*. 2008;43(2):180-187.
- 92.** Bradburn N. Respondent burden. presented at: Proceedings of the Survey Research Methods Section of the American Statistical Association 1978.
- 93.** Savage SJ, Waldman DM. Learning and fatigue during choice experiments: a comparison of online and mail survey modes. 2008;23(3):351-371.
- 94.** Krieger N., Smith K., Naishadham D., Hartman C., Barbeau E.M. "Experiences of discrimination: validity and reliability of a self-report measure for population health research on racism and health." *Social Science & Medicine*. 2005; 61(7):1576-1596.
- 95.** Taylor T.R., Kamarck T.W., Shiffman S. "Validation of the Detroit area study discrimination scale in a community sample of older African American adults: the Pittsburgh healthy heart project." *International Journal of Behavioral Medicine*. 2004; 11:88-94.