

Youth Risk Behavior Survey (YRBS) 2019 Standard Questionnaire Item Rationale

Obesity, Overweight, and Weight Control

QUESTION(S):

6. How tall are you without your shoes on?
7. How much do you weigh without your shoes on?
67. How do you describe your weight?

RATIONALE:

These questions measure self-reported height and weight and perceived body weight. Data on self-reported height and weight are used to calculate body mass index (BMI) and determine the corresponding BMI percentile for adolescents. BMI percentile takes into account that young people are still growing and are growing at different rates depending on their age and sex. CDC recommends using BMI percentile when assessing weight status for youth ages 2–20. Although BMI calculated from self-reported height and weight underestimates the prevalence of obesity compared to BMI calculated from measured height and weight,⁽¹⁾ self-reported height and weight are useful for tracking BMI trends over time.⁽²⁻⁴⁾

Children with obesity are at higher risk of having other chronic health conditions and diseases that influence physical health. These include asthma, sleep apnea, bone and joint problems, type 2 diabetes, and risk factors for heart disease.⁽⁵⁻⁷⁾ Obesity has psychological consequences as well; youth with obesity are bullied and teased more than their normal weight peers and are more likely to suffer from social isolation, depression, and lower self-esteem.^(8,9) In the long term, youth with obesity are more likely to have obesity as an adult.^(10,11)

Continued monitoring of height and weight data through the YRBS provides information at the national, state, and local levels that can be used to track progress in efforts to curb the spread of obesity.⁽³⁾ Nationwide in 2017, 15% of high school students had obesity and 16% were overweight.⁽¹²⁾ During 1999–2017, significant linear increases occurred in the percentage of students with obesity (11%–15%) and who were overweight (14%–16%).

REFERENCES:

1. Mei Z, Grummer-Strawn LM, Pietrobelli A, Goulding A, Goran MI, Dietz WH. Validity of body mass index compared with other body-composition screening indexes for assessment of body fatness in children and adolescents. *American Journal of Clinical Nutrition* 2002;75(6):978–985.

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2. Krebs NF, Himes JH, Jacobson D, Nicklas TA, Guilday P, Styne D. Assessment of child and adolescent overweight and obesity. *Pediatrics* 2007;120:S193–S228.
 3. Institute of Medicine. *Evaluating Obesity Prevention Efforts: A Plan for Measuring Progress*. Washington, DC: The National Academies Press; 2013.
 4. Brener ND, McManus T, Galuska DA, Lowry R, Wechsler H. Reliability and validity of self-reported height and weight among high school students. *Journal of Adolescent Health* 2003;32:281–287.
 5. May AL, Kuklina EV, Yoon PW. Prevalence of cardiovascular disease risk factors among US adolescents, 1999–2008. *Pediatrics* 2012;129(6):1035–1041.
 6. Lloyd LJ, Langley-Evans SC, McMullen S. Childhood obesity and risk of the adult metabolic syndrome: a systematic review. *International Journal of Obesity* 2012;36(1):1–11.
 7. Haflon NH, Larson K, Slusser W. Associations between obesity and comorbid mental health, developmental and physical health conditions in a nationally representative sample of US children aged 10 to 17. *Academic Pediatrics* 2013; 13(1):6-13.
 8. Van Geel M, Vedder P, Tanilon J. Are overweight and obese youths more often bullied by their peers? A meta-analysis on the correlation between weight status and bullying. *International Journal of Obesity* 2014;38(10):1263–1267.
 9. Griffiths LI, Parsons TJ, Hill AJ. Self-esteem and quality of life in obese children and adolescents: a systematic review. *International Journal of Pediatric Obesity* 2010;5(4):282–304.
 10. The NS, Suchindran C, North KE, Popkin BM, Gordon-Larsen P. Association of adolescent obesity with risk of severe obesity in adulthood. *Journal of the American Medical Association* 2010;304(18):2042-2047.
 11. Singh AS, Mulder C, Twisk JWR, Van Mechelen V, Chinapaw MJM. Tracking of childhood overweight into adulthood: a systematic review of the literature. *Obesity Reviews* 2008;9(5):474–488.
 12. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
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QUESTION(S):

68. Which of the following are you trying to do about your weight?

RATIONALE:

This question measures weight goals. The prevention of childhood obesity involves maintaining energy balance at a healthy weight while protecting overall health, growth and development, and nutritional status.⁽¹⁾ The *Expert Committee Recommendations Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity* recommend that overweight adolescents (85th percentile < BMI < 95th percentile) achieve a healthy weight by maintaining their current weight while stature increases; adolescents with obesity (BMI >95th percentile) can pursue weight loss that is not to exceed an average of 2 pounds per week.⁽²⁾ The goals of obesity prevention in children and adolescents also include the avoidance of potentially harmful weight concern and restrictive eating behaviors. For these reasons, understanding adolescents' weight goals, both independently and relative to weight status, is of public health importance.⁽²⁾ Nationwide in 2017, 47% of high school students were trying to lose weight.⁽⁴⁾ The percentage of students who were trying to lose weight increased significantly during 1991–2017 (42%–47%).⁽³⁾

REFERENCES:

1. Institute of Medicine. *Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation*. Washington, DC: The National Academies Press; 2012.
Available at: <https://www.nap.edu/read/13275/chapter/1>. Accessed July 12, 2018.
2. Spear BA, Barlow SE, Ervin C, et al. Recommendations for treatment of child and adolescent overweight and obesity. *Pediatrics* 2007;120:S254.
3. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).

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Behaviors that Result in Unintentional Injuries

QUESTION(S):

8. How often do you wear a seat belt when riding in a car driven by someone else?

RATIONALE:

This question measures the frequency with which seat belts are worn when riding in a car driven by someone else. Motor-vehicle crashes kill more adolescents aged 15–19 years than any other single cause in the United States.⁽¹⁾ In 2016, 2,627 adolescents were killed and more than 400,000 were treated in emergency departments for motor vehicle crash-related injuries.⁽¹⁾ Seat belts, when used appropriately, reduce the risk of fatal injury to front-seat passenger car occupants by 45% and the risk of moderate-to-critical injury by 50%.^(2,3) However, in 2016, among all fatally injured 16- to 19-year-old occupants, seat belt use among passengers (35%) was considerably lower than among drivers (49%).⁽⁴⁾ In 2017, 6% of high school students nationwide rarely or never wore a seat belt when riding in a car driven by someone else.⁽⁵⁾ During 1991–2017, among students nationwide, a significant linear decrease occurred in the prevalence of rarely or never wearing a seat belt (26%–6%).⁽⁵⁾

REFERENCES:

1. Web-based Injury Statistics Query and Reporting System (WISQARS) [database online]. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2016. Accessed June 11, 2018.
2. Kahane CJ. *Lives saved by vehicle safety technologies and associated Federal Motor Vehicle Safety Standards, 1960 to 2012 – Passenger cars and LTVs*. Publication no. DOT HS 812-069. U.S. Department of Transportation, National Highway Traffic Safety Administration; 2015. Available at: <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812069>. Accessed June 8, 2018.
3. National Highway Traffic Safety Administration. *Seat belt use in 2017—Overall results*. Traffic Safety Facts Research Note. Publication no. DOT HS 812-465. Washington, DC: U.S. Department of Transportation, National Highway Traffic Safety Administration; 2018. Available at: <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812465>. Accessed June 11, 2018.
4. Highway Data Loss Institute. *Fatality Facts: Teenagers 2016*. Insurance Institute for Highway Safety; 2018. Available at: <http://www.iihs.org/iihs/topics/t/teenagers/fatalityfacts/teenagers/2016#Passenger-vehicle-occupants>. Accessed June 11, 2018.

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5. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance — United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
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QUESTION(S):

9. During the past 30 days, how many times did you ride in a car or other vehicle driven by someone who had been drinking alcohol?
10. During the past 30 days, how many times did you drive a car or other vehicle when you had been drinking alcohol?

RATIONALE:

These questions measure the frequency with which high school students drove a motor vehicle while under the influence of alcohol or rode as a passenger in a motor vehicle operated by someone who was under the influence of alcohol. In 2015, 20% of 15- to 20-year-old drivers who were involved in fatal motor vehicle crashes and 2% of young drivers involved in crashes resulting in at least one non-fatal injury had been drinking alcohol.⁽¹⁾ In 2016, 12% of fatally injured passenger vehicle drivers aged 16–17 years old had a blood alcohol concentration equal to or above the illegal threshold for adults of 0.08% at the time of the crash.⁽²⁾ In 2017, among the 63% of high school students who had driven a car or other vehicle during the 30 days before the survey, 6% had driven one or more times when they had been drinking alcohol. During 2013–2017, among high school students who had driven a car or other vehicle during the 30 days before the survey, the prevalence of students who had driven one or more times when they had been drinking alcohol decreased from 10% to 6%.⁽³⁾ Among high school students nationwide, 17% had ridden in a car or other vehicle driven by someone who had been drinking alcohol one or more times during the 30 days before the survey.⁽³⁾ Among students nationwide, the prevalence of riding with a driver who had been drinking alcohol decreased during 1991–2009 (40%–28%) and then further decreased during 2009–2017 (28%–17%).⁽³⁾

REFERENCES:

1. National Center for Statistics and Analysis. *Young Drivers: 2015 data*. Traffic Safety Facts Research Note. Publication no. DOT HS 812-363. Washington, DC: U.S. Department of Transportation, National Highway Traffic Safety Administration; 2017. Available at: <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812363>. Accessed June 11, 2018.
2. Highway Data Loss Institute. *Fatality Facts: Teenagers 2016*. Insurance Institute for Highway Safety; 2018. Available at: <http://www.iihs.org/iihs/topics/t/teenagers/fatalityfacts/teenagers#Alcohol-involvement>. Accessed June 11, 2018.

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3. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance — United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
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QUESTION(S):

11. During the past 30 days, on how many days did you text or e-mail while driving a car or other vehicle?

RATIONALE:

This question measures the frequency with which students engage in texting or e-mailing while driving a motor vehicle. Motor vehicle crashes are the leading cause of death among U.S. adolescents aged 15–19.⁽¹⁾ In 2016, 9% of all drivers aged 15–19 involved in fatal crashes were reported as distracted at the time of the crash, and 19% of these distracted teens were distracted by the use of cell phones.⁽²⁾ Texting while driving is an especially risky type of distracted driving, as it involves three types of driver distraction: visual, physical/manual, and cognitive.⁽³⁾ In addition, teen drivers are more vulnerable to the effects of distraction, are less willing to disengage from a distracting behavior even as more road hazards are presented, and are less adept at handling road hazards than adults.⁽⁴⁻⁷⁾ In 2017, among the 63% of high school students nationwide who had driven a car or other vehicle during the 30 days before the survey, the prevalence of texting while driving one or more times in the 30 days before the survey was 39%.⁽⁸⁾ The prevalence of texting while driving among high school students who had driven a car or other vehicle during the 30 days before the survey did not change significantly from 2013 (41%) to 2017 (39%).⁽⁸⁾

REFERENCES:

1. Web-based Injury Statistics Query and Reporting System (WISQARS) [database online]. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2016. Accessed June 11, 2018.
2. National Center for Statistics and Analysis. *Distracted Driving 2016*. Traffic Safety Facts Research Note. Publication no. DOT HS 812-517. Washington, DC: U.S. Department of Transportation, National Highway Traffic Safety Administration; 2018. Available at: <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812517>. Accessed June 11, 2018.
3. Caird JK, Johnston KA, Willness CR, et al. A meta-analysis of the effects of texting on driving. *Accident Analysis & Prevention* 2014;71:311-318.
4. Durbin DR, McGehee DV, Fisher D, McCartt A. Special considerations in distracted driving with teens. *Annals of Advances in Automotive Medicine* 2014;58:69-83.

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5. Chisholm SL, Caird JK, Lockhart JA, et al. Novice and experienced driver performance with cellphones. Proceedings of the Human Factors and Ergonomics Society 50th Annual Meeting 2006:2354-2358.
6. Bates LJ, Davey J, Watson B, King MJ, Armstrong K. Factors Contributing to Crashes among Young Drivers. *Sultan Qaboos University Medical Journal* 2014;14(3):e297-e305.
7. Lee SE, Klauer SG, Olsen ECB, et al. Detection of road hazards by novice teen and experienced adult drivers. *Transportation Research Record* 2008;2078:26–32.
8. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance — United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).

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Behaviors that Result in Violence

QUESTION(S):

12. During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club?
13. During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club on school property?
14. During the past 12 months, on how many days did you carry a gun? (Do not count the days when you carried a gun only for hunting or for a sport, such as target shooting.)
15. During the past 30 days, on how many days did you not go to school because you felt you would be unsafe at school or on your way to or from school?
16. During the past 12 months, how many times has someone threatened or injured you with a weapon such as a gun, knife, or club on school property?

RATIONALE:

These questions measure violence-related behaviors and school-related violent behaviors. Violence is a significant public health issue among youth, with homicide being the third leading cause of death among youth ages 13–19 years (5.1 per 100,000).⁽¹⁾ Homicide is the leading cause of death among non-Hispanic black youth ages 13–19 years (26.3 per 100,000) and the second leading cause of death for Hispanic youth ages 13–19 years (5.7 per 100,000).⁽¹⁾ Approximately 10% of homicide victims in the United States in 2016 were aged 13–19 years; of these victims, 88% were killed with a firearm.⁽¹⁾ Of all violent deaths that occurred on school property between July 1994 and June 2016, 73% involved firearms.⁽²⁾ Nearly 100% of school districts have a policy prohibiting weapon possession or use by high school students on school property.⁽³⁾ Also, in 2016, 204,020 (695.5 per 100,000) nonfatal, physical assault injuries among youth aged 13–19 years were treated in U.S. emergency departments.⁽¹⁾

Among high school students nationwide in 2017, 16% had carried a weapon and 4% had carried a weapon on school property on at least 1 day during the 30 days before the survey.⁽⁴⁾ The prevalence of having carried a weapon decreased during 1991–1997 (26%–18%) and then did not change significantly during 1997–2017 (18%–16%).⁽⁴⁾ The prevalence of having carried a weapon on school property decreased during 1993–1997 (12%–9%) and then decreased more slowly during 1997–2017 (9%–4%).⁽⁴⁾ For the first time in 2017, the question assessing prevalence of having carried a gun during the 12 months before the survey instructed respondents not to count the days when they carried a gun only for hunting or for a sport, such as target shooting. As a result, long-term temporal trends and 2-year temporal changes are not available for this variable. In 2017, 5% of high school students carried a gun (not counting the days when they carried a gun only for hunting or for a sport, such as target shooting) during the 12 months before the survey.⁽⁴⁾

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Among high school students nationwide in 2017, 7% had not gone to school on at least 1 day during the 30 days before the survey because they felt they would be unsafe at school or on their way to or from school and 6% had been threatened or injured with a weapon on school property one or more times during the 12 months before the survey.⁽⁴⁾ Among students nationwide, the prevalence of having not gone to school because of safety concerns increased significantly during 1993–2017 (4%–7%).⁽⁴⁾ Among students nationwide, the prevalence of having been threatened or injured with a weapon on school property did not change significantly during 1993–2003 (7%–9%) and then decreased during 2003–2017 (9%–6%).⁽⁴⁾

REFERENCES:

1. Web-based Injury Statistics Query and Reporting System (WISQARS) [database online]. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2018. Accessed June 15, 2018.
 2. School-Associated Violent Death Surveillance System (SAVD-SS). Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2018. Accessed June 15, 2018.
 3. Jones SE, Fisher CJ, Greene BZ, Hertz MF, Pritzl J. Healthy and safe school environment, part I: Results from the School Health Policies and Programs Study 2006. *Journal of School Health* 2007;77(8):522–543.
 4. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
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QUESTION(S):

17. During the past 12 months, how many times were you in a physical fight?
18. During the past 12 months, how many times were you in a physical fight on school property?

RATIONALE:

These questions measure the frequency of physical fights in general and on school property during the 12 months before the survey. Physical fighting is a marker for other problem behaviors⁽¹⁾ and is associated with serious injury-related health outcomes.^(2,3) Among high school students nationwide in 2017, 24% had been in a physical fight and 9% had been in a physical fight on school property one or more times during the 12 months before the survey.⁽⁴⁾ The percentage of high school students who were in a physical fight decreased during 1991–2011 (43%–33%) and then decreased further during 2011–2017 (33%–24%).⁽⁴⁾ The percentage of

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high school students who were in a physical fight on school property also decreased significantly during 1993–2017 (16%–9%).⁽⁴⁾

REFERENCES:

1. Sosin DM, Koepsell TD, Rivara FP, Mercy JA. Fighting as a marker for multiple problem behaviors in adolescents. *Journal of Adolescent Health* 1995;16:209–215.
 2. Borowsky IW, Ireland M. Predictors of future fight-related injury among adolescents. *Pediatrics* 2004;113:530–536.
 3. Pickett W, Craig W, Harel Y, et al. Cross-national study of fighting and weapon carrying as determinants of adolescent injury. *Pediatrics* 2005;116:855–863.
 4. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
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QUESTION(S):

19. Have you ever been physically forced to have sexual intercourse when you did not want to?
20. During the past 12 months, how many times did anyone force you to do sexual things that you did not want to do? (Count such things as kissing, touching, or being physically forced to have sexual intercourse.)
21. During the past 12 months, how many times did someone you were dating or going out with force you to do sexual things that you did not want to do? (Count such things as kissing, touching, or being physically forced to have sexual intercourse.)
22. During the past 12 months, how many times did someone you were dating or going out with physically hurt you on purpose? (Count such things as being hit, slammed into something, or injured with an object or weapon.)

RATIONALE:

These questions measure the frequency of sexual violence and dating violence experienced by students. Sexual and dating violence victimization are associated with a range of negative consequences⁽¹⁻⁴⁾ including suicide ideation and attempts, major depressive episodes,⁽⁵⁻⁶⁾ increased alcohol and tobacco use, eating disorders, and risky sexual behavior.^(1,7-8) According to the Centers for Disease Control and Prevention’s National Intimate Partner and Sexual Violence Survey, 1 in 5 U.S. women have experienced (completed or attempted) rape and 1 in 14 U.S. men have been made to sexually penetrate someone else (completed or attempted) in their

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lifetime; among female victims of rape, 43.2% were under 18 years old at the time of their first victimization, and among male victims of being made to penetrate, 25.9% were under 18 at the time of the first victimization.⁽⁹⁾ About 1 in 4 women (23.2%) and 1 in 7 men (13.9%) have experienced severe physical violence by an intimate partner (e.g., hit with a fist or something hard, beaten, slammed against something) at some point in their lifetime.⁽¹⁰⁾ Among adults who ever experienced contact sexual violence, physical violence, and/or stalking by an intimate partner, 25.6% of women and 14.4% of men first experienced some form of violence by that partner between 11 and 17 years of age.⁽¹⁰⁾

All three sexual violence questions are important for understanding the public health burden of sexual violence against young people, guiding prevention strategies, and monitoring changes over time. These data are particularly useful for monitoring changes in trends and the effects of prevention efforts such as CDC's Rape Prevention Education Program.⁽¹¹⁾ Data on forced sexual activity by any perpetrator — not just a dating partner — provides a better understanding of the burden of sexual violence among high school students because studies have shown that perpetrators can include current or former friends, acquaintances, family members, and other adults.^(9,12) Preventing sexual violence by any perpetrator and dating violence are focus areas for CDC as they are part of adverse childhood experiences. Knowing the proportion of high school students who are sexually and physically victimized by a dating partner is also crucial because it provides a more complete measure of teen dating violence and prevention strategies often focus specifically on violence in dating relationships. These estimates are critically important for monitoring progress in this area.

In 2017, 7% of high school students nationwide had ever been physically forced to have sexual intercourse when they did not want to.⁽¹³⁾ The percentage of high school students who had ever been physically forced to have sexual intercourse when they did not want to decreased significantly during 2001–2017 (8%–7%).⁽¹³⁾ Among the students who dated or went out with someone during the 12 months before the survey, 8% experienced physical dating violence by a dating partner, and 7% experienced sexual dating violence by a dating partner.⁽¹³⁾ The percentage of high school students who experienced physical dating violence and sexual dating violence both decreased significantly during 2013–2017 (10%–8% and 10%–7%, respectively).⁽¹³⁾ The prevalence of high school students being forced to do sexual things they did not want to do by anyone (i.e., sexual violence) was assessed for the first time in 2017. Nationwide, 10% of students experienced sexual violence one or more times during the 12 months before the survey.⁽¹³⁾

REFERENCES:

1. Basile KC, Black MC, Simon TR, Arias I, Brener ND, Saltzman LE. The association between self-reported lifetime history of forced sexual intercourse and recent health-risk behaviors: Findings from the 2003 National Youth Risk Behavior Survey. *Journal of Adolescent Health* 2006;39(5):752-e1.
2. Ackard DM, Eisenberg ME, Neumark-Sztainer D. Long-term impact of adolescent dating violence on the behavioral and psychological health of male and female youth. *Journal of Pediatrics* 2007;151(5):476–481.

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3. Centers for Disease Control and Prevention. Physical dating violence among high school students —United States, 2003. *Morbidity and Mortality Weekly Report* 2006;55(19):532–535.
 4. Roberts TA, Klein J, Fisher S. Longitudinal effect of intimate partner abuse and high-risk behavior among adolescents. *Archives of Pediatrics & Adolescent Medicine* 2003;157:875–881.
 5. Wolitzky-Taylor KB, Ruggiero JK, Danielson CK, et al. Prevalence and correlates of dating violence in a national sample of adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry* 2008;47(7):755–762.
 6. Coker AL, McKeown RE, Sanderson M, Davis KE, Valois RF, Huebner S. Severe dating violence and quality of life among South Carolina high school students. *American Journal of Preventive Medicine* 2000;19(4):220–227.
 7. Silverman JG, Raj A, Mucci LA, Hathaway JE. Dating violence against adolescent girls and associated substance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality. *Journal of the American Medical Association* 2001;286(5):572–579.
 8. Lormand DK, Markham CM, Peskin MF, et al. Dating violence among urban, minority, middle school youth and associated sexual risk behaviors and substance use. *Journal of School Health* 2013;83(6):415–421.
 9. Smith SG, Zhang, X., Basile, K.C., et al. *National Intimate Partner and Sexual Violence Survey: 2015 Data Brief*. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; 2018.
 10. Smith SG, Chen J, Basile KC, et al. *The National Intimate Partner and Sexual Violence Survey (NISVS): 2010-2012 State Report*. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; 2017.
 11. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Division of Violence Prevention. Rape prevention and education: Transforming communities to prevent sexual violence. Available at: <http://www.cdc.gov/ViolencePrevention/RPE/index.html>. Accessed June 13, 2018.
 12. Kilpatrick DG, Resnick HS, Ruggiero KJ, Conoscenti LM, McCauley J. Drug-facilitated, incapacitated, and forcible rape: A national study. Charleston, SC: Medical University of South Carolina, National Crime Victims Research & Treatment Center; 2007. Available at: <https://www.ncjrs.gov/pdffiles1/nij/grants/219181.pdf>. Accessed June 13, 2018.
 13. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
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QUESTION(S):

23. During the past 12 months, have you ever been bullied on school property?
24. During the past 12 months, have you ever been electronically bullied? (Count being bullied through texting, Instagram, Facebook, or other social media.)

RATIONALE:

These questions measure the frequency of bullying victimization. Bullying victimization is associated with depression,⁽¹⁻²⁾ suicidal ideation,^(1,3-4) self-injury,⁽¹⁾ suicide attempts,^(1,3-4) increased odds of repeated common health problems,⁽⁵⁾ school absenteeism,⁽⁶⁾ psychological distress,⁽⁵⁾ externalizing problems,⁽⁷⁾ sleep disturbances,⁽³⁾ and feeling unsafe at school.⁽⁶⁾ Electronic bullying victimization has been associated with discipline problems in school, skipping school, weapon carrying,⁽⁸⁾ psychological distress,⁽⁹⁾ lower self-esteem,⁽¹⁰⁾ depression,⁽¹⁾ suicidal ideation,⁽⁴⁾ self-injury,⁽¹⁾ and suicide attempts.^(1,4) Among high school students nationwide in 2017, 19% reported that they had been bullied on school property during the 12 months before the survey and 15% had been electronically bullied through texting, Instagram, Facebook, or other social media during the 12 months before the survey.⁽¹¹⁾ No significant trends over time were observed for either bullying on school property or electronic bullying.

REFERENCES:

1. Kessel Schneider S, O'Donnell L, Stueve A, Coulter RWS. Cyberbullying, school bullying, and psychological distress: A regional census of high school students. *American Journal of Public Health* 2012;102:171–177.
2. Hawker DS, Boulton MJ. Twenty years' research on peer victimization and psychosocial maladjustment: A meta-analytic review of cross-sectional studies. *Journal of Child Psychology and Psychiatry* 2000;41(4):441-455.
3. van Geel M, Vedder P, Tanilon J. Relationship between peer victimization, cyberbullying, and suicide in children and adolescents. *Journal of American Medical Association Pediatrics* 2014;168(5):435-442.
4. Klomek AB, Sourander A, Gould M. The association of suicide and bullying in childhood to young adulthood: A review of cross-sectional and longitudinal research findings. *The Canadian Journal of Psychiatry* 2010;55(5):282-288.
5. Rigby K. Consequences of bullying in school. *The Canadian Journal of Psychiatry* 2003;48(9):583–590.
6. Glew GM, Fan MY, Katon W, Rivara FR, Kernic MA. Bullying, psychosocial adjustment, and academic performance in elementary school. *Archives of Pediatrics & Adolescent Medicine* 2005;159:1026–1031.

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7. McDougall P, Vaillancourt T. Long-term adult outcomes of peer victimization in childhood and adolescence: Pathways to adjustment and maladjustment. *American Psychologist* 2015;70(4):300-310.
 8. Ybarra ML, Diener-West M, Leaf PJ. Examining the overlap in internet harassment and school bullying: Implications for school intervention. *Journal of Adolescent Health*. 2007;41:42–50.
 9. Kiriakidis SP, Kavoura A. Cyberbullying. A review of the literature on harassment through the internet and other electronic means. *Family & Community Health* 2010;33(2):82–93.
 10. Patchin JW, Hinduja S. Cyberbullying and self-esteem. *Journal of School Health* 2010;80:614–621.
 11. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
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QUESTION(S):

25. During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?
26. During the past 12 months, did you ever seriously consider attempting suicide?
27. During the past 12 months, did you make a plan about how you would attempt suicide?
28. During the past 12 months, how many times did you actually attempt suicide?
29. If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse?

RATIONALE:

These questions measure sadness, suicidal ideation and planning, attempted suicide, and the severity of suicide attempts. Suicide is the second leading cause of death among youth aged 13–19 years.⁽¹⁾ The suicide rate for persons aged 13–19 years was 8.31 per 100,000 in 2016.⁽¹⁾ A prior suicide attempt is one of the most significant risk factors for a suicide fatality.^(2,3) Among high school students nationwide in 2017, 32% felt so sad or hopeless almost every day for 2 or more weeks in a row that they stopped doing some usual activities.⁽⁴⁾ Among high school students nationwide in 2017, 17% had seriously considered attempting suicide, 14% had made a plan about how they would attempt suicide, 7% had attempted suicide one or more times, and 2% had a suicide attempt that resulted in an injury, poisoning, or overdose that had to be treated

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by a doctor or nurse (injured in a suicide attempt) during the 12 months before the survey.⁽⁴⁾ The percentage of students who seriously considered attempting suicide decreased during 1991–2007 (29%–15%) and then increased during 2007–2017 (15%–17%).⁽⁴⁾ The percentage of students who made a suicide plan decreased during 1991–2009 (19%–11%) and then increased during 2009–2017 (11%–14%).⁽⁴⁾ The percentage of students who attempted suicide significantly decreased during 1991–2017 (7%–7%).⁽⁴⁾ No significant trends over time were observed for being injured in a suicide attempt.

REFERENCES:

1. Web-based Injury Statistics Query and Reporting System (WISQARS) [database online]. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2018. Accessed June 15, 2018.
2. Borowsky IW, Ireland M, Resnick MD. Adolescent suicide attempts: Risks and protectors. *Pediatrics* 2001; 107:485–493.
3. Bridge JA, Goldstein TR, Brent DA. Adolescent suicide and suicidal behavior. *Journal of Child Psychology and Psychiatry* 2006;47(3/4):372–394.
4. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).

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Tobacco Use

QUESTION(S):

30. Have you ever tried cigarette smoking, even one or two puffs?
31. How old were you when you first tried cigarette smoking, even one or two puffs?
32. During the past 30 days, on how many days did you smoke cigarettes?
33. During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?

RATIONALE:

These questions measure lifetime and current smoking patterns, and age of initiation. Cigarette smoking is the leading cause of preventable death in the United States⁽¹⁾ and accounts for approximately 440,000 deaths each year.^(1,2) Each day across the United States more than 3,800 youth under 18 years of age start smoking and more than 80% of adult smokers begin before the age of 18.⁽³⁾ Cigarette smoking increases risk of heart disease; chronic obstructive pulmonary disease; acute respiratory illness; stroke; and cancers of the lung, larynx, oral cavity, pharynx, pancreas, and cervix.^(1,3) In addition, as compared to nonsmokers, cigarette smokers are more likely to drink alcohol, use marijuana and cocaine, engage in risky sexual behaviors, engage in physical fighting, carry a weapon, and attempt suicide.⁽³⁻⁴⁾ Among high school students nationwide in 2017, 29% had ever tried cigarette smoking and 9% had smoked cigarettes on at least 1 day during the 30 days before the survey.⁽⁵⁾ The percentage of high school students who had ever tried cigarette smoking did not change significantly during 1991–1999 (70%–70%) and then decreased during 1999–2017 (70%–29%).⁽⁵⁾ The percentage of high school students who had smoked cigarettes on at least 1 day during the 30 days before the survey increased significantly during 1991–1997 (28%–36%) and then decreased during 1997–2017 (36%–9%).⁽⁵⁾

REFERENCES:

1. U.S. Department of Health and Human Services. *The Health Consequences of Smoking – 50 Years of Progress: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services; Centers for Disease Control and Prevention; National Center for Chronic Disease Prevention and Health Promotion; Office on Smoking and Health; 2014. Available at: https://www.cdc.gov/tobacco/data_statistics/sgr/50th-anniversary/index.htm. Accessed June 4, 2018.
2. Centers for Disease Control and Prevention. Annual smoking-attributable mortality, years of potential life lost, and productivity losses—United States, 2000–2004. *Morbidity and Mortality Weekly Report* 2008;57(45):1226–1228.
3. U.S. Department of Health and Human Services. *Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of

Item Rationale for the 2019 Standard High School YRBS

Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2012. Available at: <http://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/full-report.pdf>. Accessed June 4, 2018.

4. Substance Abuse and Mental Health Services Administration. *Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings*. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2011. NSDUH Series H-41, HHS Publication No. (SMA) 11-4658. Available at: <http://www.samhsa.gov/data/NSDUH/2k10NSDUH/2k10Results.htm#4.9>. Accessed June 4, 2018.
 5. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
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QUESTION(S):

34. Have you ever used an electronic vapor product?
35. During the past 30 days, on how many days did you use an electronic vapor product?
36. During the past 30 days, how did you usually get your own electronic vapor products?

RATIONALE:

These questions measure the prevalence of use of electronic vapor products and access to these products. Electronic vapor products are battery-powered electronic devices that usually contain a nicotine-based liquid that is vaporized and inhaled by the user.⁽¹⁾ Electronic vapor products come in many shapes and sizes, and may be shaped like cigarettes or other tobacco products, USB devices, pen-shaped devices, or tank-style devices. Electronic vapor products include electronic cigarettes (e-cigarettes), vapes, vape pens, electronic cigars (e-cigars), electronic hookahs (e-hookahs), hookah pens, and mods. Depending on the brand, e-cigarette cartridges or refillable e-liquids typically contain nicotine, a component to produce the aerosol (e.g., propylene glycol or glycerol), and flavorings (e.g., fruit, mint, or chocolate).⁽²⁾ In 2016, the U.S. Food and Drug Administration finalized a rule to regulate e-cigarettes and other electronic vapor products as tobacco products.⁽³⁾ This rule prevents sales to minors, prohibits samples, prohibits vending machine sales (unless in a facility that never admits minors), and mandates warning labels on packaging.⁽³⁾ Among high school students nationwide in 2017, 42% had ever tried electronic vapor products and 13% of high school students had used electronic vapor products on at least 1 day during the 30 days before the survey.⁽⁴⁾ According to the National Youth Tobacco Survey, e-cigarettes have remained the most commonly used tobacco product among high school students since 2014.⁽⁵⁾

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REFERENCES:

1. U.S. Department of Health and Human Services. *E-Cigarette Use Among Youth and Young Adults. A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2016. Available at: https://www.cdc.gov/tobacco/data_statistics/sgr/e-cigarettes/index.htm. Accessed June 4, 2018.
 2. Cobb NK, Byron MJ, Abrams DB, Shields PG. Novel nicotine delivery systems and public health: The rise of the "e-cigarette." *American Journal of Public Health* 2010;100:2340–2342.
 3. Food and Drug Administration. Deeming Tobacco Products To Be Subject to the Federal Food, Drug, and Cosmetic Act, as Amended by the Family Smoking Prevention and Tobacco Control Act; Regulations on the Sale and Distribution of Tobacco Products and Required Warning Statements for Tobacco Products; Final Rule. *Federal Register* 2016;81(90): 28973-29106.
 4. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
 5. Centers for Disease Control and Prevention. Tobacco product use among middle and high school students — United States, 2011–2017. *Morbidity and Mortality Weekly Report* 2018;67(22):629-633.
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QUESTION(S):

37. During the past 30 days, on how many days did you use chewing tobacco, snuff, dip, snus, or dissolvable tobacco products, such as Copenhagen, Grizzly, Skoal, or Camel Snus? (Do not count any electronic vapor products.)
38. During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars?

RATIONALE:

These questions measure smokeless tobacco use and cigar use. Smokeless tobacco products include chewing tobacco, snuff, dip, snus or dissolvable tobacco products.⁽¹⁾ The smokeless tobacco brands provided as examples reflect the most commonly used brands based on market-share data.⁽²⁾ Smokeless tobacco contains 28 known human carcinogens.⁽¹⁾ Use of smokeless tobacco products increases the risk of developing cancer of the oral cavity.⁽¹⁾ Other oral health problems strongly associated with smokeless tobacco use are leukoplakia (a lesion of the soft

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tissue that consists of a white patch or plaque that cannot be scraped off) and recession of the gums.^(1,3,4) Smokeless tobacco use also causes an increased risk of heart disease and stroke.⁽⁵⁾ In addition, adolescent smokeless tobacco users are more likely than nonusers to become adult cigarette smokers.⁽⁴⁾ Smokeless tobacco may appeal to youth because it can come in flavors such as mint, fruit, or spice.⁽⁴⁾ Among high school students nationwide in 2017, 6% had used smokeless tobacco (e.g., chewing tobacco, snuff, or dip) on at least 1 day during the 30 days before the survey.⁽⁶⁾

Cigar smoking can cause lung cancer, coronary heart disease, and chronic obstructive pulmonary disease.⁽⁷⁻⁹⁾ The overall risk of oral and pharyngeal cancer is 7–10 times higher among cigar smokers compared to those who never smoked.⁽¹⁰⁾ In 2017, 8% of high school students nationwide had smoked cigars, cigarillos, or little cigars on at least 1 day during the 30 days before the survey.⁽⁷⁾ The percentage of students who had smoked cigars, cigarillos, or little cigars on at least 1 day during the 30 days before decreased during 1997–2017 (22%–8%).⁽⁷⁾

REFERENCES:

1. World Health Organization. *Smokeless Tobacco and Some Tobacco-Specific N-Nitrosamines*. Lyon, France: World Health Organization; 2007. International Agency for Research on Cancer Monographs on the Evaluation of Carcinogenic Risks to Humans, Vol. 89. Available at: <http://monographs.iarc.fr/ENG/Monographs/vol89/mono89.pdf>. Accessed June 4, 2018.
2. Wells Fargo Securities. Equity Research/Tobacco. Nielsen: Tobacco ‘All Channel’ Data 4/21. May 2018.
3. Johnson GK, Slach NA. Impact of tobacco use on periodontal status. *Journal of Dental Education* 2001;65:313–321.
4. U.S. Department of Health and Human Services. *Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2012. Available at: <http://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/full-report.pdf>. Accessed June 4, 2018.
5. Henley SJ, Thun MJ, Connell C, Calle EE. Two large prospective studies of mortality among men who use snuff or chewing tobacco (United States). *Cancer Causes and Control* 2005;16:347–358.
6. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
7. U.S. Department of Health and Human Services. *Smoking and Tobacco Control Monograph No. 9: Cigars: Health Effects and Trends*. Bethesda, MD: U.S. Department

Item Rationale for the 2019 Standard High School YRBS

of Health and Human Services, National Cancer Institute; 1998. No. 98-4302:217. Available at: http://cancercontrol.cancer.gov/brp/tcrb/monographs/9/m9_complete.PDF. Accessed June 4, 2018.

8. Shaper AG, Wannamethee SG, Walker M. Pipe and cigar smoking and major cardiovascular events, cancer incidence and all-cause mortality in middle-age British men. *International Journal of Epidemiology* 2003;32:802–808.
 9. Rodriguez J, Jiang R, Johnson WC, MacKenzie BA, Smith LJ, Barr RG. The association of pipe and cigar use with cotinine levels, lung function, and airflow obstruction. A cross-sectional study. *Annals of Internal Medicine* 2010;152:201–10.
 10. U.S. Department of Health and Human Services. *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, National Institute for Dental and Craniofacial Research, National Institutes of Health; 2000. Available at: <https://www.nidcr.nih.gov/sites/default/files/2017-10/hck1ocv.%40www.surgeon.fullrpt.pdf>. Accessed June 4, 2018.
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QUESTION(S):

39. During the past 12 months, did you ever try to quit using all tobacco products, including cigarettes, cigars, smokeless tobacco, shisha or hookah tobacco, and electronic vapor products?

RATIONALE:

This question measures attempts to quit using all tobacco products. Nicotine exposure during adolescence, a critical period for brain development, can cause addiction, might harm brain development, and could lead to sustained tobacco product use among youths.^(1,2,3) Therefore, among youth, there is no safe exposure to nicotine, be it from combustible, non-combustible, or electronic sources. Before 2017, the YRBS assessed the prevalence of high school students who attempted to quit smoking cigarettes during the 12 months before the survey. The questionnaire item was expanded in 2017 to include all tobacco products. In 2017, among high school students nationwide who used any tobacco products during the 12 months before the survey, 41% had tried to quit using all tobacco products during those 12 months.⁽⁴⁾

REFERENCES:

1. U.S. Department of Health and Human Services. *The Health Consequences of Smoking – 50 Years of Progress: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services; Centers for Disease Control and Prevention; National Center for Chronic Disease Prevention and Health Promotion; Office on Smoking and

Item Rationale for the 2019 Standard High School YRBS

- Health; 2014. Available at: https://www.cdc.gov/tobacco/data_statistics/sgr/50th-anniversary/index.htm. Accessed June 4, 2018.
2. U.S. Department of Health and Human Services. *The Health Consequences of Smoking: Nicotine Addiction: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, Centers for Disease Control; 1988. Available at: <https://profiles.nlm.nih.gov/ps/access/NNBBZD.pdf>. Accessed June 7, 2018.
 3. England LJ, Bunnell RE, Pechacek TF, et al. Nicotine and the developing human: a neglected element in the electronic cigarette debate. *American Journal of Preventive Medicine* 2015;49(2):286–93.
 4. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).

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Alcohol and Other Drug Use

QUESTION(S):

40. How old were you when you had your first drink of alcohol other than a few sips?
41. During the past 30 days, on how many days did you have at least one drink of alcohol?
43. During the past 30 days, on how many days did you have 4 or more drinks of alcohol in a row, that is, within a couple of hours (if you are female) or 5 or more drinks of alcohol in a row, that is, within a couple of hours (if you are male)?
44. During the past 30 days, what is the largest number of alcoholic drinks you had in a row, that is, within a couple of hours?
42. During the past 30 days, how did you usually get the alcohol you drank?

RATIONALE:

These questions measure current use of alcohol, age of initiation, binge drinking, the largest number of alcoholic drinks consumed during a drinking occasion, and access to alcohol. Excessive drinking is responsible for more than 4,300 deaths among underage youth each year, and cost the U.S. \$24 billion in 2010.^(1,2) Underage drinking contributes to a wide range of health and social problems, including motor vehicle crashes, suicide, interpersonal violence (e.g., homicides, assaults, rapes), unintentional injuries (e.g., burns, falls, drowning), risky sexual activity, academic problems, and alcohol and drug poisoning.^(3,4) Early initiation of drinking is also associated with increased risks of developing an alcohol use disorder later in life and suicide.^(3, 5-7) Binge drinking is the most common pattern of excessive alcohol use in the United States, and about 90% of the alcohol consumed by youth is in the form of binge drinks.^(7,8) The National Institute on Alcohol Abuse and Alcoholism defines binge drinking as a pattern of drinking that brings a person's blood alcohol concentration to 0.08% or above. This typically happens when males consume 5 or more drinks and when females consume 4 or more drinks in about 2 hours.⁽⁹⁾ Limiting youth access to alcohol has reduced underage alcohol use and alcohol-related problems.⁽¹⁰⁻¹²⁾ However, youth continue to obtain alcohol from a variety of sources, particularly from adults of legal drinking age.⁽¹³⁾

Among high school students nationwide in 2017, 60% drank at least one drink of alcohol on at least 1 day during their life and 30% had had at least one drink of alcohol on at least 1 day during the 30 days before the survey.⁽¹³⁾ In addition, 18% of high school students reported binge drinking (defined as 4 or more drinks of alcohol in a row for females and 5 or more drinks of alcohol in a row for males within a couple of hours) on at least 1 day during the 30 days before the survey.⁽¹³⁾ The percentage of high school students who had at least one drink of alcohol on at least 1 day during their life decreased significantly during 1991–2017 (82%–60%).⁽¹³⁾ Likewise, the percentage of students who had at least one drink of alcohol on at least 1 day during the 30 days before the survey decreased significantly during 1991–2017 (51%–30%).⁽¹³⁾

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REFERENCES:

1. Stahre M, Roeber J, Kanny D, Brewer RD, Zhang X. Contribution of excessive alcohol consumption to deaths and years of potential life lost in the United States. *Preventing Chronic Disease* 2014;11:130293.
2. Sacks JJ, Gonzales KR, Bouchery EE, Tomedi LE, Brewer RD. 2010 national and state costs of excessive alcohol consumption. *American Journal of Preventive Medicine* 2015; 49(5):e73–e79.
3. U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. 2017. Report to Congress on the Prevention and Reduction of Underage Drinking. Available at: https://alcoholpolicy.niaaa.nih.gov/sites/default/files/imce/users/u1743/stop_act_rtc_2017.pdf. Accessed May 30, 2018.
4. Miller JW, Naimi TS, Brewer RD, Jones SE. Binge drinking and associated health risk behaviors among high school students. *Pediatrics* 2007;119:76–85.
5. Swahn MH, Bossarte RM, Sullivent EE. Age of alcohol use initiation, suicidal behavior, and peer and dating violence victimization and perpetration among high-risk, seventh-grade adolescents. *Pediatrics* 2008;121:297–305.
6. Bossarte RM, Swahn MH. The associations between early alcohol use and suicide attempts among adolescents with a history of major depression. *Addictive Behaviors* 2011;36:532–535.
7. Centers for Disease Control and Prevention. Binge Drinking Fact Sheet. Available at: <http://www.cdc.gov/alcohol/fact-sheets/binge-drinking.htm>. Accessed May 30, 2018.
8. Office of Juvenile Justice and Delinquency Prevention. Drinking in America: Myths, Realities, and Prevention Policy. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention, 2005. Available at: http://web.archive.org/web/20150910124238/http://www.udetc.org/documents/Drinking_in_America.pdf. Accessed May 30, 2018.
9. National Institute of Alcohol Abuse and Alcoholism. NIAAA council approves definition of binge drinking. NIAAA Newsletter 2004; No. 3, p. 3. Available at: http://pubs.niaaa.nih.gov/publications/Newsletter/winter2004/Newsletter_Number3.pdf. Accessed May 30, 2018.
10. DeJong W, Blanchette J. Case closed: research evidence on the positive public health impact of the age 21 minimum legal drinking age in the United States. *Journal of Studies on Alcohol and Drugs* 2014;75(Suppl 17):108–115.

Item Rationale for the 2019 Standard High School YRBS

11. Klepp KI, Schmid LA, Murray DM. Effects of the increased minimum drinking age law on drinking and driving behavior among adolescents. *Addiction Research* 1996;4:237–244.
 12. Centers for Disease Control and Prevention. Age 21 Minimum Legal Drinking Age Fact Sheet. Available at: <http://www.cdc.gov/alcohol/fact-sheets/minimum-legal-drinking-age.htm>. Accessed May 30, 2018.
 13. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
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QUESTION(S):

45. During your life, how many times have you used marijuana?
46. How old were you when you tried marijuana for the first time?
47. During the past 30 days, how many times did you use marijuana?
48. During your life, how many times have you used synthetic marijuana?
49. During your life, how many times have you taken prescription pain medicine without a doctor's prescription or differently than how a doctor told you to use it?
50. During your life, how many times have you used any form of cocaine, including powder, crack, or freebase?
51. During your life, how many times have you sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high?
52. During your life, how many times have you used heroin (also called smack, junk, or China White)?
53. During your life, how many times have you used methamphetamines (also called speed, crystal meth, crank, ice, or meth)?
54. During your life, how many times have you used ecstasy (also called MDMA)?
55. During your life, how many times have you taken steroid pills or shots without a doctor's prescription?
56. During your life, how many times have you used a needle to inject any illegal drug into

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your body?

57. During the past 12 months, has anyone offered, sold, or given you an illegal drug on school property?

RATIONALE:

These questions measure lifetime and current use of marijuana (including lifetime use of synthetic marijuana) and ever use of cocaine, inhalants, heroin, methamphetamines, ecstasy, steroids, and injected drugs; use of prescription pain medicine without a doctor's prescription, or used in a manner differently than instructed by the doctor; and illegal drug activity on school property. Among youth, illicit drug use is associated with heavy alcohol and tobacco use,⁽¹⁾ violence and delinquency,⁽²⁻⁴⁾ and suicide.⁽⁵⁾ Synthetic marijuana use has been linked with adverse effects such as increased heart rate and blood pressure, drowsiness, nausea, vomiting, chest pain, hallucinations, agitation, and acute kidney injury.⁽⁶⁻⁸⁾ Data also show that high school students who use synthetic marijuana tend to engage in more risky behaviors related to sex, substance use, and injury/violence than students who use marijuana only.⁽⁹⁾ All school districts prohibit illegal drug possession or use by students on school property.⁽¹⁰⁾

Among high school students nationwide in 2017, 36% had used marijuana, 7% had used synthetic marijuana, 5% had used any form of cocaine, 2% had used heroin, 3% had used methamphetamines, 4% had used ecstasy, 3% had taken steroid pills or shots without a doctor's prescription one or more times during their life, and 14% had taken prescription pain medicine without a doctor's prescription or differently than how a doctor told them to use it one or more times during their life.⁽¹¹⁾ In 2017, 6% of high school students nationwide had sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high and 2% had used a needle to inject any illegal drug into their body one or more times during their life.⁽¹⁰⁾ Also, 20% of students had been offered, sold, or given an illegal drug on school property during the 12 months before the survey.⁽¹¹⁾ The percentage of high school students who had used marijuana one or more times during their life increased during 1991–1997 (31%–47%) and then decreased during 1997–2017 (47%–36%).⁽¹¹⁾ The percentage of high school students who had used cocaine one or more times during their life increased during 1991–2001 (6%–9%) and then decreased during 2001–2017 (9%–5%).⁽¹¹⁾ The percentage of high school students who had used heroin one or more times during their life did not change significantly during 1999–2011 (2%–3%) then decreased significantly during 2011–2017 (3%–2%).⁽¹¹⁾ The percentage of high school students who had used methamphetamines one or more times during their life decreased significantly during 1999–2017 (9%–3%).⁽¹⁰⁾ The percentage of high school students who had used ecstasy one or more times during their life decreased significantly from 2001–2017 (11%–4%).⁽¹¹⁾

REFERENCES:

1. Substance Abuse and Mental Health Services Administration. *Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings*. NSDUH Series H-41, HHS Publication No. (SMA) 11-4658. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2011. Available at:

Item Rationale for the 2019 Standard High School YRBS

- <https://www.samhsa.gov/data/sites/default/files/NSDUHNationalFindingsResults2010-web/2k10ResultsRev/NSDUHresultsRev2010.pdf>. Accessed June 18, 2018.
2. Substance Abuse and Mental Health Services Administration. Youth violence and illicit drug use. *The NSDUH Report* 2006;5:1–3. Available at: <http://files.eric.ed.gov/fulltext/ED495798.pdf>. Accessed June 18, 2018.
 3. Substance Abuse and Mental Health Services Administration. Marijuana use and delinquent behaviors among youths. *The NSDUH Report* January 9, 2004. Available at: <http://www.samhsa.gov/data/2k4/MJdelinquency/MJdelinquency.pdf>. Accessed June 18, 2018.
 4. Young AM, Glover N, Havens JR. Nonmedical use of prescription medications among adolescents in the United States: A systematic review. *Journal of Adolescent Health* 2012;51(1):6–17.
 5. Substance Abuse and Mental Health Services Administration. Substance use and the risk of suicide among youths. *The NHSDA Report* July 12, 2002. Available at: <http://www.samhsa.gov/data/2k2/suicide/suicide.htm>. Accessed June 18, 2018.
 6. Forrester MB. Adolescent synthetic cannabinoid exposures reported to Texas poison centers. *Pediatric Emergency Care* 2012;28(10):985–989.
 7. Law R, Schier J, Martin C, Chang A, Wolkin A. Notes from the field: Increase in reported adverse health effects related to synthetic cannabinoid use – United States, January–May, 2015. *Morbidity and Mortality Weekly Report* 2015;64(22):618–619.
 8. Centers for Disease Control and Prevention. Acute kidney injury associated with synthetic cannabinoid use – multiple states, 2012. *Morbidity and Mortality Weekly Report* 2013;62(6):93–98.
 9. Clayton HB, Lowry R, Ashley C, Wolkin A, Grant AM. Health risk behaviors with synthetic cannabinoids versus marijuana. *Pediatrics* 2017; 139(4):e20162675
 10. Everett Jones S, Fisher CJ, Greene BZ, Hertz MF, Pritzl J. Healthy and safe school environment, part I: Results from the School Health Policies and Programs Study 2006. *Journal of School Health* 2007;77(8):522–543.
 11. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).

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Sexual Behaviors that Contribute to Unintended Pregnancy and Sexually Transmitted Diseases, Including HIV Infection

QUESTION(S):

58. Have you ever had sexual intercourse?
59. How old were you when you had sexual intercourse for the first time?
60. During your life, with how many people have you had sexual intercourse?
61. During the past 3 months, with how many people did you have sexual intercourse?
62. Did you drink alcohol or use drugs before you had sexual intercourse the last time?
63. The last time you had sexual intercourse, did you or your partner use a condom?
64. The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy?

RATIONALE:

These questions measure the prevalence of sexual activity, number of sexual partners, age at first intercourse, alcohol and other drug use related to sexual activity, condom use, and contraceptive use. Early initiation of sexual intercourse is associated with having a greater number of lifetime sexual partners.^(1,2) In addition, adolescents who initiate sexual intercourse early are less likely to use contraception^(2,3) and are at higher risk for STDs⁽⁴⁾ and pregnancy.^(5,6) Estimates suggest that while representing 25% of the ever sexually active population, persons aged 15 to 24 years acquire more than half of all new STDs.⁽⁷⁾ Both chlamydia and gonorrhea rates are highest among young women between the ages of 20 and 24 years (3779.0 cases per 100,000 individuals and 595.5 cases per 100,000 individuals, respectively in 2016).⁽⁸⁾ In 2016, there were an estimated 2,041 persons ages 13–19 years newly diagnosed with HIV infection and 7,878 living with diagnosed HIV infection.⁽⁹⁾ In 2014, young people aged 13–24 accounted for 21% of all new HIV infections in the United States.⁽¹⁰⁾

Among high school students nationwide in 2017, 40% had ever had sexual intercourse, 10% had had sexual intercourse with four or more persons during their life, and 29% had had sexual intercourse with at least one person during the 3 months before the survey.⁽¹¹⁾ The percentage of students who ever had sexual intercourse decreased during 1991–2017 (54%–40%).⁽¹¹⁾ The percentage of students who had sexual intercourse with four or more persons during their life decreased during 1991–2017 (19%–10%).⁽¹¹⁾ During 1991–2013, there was a significant decrease in the percentage of students who had had sexual intercourse with at least one person during the 3 months before the survey (38%–34%), and the percentage further decreased during 2013–2017 (34%–29%).⁽¹¹⁾ In 2017, among the 29% of students who were currently sexually active, 54% reported that either they or their partner had used a condom during last sexual intercourse.⁽¹¹⁾ The percentage of sexually active students who used a condom during last sexual intercourse

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increased during 1991–2005 (46%–63%) and then did not change significantly during 2005–2017 (63%–54%).⁽¹¹⁾

REFERENCES:

1. Santelli JS, Brener ND, Lowry R, et al. Multiple sexual partners among U.S. adolescents and young adults. *Family Planning Perspectives* 1998;30:271–275.
 2. Martinez G, Copen CE, Abma JC. Teenagers in the United States: Sexual activity, contraceptive use, and childbearing, 2006–2010 National Survey of Family Growth. National Center for Health Statistics. *Vital and Health Statistics Series* 2011; 23(31). Available at: http://www.cdc.gov/nchs/data/series/sr_23/sr23_031.pdf. Accessed April 26, 2016.
 3. Manning WD, Longmore MA, Giordano PC. The relationship context of contraceptive use at first intercourse. *Family Planning Perspectives* 2000;32(3):104–110.
 4. Kaestle CE, Halpern CT, Miller WC, Ford CA. Young age at first sexual intercourse and sexually transmitted infections in adolescents and young adults. *American Journal of Epidemiology* 2005;161(8):774–780.
 5. Manlove J, Terry E, Gitelson L, Papillo AR, Russell S. Explaining demographic trends in teenage fertility, 1980–1995. *Family Planning Perspectives* 2000;32(4):166–175.
 6. Thornberry TP, Smith CA, Howard GJ. Risk factors for teenage fatherhood. *Journal of Marriage & Family* 1997;59:505–522.
 7. Satterwhite CL, Torrone E, Meites E, Dunne EF, Mahajan R, Ocfemia MC, Su J, Xu F, Weinstock H. Sexually transmitted infections among US women and men: Prevalence and incidence estimates, 2008. *Sexually Transmitted Diseases* 2013;40(3):187–193.
 8. Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2016*. Atlanta, GA: U.S. Department of Health and Human Services; 2017.
 9. Centers for Disease Control and Prevention. *HIV Surveillance Report, 2016*. Volume 28. Atlanta, GA: Centers for Disease Control and Prevention, Division of HIV/AIDS Prevention; 2017.
 10. Centers for Disease Control and Prevention. *Diagnoses of HIV Infection among Adolescents and Young Adults in the United States and 6 Dependent Areas 2011-2016*. HIV Surveillance Supplemental Report 2018;23(No. 3).
 11. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
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QUESTION(S):

84. Have you ever been tested for HIV, the virus that causes AIDS? (Do not count tests done if you donated blood.)
85. During the past 12 months, have you been tested for a sexually transmitted disease (STD) other than HIV, such as chlamydia or gonorrhea?

RATIONALE:

These questions measure whether high school students have ever been tested for HIV and if they have been tested for an STD during the 12 months before the survey. Because adolescents and young people contract HIV and other STDs at higher rates than adults,⁽¹⁻³⁾ national recommendations and clinical guidelines suggest HIV testing and regular STD testing for sexually active young people.⁽⁴⁻⁷⁾ HIV testing is an integral part of the National HIV/AIDS Strategy for the United States, and routine testing is one of the most important strategies recommended for reducing the spread of HIV and improving the health outcomes for those already infected.^(5,8) State and local education agencies and schools are essential partners in this effort. Educating students about HIV and other STDs might increase students' likelihood of being tested.⁽⁹⁾ Further, schools have a critical role to play in facilitating delivery of HIV and STD prevention for adolescents.^(9,10) State and local data on HIV and STD testing will help agencies examine local trends in testing behaviors, identify disparities in testing, and determine whether high risk youth are being tested.^(10,11) In 2017, 9% of high school students nationwide had ever tested for HIV.⁽¹²⁾ The percentage of high school students who have ever been tested for HIV did not change from 2005–2013 (12%–13%), but significantly decreased from 2013–2017 (13%–9%).⁽¹²⁾ STD testing is included on the standard YRBS questionnaire for the first time in 2019. However, another national study of youth found that only 6.7% of sexually active 15- to 19-year-olds had been tested for STDs within the previous year.⁽¹³⁾

REFERENCES:

1. Centers for Disease Control and Prevention. *HIV Surveillance Report, 2016*. Volume 28. Atlanta, GA: Centers for Disease Control and Prevention, Division of HIV/AIDS Prevention; 2017.
2. Satterwhite CL, Torrone E, Meites E, et al. Sexually transmitted infections among US women and men: Prevalence and incidence estimates, 2008. *Sexually Transmitted Diseases* 2013;40(3):187–193.
3. Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2016*. Atlanta, GA: U.S. Department of Health and Human Services; 2017.
4. U.S. Preventive Services Task Force. Final Recommendation Statement: Chlamydia and Gonorrhea: Screening. December 2016. Available at:

Item Rationale for the 2019 Standard High School YRBS

<https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/chlamydia-and-gonorrhea-screening>. Accessed July 16, 2018.

5. Centers for Disease Control and Prevention. Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. *Morbidity and Mortality Weekly Report* 2006;55(RR-14).
 6. Meyers D, Wolff T, Gregory K, et al. USPSTF recommendations for STI screening. *American Family Physician* 2008;77,819-824.
 7. Van Handel M, Kann L, Olsen EO, et al. HIV testing among US high school students and young adults. *Pediatrics* 2016;137:1–9.
 8. The White House Office of National AIDS Policy. National HIV/AIDS Strategy for the United States: Updated to 2020. Washington, DC: The White House Office of National AIDS Policy; 2015. Available at: <https://www.hiv.gov/sites/default/files/nhas-update.pdf>. Accessed July 9, 2018.
 9. Centers for Disease Control and Prevention. HIV testing among high school students—United States, 2007. *Morbidity and Mortality Weekly Report* 2009;58:665–668.
 10. Centers for Disease Control and Prevention. HIV testing among adolescents: What schools and education agencies can do. Atlanta, GA: Centers for Disease Control and Prevention; 2012. Available at: http://www.cdc.gov/healthyyouth/sexualbehaviors/pdf/hivtesting_adolescents.pdf. Accessed July 9, 2018.
 11. Division of Adolescent and School Health, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention. Program 1308 guidance: Supporting state and local education agencies to reduce adolescent sexual risk behaviors and adverse health outcomes associated with HIV, other STD, and teen pregnancy. 2014. Available at: http://www.cdc.gov/healthyyouth/fundedpartners/1308/pdf/program_guidance_final.pdf. Accessed July 9, 2018.
 12. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
 13. Cuffe KM, Newton-Levinson A, Gift TL, et al. Sexually transmitted infection testing among adolescents and young adults in the United States. *Journal of Adolescent Health* 2016;58:512–519.
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QUESTION(S):

65. During your life, with whom have you had sexual contact?
66. Which of the following best describes you?

RATIONALE:

These questions measure sexual identity and sex of sexual partners. Measuring these two constructs enables identification of youth who are sexual minorities. Sexual minority refers to individuals who identify as gay, lesbian, or bisexual (i.e., not heterosexual), as well as those who have sexual contact with persons of the same or both sexes. Sexual minority youth are a diverse population, representing all races, ethnicities, socioeconomic statuses, and are from all parts of the country. While many sexual minority youth cope with the transition from childhood to adulthood successfully and become healthy and productive adults, others struggle as a result of challenges such as stigma, discrimination, family disapproval, social rejection, and violence.⁽¹⁾ YRBS data supports this reality, finding that sexual minority youth, both by sexual identity and sex of sexual contacts, have higher rates of violence victimization than youth who identify as heterosexual or only report opposite sex sexual contacts.⁽²⁾ Sexual minority youth also face well-documented health disparities. For example, young gay and bisexual males have disproportionately high rates of HIV and syphilis,^(3,4) adolescent lesbian and bisexual females are more likely to have ever been pregnant,⁽⁵⁾ and sexual minority youth are at increased risk of suicidality compared to their heterosexual peers.⁽²⁾ Increasing attention has been given to the HIV prevention needs of young men who have sex with other men (YMSM), as they are more likely than males who only report sexual contact with females to engage in sexual risk-taking behaviors, such as forgoing condoms and having more than four lifetime sexual partners.⁽²⁾ Additionally, HIV infection rates among YMSM are disproportionately high.⁽⁶⁾ Data on the sexual minority status of young people are critical for continuing to demonstrate the disproportionate rates at which sexual minority students experience many health risks compared to non-sexual minority students and for developing, implementing, and evaluating policies and programs designed to mitigate these disparities. In 2017, 85% of high school students nationwide identified as heterosexual, 2% identified as gay or lesbian, 8% identified as bisexual, and 4% responded not sure about their sexual identity.⁽²⁾ Also in 2017, 45% of high school students nationwide had had sexual contact with only the opposite sex, 2% had had sexual contact with only the same sex, 5% had had sexual contact with both sexes, and 48% had had no sexual contact.⁽²⁾

REFERENCES:

1. Meyer IH, Frost DM. Minority stress and the health of sexual minorities. In: Patterson CJ, D'Augelli AR, eds. *Handbook of Psychology and Sexual Orientation*. New York, NY: Oxford University Press; 2013:252-266.
2. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).

Item Rationale for the 2019 Standard High School YRBS

3. Centers for Disease Control and Prevention. HIV surveillance — adolescents and young adults. Atlanta, GA: U.S. Department of Health and Human Services; 2010. Available at: http://www.cdc.gov/hiv/pdf/statistics_surveillance_Adolescents.pdf. Accessed July 9, 2018.
4. Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2016*. Atlanta, GA: U.S. Department of Health and Human Services; 2017.
5. Goodenow C, Szalacha LA, Robin LE, Westheimer K. Dimensions of sexual orientation and HIV-related risk among adolescent females: Evidence from a statewide survey. *American Journal of Public Health* 2008;98(6):1051–1058.
6. Centers for Disease Control and Prevention. Vital signs: HIV infection, testing, and risk behaviors among youth—United States. *Morbidity and Mortality Weekly Report* 2012;61(47):971–976.

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Dietary Behaviors

QUESTION(S):

69. During the past 7 days, how many times did you drink 100% fruit juices such as orange juice, apple juice, or grape juice? (Do not count punch, Kool-Aid, sports drinks, or other fruit-flavored drinks.)
70. During the past 7 days, how many times did you eat fruit? (Do not count fruit juice.)
71. During the past 7 days, how many times did you eat green salad?
72. During the past 7 days, how many times did you eat potatoes? (Do not count french fries, fried potatoes, or potato chips.)
73. During the past 7 days, how many times did you eat carrots?
74. During the past 7 days, how many times did you eat other vegetables? (Do not count green salad, potatoes, or carrots.)
75. During the past 7 days, how many times per day did you usually drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not count diet soda or diet pop.)
76. During the past 7 days, how many glasses of milk did you drink? (Count the milk you drank in a glass or cup, from a carton, or with cereal. Count the half pint of milk served at school as equal to one glass.)
77. During the past 7 days, on how many days did you eat breakfast?

RATIONALE:

These questions measure dietary behaviors, including consumption of fruits, vegetables, and beverages. The fruit and vegetable questions are similar to questions asked of adults on the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System 2009 survey questionnaire.⁽¹⁾ Fruits and vegetables are good sources of complex carbohydrates, vitamins, minerals, and other substances that are important for good health.⁽²⁾ There is probable evidence to suggest that dietary patterns with higher intakes of fruits and vegetables are associated with a decreased risk for some types of cancer,⁽³⁻⁵⁾ cardiovascular disease,⁽⁶⁾ and stroke.⁽⁷⁾ Although data are limited, an increased intake of fruits and vegetables appears to be associated with a decreased risk of being overweight.⁽⁸⁻¹⁰⁾ However, most youth do not meet the recommendations for fruit and vegetable consumption.⁽¹¹⁻¹³⁾ In 2017, during the 7 days before the survey, 31% of high school students nationwide had eaten fruit or drunk 100% fruit juice two or more times per day and 14% of students had eaten vegetables three or more times per day.⁽¹⁴⁾

Although total sugar-sweetened beverage consumption has significantly decreased during the last decade, mainly due to the decrease in regular soda intake, the calorie intake from sugar-

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sweetened beverages remain high.⁽¹⁵⁻¹⁹⁾ Furthermore, sugar-sweetened beverages are a primary source of added sugars in the diet of U.S. children,⁽²⁰⁾ and contribute on average 143 kcal/day (7.3% of daily energy intake).⁽¹⁸⁾ Consumption of sugar-sweetened beverages is associated with a less healthy diet⁽²¹⁾ and dental decay,⁽²²⁾ and appears to be associated with increased risk of being overweight among children⁽²³⁻²⁵⁾ and the development of metabolic syndrome and type 2 diabetes.⁽²⁶⁾ Nationwide in 2017, 19% of high school students had drunk a can, bottle, or glass of soda or pop (not counting diet soda or diet pop) one or more times per day during the 7 days before the survey.⁽¹⁴⁾ The percentage of students who drank soda or pop one or more times per day decreased significantly during 2007–2017 (34%–19%).⁽¹⁴⁾

Milk is an important source of many nutrients, including calcium.⁽²⁾ There is evidence that intake of milk and milk products is associated with bone health in children and adolescents and with a lower risk of cardiovascular disease and type 2 diabetes and with lower blood pressure in adults.⁽²⁾ Although the recommended intake of milk and milk products is 3 cups per day for adolescents, most adolescents consume far less.^(2,12) In 2017, 8% of high school students nationwide had drunk three or more glasses of milk per day.⁽¹⁴⁾ The percentage of students who drank three or more glasses of milk decreased significantly during 1999–2013 (18%–13%) and then further decreased 2013–2017 (13%–8%).⁽¹⁴⁾

Eating breakfast is associated with weight loss and weight loss maintenance,⁽²⁾ improved nutrient intake,⁽²⁾ and better cognitive function, academic performance, school attendance rates, psychosocial function, and mood.⁽²⁷⁻³⁰⁾ In 2017, 35% of high school students nationwide ate breakfast on all 7 days before the survey.⁽¹⁴⁾ No significant trend over time was observed for eating breakfast on all 7 days.

REFERENCES:

1. Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System survey questionnaire. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2009. Available at: <http://www.cdc.gov/brfss/questionnaires/pdf-ques/2009brfss.pdf>. Accessed May 18, 2016.
2. U.S. Department of Agriculture, U.S. Department of Health and Human Services. *Dietary Guidelines for Americans 2015–2020*. 8th Edition. Washington, DC: U.S. Government Printing Office, 2015. Available at: <http://health.gov/dietaryguidelines/2015/guidelines/>. Accessed June 6, 2018.
3. Key T, Schatzkin A, Willet WC, Allen NE, Spencer EA, Travis RC. Diet, nutrition, and the prevention of cancer. *Public Health Nutrition* 2004;7(1A):187–200.
4. Kushi LH, Byers T, Doyle C, et al. American Cancer Society guidelines on nutrition and physical activity for cancer prevention: Reducing the risk of cancer with healthy food choices and physical activity. *CA: A Cancer Journal for Clinicians* 2006;56:254–281.

Item Rationale for the 2019 Standard High School YRBS

5. Vainio H, Weiderpass E. Fruit and vegetables in cancer prevention. *Nutrition and Cancer* 2006;54(1):111–142.
6. Bazzano LA, He J, Ogden LG, et al. Fruit and vegetable intake and risk of cardiovascular disease in US adults: The first National Health and Nutrition Examination Survey Epidemiologic Follow-up Study. *American Journal of Clinical Nutrition* 2002;76(1):93–99.
7. He FJ, Nowson CA, MacGregor GA. Fruit and vegetable consumption and stroke: Meta-analysis of cohort studies. *Lancet* 2006;367(9507):320–326.
8. Rolls BJ, Ello-Martin JA, Tohill BC. What can intervention studies tell us about the relationship between fruit and vegetable consumption and weight management. *Nutrition Reviews* 2004;62(1):1–17.
9. He K, Hu FB, Colditz GA, Manson JE, Willett WC, Liu S. Changes in intake of fruits and vegetables in relation to risk of obesity and weight gain among middle-aged women. *International Journal of Obesity* 2004;28:1569–1574.
10. Goss J, Grubbs L. Comparative analysis of body mass index, consumption of fruits and vegetables, smoking, and physical activity among Florida residents. *Journal of Community Health Nursing* 2005;22(1):37–46.
11. Kim SA, Moore LV, Galuska D, Wright AP, Harris D, Grummer-Strawn LM, Merlo CL, Nihiser AJ, Rhodes DG. Vital signs: fruit and vegetable intake among children — United States, 2003–2010. *Morbidity and Mortality Weekly Report* 2014;63(31):671–676.
12. Krebs-Smith SM, Guenther PM, Subar AF, Kirkpatrick SI, Dodd KW. Americans do not meet dietary recommendations. *Journal of Nutrition* 2010;140:1832–1838.
13. Moore LV, Thompson FE, Demissie Z. Percentage of youth meeting federal fruit and vegetable intake recommendations, Youth Risk Behavior Surveillance System, United States and 33 States, 2013. *Journal of the Academy of Nutrition and Dietetics* 2017;117:545–553.
14. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
15. Mesriow MS, Welsh JA. Changing beverage consumption patterns have resulted in fewer liquid calories in the diets of US children: National Health and Nutrition Examination Survey 2001–2010. *Journal of the Academy of Nutrition and Dietetics* 2015;115(4):559–566.
16. Kit BK, Fakhouri THI, Park S, Nielsen SJ, Ogden CL. Trends in sugar-sweetened beverage consumption among youth and adults in the United States: 1999–2010. *American Journal of Clinical Nutrition* 2013;98:180–188.

Item Rationale for the 2019 Standard High School YRBS

17. Welsh JA, Sharma AJ, Grellinger L, Vos MB. Consumption of added sugars is decreasing in the United States. *American Journal of Clinical Nutrition* 2011;94:726–734.
18. Rosinger A, Herrick K, Gahche J, Park S. Sugar-sweetened beverage consumption among U.S. youth, 2011–2014. NCHS data brief, no 271. Hyattsville, MD: National Center for Health Statistics; 2017.
19. Bleich SN, Vercammen KA, Koma JW, Li Z. Trends in beverage consumption among children and adults, 2003–2014. *Obesity* 2018;26(2):432-441.
20. Drewnowski A, Rehm CD. Consumption of added sugars among US children and adults by food purchase location and food source. *American Journal of Clinical Nutrition* 2014;100(3):901–907.
21. Marshall T, Gilmore J, Broffitt B, et al. Diet quality in young children is influenced by beverage consumption. *Journal of the American College of Nutrition* 2005;24(1):65–75.
22. Tahmassebi JF, Duggal MS, Malik-Kotru G, Curzon ME. Soft drinks and dental health: A review of the current literature. *Journal of Dental Research* 2006;34(1):2–11.
23. Vartanian LR, Schwartz MB, Brownell KD. Effects of soft drink consumption on nutrition and health: A systematic review and meta-analysis. *American Journal of Public Health* 2007;97(4):667–675.
24. Malik VS, Pan A, Willett WC, Hu FB. Sugar-sweetened beverages and weight gain in children and adults: A systematic review and meta-analysis. *American Journal of Clinical Nutrition* 2013;98(4):1084–1102.
25. Luger M, Lafontan M, Bes-Rastrollo M, Winzer E, Yumuk V, Farpour-Lambert N. Sugar-sweetened beverages and weight gain in children and adults: A systematic review from 2013 to 2015 and a comparison with previous studies. *Obesity Facts* 2017;10(6):674-693.
26. Malik VS, Popkin BM, Bray GA, Despres JP, Willett WC, Hu FB. Sugar-sweetened beverages and risk of metabolic syndrome and type 2 diabetes: A meta-analysis. *Diabetes Care* 2010;33:2477–2483.
27. Rampersaud GC, Pereira M, Girard BL, Adams J, Metz J. Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents. *Journal of the American Dietetic Association* 2005;105:743–760.
28. Hoyland A, Dye L, Lawton CL. A systematic review of the effect of breakfast on the cognitive performance of children and adolescents. *Nutrition Research Reviews* 2009;22:220–243.

Item Rationale for the 2019 Standard High School YRBS

29. Michael SL, Merlo CL, Basch CE, Wentzel KR, Wechsler H. Critical connections: Health and academics. *Journal of School Health* 2015;85:740–758.
30. Rasberry CN, Tiu GF, Kann L, et al. Health-related behaviors and academic achievement among high school students — United States, 2015. *Morbidity and Mortality Weekly Report* 2017;66:921–927.

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Physical Activity

QUESTION(S):

78. During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.)
79. On an average school day, how many hours do you watch TV?
80. On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Count time spent playing games, watching videos, texting, or using social media on your smartphone, computer, Xbox, PlayStation, iPad, or other tablet.)
81. In an average week when you are in school, on how many days do you go to physical education (PE) classes?
82. During the past 12 months, on how many sports teams did you play? (Count any teams run by your school or community groups.)

RATIONALE:

These questions measure participation in physical activity and team sports and attendance in physical education classes. These questions also examine time spent watching television (TV) and using a computer or playing video games. Participation in regular physical activity among young people can help build and maintain healthy bones and muscles, maintain body weight and reduce body fat, reduce feelings of depression and anxiety, and promote psychological well-being.⁽¹⁾ Over time, regular physical activity decreases the risk of high blood pressure, heart disease, diabetes, obesity, some types of cancer, and premature death.⁽¹⁾ In 2008, the U.S. Department of Health and Human Services recommended that young people aged 6–17 years participate in at least 60 minutes of physical activity daily.⁽²⁾ In 2017, 26% of high school students were physically active doing any kind of physical activity that increased their heart rate and made them breathe hard some of the time for a total of at least 60 minutes per day on each of the 7 days before the survey.⁽³⁾

In 2012, the U.S. Department of Health and Human Services released a mid-course report on the *Physical Activity Guidelines for Americans*.⁽⁴⁾ This report focused on strategies to increase physical activity among youth. The report concluded that school-based settings had the strongest evidence and multi-component physical activity programs, including physical education, had the most promise for increasing physical activity. In 2013, the Institute of Medicine (IOM) released *Educating the Student Body: Taking Physical Activity and Physical Education to School*.⁽⁵⁾ This report also stressed the importance of a comprehensive, multi-component, whole school approach to physical activity in schools. CDC and many other federal and national partners are promoting Comprehensive School Physical Activity Programs (CSPAP) to create school environments that offer many opportunities for students to be physically active throughout the

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school day.⁽⁶⁾ A CSPAP includes strong coordination across five components: physical education, physical activity during school, physical activity before and after school, staff involvement, and family and community engagement. Physical education is the cornerstone of CSPAP with research showing that school physical education classes can increase adolescent participation in physical activity^(7–13) and help high school students develop the knowledge, attitudes, and skills they need to engage in lifelong physical activity.^(4,14,15) In 2017, 52% of high school students nationwide went to physical education classes on 1 or more days in an average week when they were in school.⁽³⁾

Watching TV and using a computer are considered sedentary behaviors. Among youth, time spent watching TV is associated with childhood and adult obesity, consumption of fast food, soft drinks, and high-fat snacks, and consumption of fewer fruits and vegetables.^(16–22) Youth who engage in less than 2 hours of TV viewing per day tend to be more active.⁽¹⁶⁾ Computer usage and video game playing are associated with physical inactivity among adolescents and young adults.⁽²³⁾ Among high school students nationwide in 2017, 43% of students played video or computer games or used a computer for something that was not school work for 3 or more hours per day on an average school day and 21% watched television 3 or more hours per day on an average school day.⁽³⁾ During 2003–2017, a significant linear increase occurred in the percentage of high school students who used computers 3 or more hours per day (22%–43%).⁽³⁾ The percentage of students who watched television 3 or more hours per day decreased significantly during 1991–2013 (43%–33%) and then decreased more rapidly during 2013–2017 (33%–21%).⁽³⁾

REFERENCES:

1. 2018 Physical Activity Guidelines Advisory Committee. *2018 Physical Activity Guidelines Advisory Committee Scientific Report*. Washington, DC: U.S. Department of Health and Human Services; 2018. Available at: <https://health.gov/paguidelines/second-edition/report.aspx>. Accessed June 25, 2018.
2. U.S. Department of Health and Human Services. *2008 Physical Activity Guidelines for Americans*. Washington, DC: U.S. Department of Health and Human Services; 2008. Available at: <http://www.health.gov/PAGuidelines/pdf/paguide.pdf>. Accessed June 25, 2018.
3. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).
4. U.S. Department of Health and Human Services. *Physical Activity Guidelines for Americans Midcourse Report: Strategies to Increase Physical Activity among Youth*. Washington, DC: U.S. Department of Health and Human Services; 2012. Available at: <http://www.health.gov/paguidelines/midcourse/>. Accessed June 25, 2018.
5. Institute of Medicine. *Educating the Student Body: Taking Physical Activity and Physical Education to School*. Washington, DC: The National Academies Press; 2013. Available

Item Rationale for the 2019 Standard High School YRBS

- at: http://books.nap.edu/openbook.php?record_id=18314&page=R1. Accessed June 25, 2018.
6. Centers for Disease Control and Prevention. *Comprehensive School Physical Activity Programs: A Guide for Schools*. Atlanta, GA: US Department of Health and Human Services; 2013. Available at: http://www.cdc.gov/healthyyouth/physicalactivity/pdf/13_242620-A_CSPAP_SchoolPhysActivityPrograms_Final_508_12192013.pdf. Accessed June 25, 2018.
 7. Metcalf B, Henley M, Wilkin T. Effectiveness of intervention on physical activity of children: Systematic review and meta-analysis of controlled trials with objectively measured outcomes. *British Medical Journal* 2012; e345–347.
 8. Dobbins M, Husson H, DeCorby K, LaRocca RL. School-based physical activity programs for promoting physical activity and fitness in children and adolescents aged 6 to 18 (Review). *Cochrane Database of Systematic Reviews* 2013, Issue 2. Art. No.: CD007651. DOI: 10.1002/14651858.CD007651.pub2.
 9. Lonsdale C, Rosenkranz RR, Peralta LR, Bennie A, Fahey P, Lubans DR. A systematic review and meta-analysis of interventions designed to increase moderate-to-vigorous physical activity in school physical education. *Preventive Medicine* 2013; 56(2):152–161.
 10. Bassett DR, Fitzhugh EC, Heath GW, et al. Estimated energy expenditures for school-based policies and active living. *American Journal of Preventive Medicine* 2013;44(2):108-113.
 11. McKenzie TL, Li DL, Derby CA, Webber LS, Luepker RV, Cribb P. Maintenance of effects of the CATCH physical education program: Results from the CATCH-ON Study. *Health Education & Behavior* 2003;30:447–462.
 12. McKenzie TL, Sallis JF, Prochaska JJ, Conway TL, Marshall SJ, Rosengard P. Evaluation of a two-year middle-school physical education intervention: M-SPAN. *Medicine & Science in Sports & Exercise* 2004;36:1382–1388.
 13. Pate R, Ward DS, Saunders RP, Felton G, Dishman RK, Dowda M. Promotion of physical activity among high school girls: A randomized controlled trial. *American Journal of Public Health* 2005;95:1582–1587.
 14. Dishman RK, Motl RW, Saunders R, et al. Enjoyment mediates effects of a school-based physical-activity intervention. *Medicine & Science in Sports & Exercise* 2005;37(3):478–487.
 15. SHAPE America. *The Essential Components of Physical Education*. Reston, VA: SHAPE America – Society of Health and Physical Educators; 2015. Available at: <http://www.shapeamerica.org/upload/TheEssentialComponentsOfPhysicalEducation.pdf>. Accessed June 25, 2018.

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16. Fulton JE, Wang X, Yore MM, Carlson SA, Galuska DA, Caspersen CJ. Television viewing, computer usage, and BMI among U.S. children and adolescents. *Journal of Physical Activity and Health* 2009;6(Suppl 1):S28–S35.
 17. Kaur H, Choi WS, Mayo MS, Harris KJ. Duration of television watching is associated with increased body mass index. *Journal of Pediatrics* 2003;143(4):506–511.
 18. Sisson SB, Shay CM, Broyles ST, Leyva M. Television-viewing time and dietary quality among U.S. children and adults. *American Journal of Preventive Medicine* 2012; 43(2):196–200.
 19. Pearson N, Biddle SJH. Sedentary behavior and dietary intake in children, adolescents, and adults: A systematic review. *American Journal of Preventive Medicine* 41(2);2011:178-188.
 20. Fuller-Tyszkiewicz M, Skouteris H, Hardy LL, Halse C. The associations between TV viewing, food intake, and BMI. A prospective analysis of data from the Longitudinal Study of Australian Children. *Appetite* 2012; 59(3):945–948.
 21. Salmon J, Campbell KJ, Crawford DA. Television viewing habits associated with obesity risk factors: A survey of Melbourne schoolchildren. *Medical Journal of Australia* 2006;184:64–67.
 22. Demissie Z, Lowry R, Eaton DK, Park S, Kann L. Electronic media and beverage intake among United States high school students—2010. *Journal of Nutrition Education and Behavior* 2013;45(6):756–760.
 23. Fotheringham MJ, Wonnacott RL, Owen N. Computer use and physical inactivity in young adults: Public health perils and potentials of new information technologies. *Annals of Behavioral Medicine* 2000;22:269–275.
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QUESTION(S):

83. During the past 12 months, how many times did you have a concussion from playing a sport or being physically active?

RATIONALE:

This question measures the prevalence of self-reported concussions from playing sports or being physically active. Compared with older athletes, high school athletes have shown increased susceptibility to concussions and longer recovery times,⁽¹⁾ making concussions among youths playing a sport or being physically active an area of concern. Also of concern are the short-term

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and long-term sequelae of concussions, which can include cognitive, affective, and behavioral changes.⁽¹⁾ In 2013, the Institute of Medicine (now National Academy of Sciences) produced a report entitled *Sports Related Concussions in Youth: Improving the Science, Changing the Culture* that challenged CDC to improve the surveillance of sports-related concussions among youth.⁽¹⁾ The report identified a number of gaps in current surveillance efforts. Specifically, current surveillance systems only captured concussions experienced in organized, school-based sports at the high school or college level, or only captured sports-related concussions seen in emergency departments.⁽¹⁾ As a result, there were no comprehensive national incidence estimates of sports- and recreation-related concussions experienced by youth.

States may be particularly interested in more comprehensive estimates of sports- and recreation-related concussions because legislation related to sports concussions was passed in all 50 states within the past 5–7 years. This legislation, commonly referred to as “Return to Play” laws, typically have three core components: concussion education for athletes, parents, and coaches; restrictions on returning to play on the same day of a suspected concussion; and medical clearance prior to returning to play after a concussion. Being able to monitor the incidence of sports- and recreation-related concussions at the state level could allow states to monitor the effects of this legislation as well as the impact of prevention efforts.

Among high school students nationwide in 2017, 15% of students experienced a sports- or physical activity-related concussion during the 12 months before the survey.⁽²⁾

REFERENCES:

1. Institute of Medicine and National Research Council. *Sports-related Concussions in Youth: Improving the Science, Changing the Culture*. Washington, DC: The National Academies Press; 2014. Available at: <http://www.nationalacademies.org/hmd/Reports/2013/Sports-Related-Concussions-in-Youth-Improving-the-Science-Changing-the-Culture.aspx>. Accessed June 25, 2018.
2. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).

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Oral Health

QUESTION(S):

86. When was the last time you saw a dentist for a check-up, exam, teeth cleaning, or other dental work?

RATIONALE:

This question measures the prevalence of oral health care, provides data for one of the Leading Health Indicators for Healthy People 2020 (OH-7 “Increase the proportion of children, adolescents, and adults who used the oral health care system in the past year”), and relates to OH-8 “Increase the proportion of low-income children and adolescents who received any preventive dental service during the past year.”⁽¹⁾

Despite improvements in oral health status in the United States, disparities remain in some population groups as classified by sex, income, age, and race/ethnicity.⁽²⁾ Oral diseases and conditions can occur throughout the life span.⁽²⁾ Nearly every American has had the most common oral disease, dental caries.⁽²⁾ More than 50% of adolescents aged 12–19 year experienced dental caries in permanent teeth in 2011–2012.⁽³⁾ Oral health is related to general health. The examination of oral tissues may be used to determine the presence of disease, disease progression, or exposure to risk factors, and as a diagnostic tool.⁽²⁾ The mouth can be a portal of entry for infections that can affect local tissues and may spread to other parts of the body.⁽²⁾ Oral diseases may also be associated with other diseases such as diabetes, heart disease and stroke, and adverse pregnancy outcomes.⁽²⁾ According to 2017 YRBS data, nationwide, 76% of students saw a dentist for a check-up, teeth cleaning, or other dental work during the 12 months before the survey.⁽⁴⁾

REFERENCES:

1. U.S. Department of Health and Human Services. *Healthy People 2020*. Washington, DC: U.S. Department of Health and Human Services; 2010. Available at: <http://www.healthypeople.gov/2020>. Accessed June 18, 2018.
2. U.S. Department of Health and Human Services. *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, National Institute for Dental and Craniofacial Research, National Institutes of Health; 2000. Available at: <https://www.nidcr.nih.gov/sites/default/files/2017-10/hck1ocv.%40www.surgeon.fullrpt.pdf>. Accessed June 18, 2018.
3. Dye BA, Thornton-Evans G, Xianfen L, Iafolla TJ. Dental caries and sealant prevalence in children and adolescents in the United States, 2011–2012. NCHS data brief, no 191. Hyattsville, MD: National Center for Health Statistics; 2015.
4. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).

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Asthma

QUESTION(S):

87. Has a doctor or nurse ever told you that you have asthma?

RATIONALE:

This question measures the prevalence of asthma. Approximately 9.4 million (13%) U.S. children <18 years have been diagnosed with asthma at some time in their lives.⁽¹⁾ More than 80% of children, with or without asthma, have visited a health care provider(s); however, in 2011–2012, more children with asthma (32%) had three or more visits to a provider(s) than did children without asthma (24%).⁽²⁾ Poorly controlled asthma may impair a child’s ability to attend school, affect his or her academic performance, and cause parents to miss work in order to care for an ill child.⁽³⁾ However, the percent of children aged 5–17 years with asthma who reported one or more asthma-related missed school days has decreased significantly from 2003 (61.4%) to 2013 (49.0%).⁽³⁾ In 2013, children aged 5–17 years with asthma missed 13.8 million school days. Nearly 60% had at least one asthma absence day in the past year.⁽³⁾ Among high school students nationwide in 2017, 23% had ever been told by a doctor or nurse that they had asthma.⁽⁴⁾ The percentage of high school students who ever had asthma increased significantly during 2003–2009 (19%–22%) and then did not change during 2009–2017 (22%–23%).⁽⁴⁾

REFERENCES:

1. Centers for Disease Control and Prevention. 2016 Lifetime Asthma, Current Asthma, Asthma Attacks among those with Current Asthma. Available at: <https://www.cdc.gov/asthma/nhis/2016/data.htm>. Accessed June 7, 2018.
2. Centers for Disease Control and Prevention. Number of Visits to a Health Care Provider(s) among Children. Available at: https://www.cdc.gov/asthma/asthma_stats/visitsToProvider.htm. Accessed June 7, 2018.
3. Centers for Disease Control and Prevention Asthma-related Missed School Days among Children aged 5–17 Years. Available at: https://www.cdc.gov/asthma/asthma_stats/missing_days.htm. Accessed June 7, 2018
4. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).

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Sleep

QUESTION(S):

88. On an average school night, how many hours of sleep do you get?

This question measures the amount of sleep students get on an average school night. Sleep is necessary for physical and mental health and is particularly important during adolescence, a phase of rapid biologic growth and development.⁽¹⁾ According to the 2006 Sleep in America poll, more than half of adolescents are getting insufficient sleep on school nights.⁽²⁾ Lack of adequate sleep among adolescents is associated with daytime sleepiness,^(3,4) falling asleep during class,⁽⁵⁾ general inattentiveness,⁽⁵⁾ classroom behavioral problems,⁽⁵⁾ drowsy driving,^(1,3) depressed mood,^(1,3,6) headaches,⁽⁶⁾ and poor school performance.⁽⁷⁾ Evidence tying insufficient sleep to poor health outcomes such as obesity, cardiovascular disease, and diabetes is also growing.^(8–10)

Analysis of data from the national YRBS has shown that insufficient sleep is associated with higher odds of current use of cigarettes, marijuana, and alcohol; current sexual activity; seriously considering attempting suicide; feeling sad or hopeless; physical fighting; physical inactivity; obesity; engaging in injury-related risk behaviors; and engaging in unhealthy weight-control behaviors.^(11–14)

In 2016, the American Academy of Sleep Medicine recommended that children aged 6–12 years should regularly sleep 9–12 hours per 24 hours and teens aged 13–18 years should sleep 8–10 hours per 24 hours.⁽¹⁵⁾ Healthy People 2020 contains four sleep health-related objectives, including one for adolescents. This objective is to “increase the proportion of students in grades 9 through 12 who get sufficient sleep (defined as 8 or more hours of sleep on an average school night).”⁽¹⁶⁾ Among high school students nationwide in 2017, 25% of students got 8 or more hours of sleep on an average school night.⁽¹⁷⁾ The percentage of students getting 8 or more hours of sleep did not change significantly during 2007–2013 (31%–32%) and then decreased significantly during 2013–2017 (32%–25%).⁽¹⁷⁾

REFERENCES:

1. Owens J, Adolescent Sleep Working Group, Committee on Adolescence. Insufficient sleep in adolescents and young adults: An update on causes and consequences. *Pediatrics* 2014;134(3):e921-32.
2. National Sleep Foundation. *2006 Sleep in American Poll. Summary of Findings*. Washington, DC: National Sleep Foundation; 2006. Available at: http://www.sleepfoundation.org/sites/default/files/2006_summary_of_findings.pdf. Accessed June 25, 2018.
3. Millman RP, Working Group on Sleepiness in Adolescents/Young Adults, AAP Committee on Adolescence. Excessive sleepiness in adolescents and young adults: Causes, consequences, and treatment strategies. *Pediatrics* 2005;115(6):1774–1786.

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4. Moore M, Meltzer LJ. The sleepy adolescent: Causes and consequences of sleepiness in teens. *Paediatric Respiratory Reviews* 2008;9(2):114–120; quiz 120–1.
5. Beebe DW. Cognitive, behavioral, and functional consequences of inadequate sleep in children and adolescents. *Pediatric Clinics of North America* 2011;58(3):649–665.
6. Smaldone A, Honig JC, Byrne MW. Sleepless in America: Inadequate sleep and relationships to health and well-being of our nation's children. *Pediatrics* 2007;119 (Suppl 1):S29–37.
7. Wolfson AR, Carskadon MA. Sleep schedules and daytime functioning in adolescents. *Child Development* 1998;69(4):875–887.
8. Taheri S. The link between short sleep duration and obesity: We should recommend more sleep to prevent obesity. *Archives of Disease in Childhood* 2006;91:881–884.
9. Matthews KA, Pantescio EJ. Sleep characteristics and cardiovascular risk in children and adolescents: An enumerative review. *Sleep Medicine* 2016;18:36-49.
10. Knutson KL, Ryden AM, Mander VA, Van Cauter E. Role of sleep duration and quality in the risk and severity of type 2 diabetes mellitus. *Archives of Internal Medicine* 2006;166:1768–1764.
11. McKnight-Eily LR, Eaton DK, Lowry R, Croft JB, Presley-Cantrell L, Perry GS. Relationships between hours of sleep and health-risk behaviors in US adolescent students. *Preventive Medicine* 2011;53(4–5):271–273.
12. Lowry R, Eaton DK, Foti K, McKnight-Eily L, Perry G, Galuska DA. Association of sleep duration with obesity among US high school students. *Journal of Obesity* 2012;2012:476914.
13. Wheaton AG, Olsen EO, Miller GF, Croft JB. Sleep duration and injury-related risk behaviors among high school students—United States, 2007–2013. *Morbidity and Mortality Weekly Report* 2016;65(13):337–341.
14. Wheaton AG, Perry GS, Chapman DP, Croft JB. Self-reported sleep duration and weight-control strategies among U.S. high school students. *Sleep* 2013;36(8):1139–1145.
15. Paruthi S, Brooks LJ, D’Ambrosio C, et al. Consensus statement of the American Academy of Sleep Medicine on the recommended amount of sleep for healthy children: Methodology and discussion. *Journal of Clinical Sleep Medicine* 2016;12:1549–61.
16. U.S. Department of Health and Human Services. *Healthy People 2020: Sleep health*. Available at: <http://www.healthypeople.gov/2020/topicsobjectives2020/nationaldata.aspx?topicId=38>. Accessed June 25, 2018.

Item Rationale for the 2019 Standard High School YRBS

17. Kann L, McManus T, Harris WA, et al. Youth risk behavior surveillance—United States, 2017. *MMWR Surveillance Summaries* 2018;67(No. SS-8).

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Grades

QUESTION(S):

89. During the past 12 months, how would you describe your grades in school?

RATIONALE:

This question measures academic grades in school. The academic success of America's youth is strongly linked with their health. Health-related factors such as hunger, physical and emotional abuse, and chronic illness can lead to poor school performance.⁽¹⁻⁴⁾ Health-risk behaviors such as early sexual initiation, violence, and physical inactivity are consistently linked to poor grades and test scores and lower educational attainment.⁽²⁻⁸⁾ In turn, academic success is an excellent indicator for the overall well-being of youth and a primary predictor and determinant of adult health outcomes.⁽⁹⁻¹¹⁾ Leading national education organizations recognize the close relationship between health and education, as well as the need to foster health and well-being within the educational environment for all students.⁽¹²⁻¹⁴⁾ This question provides data to monitor the important link between health-risk behaviors and academic achievement.

REFERENCES:

1. Dunkle MC, Nash MA. *Beyond the Health Room*. Washington, DC: Council of Chief State School Officers, Resource Center on Educational Equity; 1991. Available at: <http://files.eric.ed.gov/fulltext/ED340681.pdf>. Accessed June 25, 2018.
2. Michael SL, Merlo C, Basch C, Wentzel K, Wechsler H. Critical connections: Health and academics. *Journal of School Health* 2015;85(11):740–758.
3. Bradley BJ, Greene AC. Do health and education agencies in the United States share responsibility for academic achievement and health? A review of 25 years of evidence about the relationship of adolescents' academic achievement and health behaviors. *Journal of Adolescent Health* 2013;52(5):523–532.
4. Basch CE. Healthier students are better learners: a missing link in school reforms to close the achievement gap. *Journal of School Health* 2011;81(10):593–598.
5. Rasberry CN, Tiu GF, Kann L, et al. Health-related behaviors and academic achievement among high school students — United States, 2015. *Morbidity and Mortality Weekly Report* 2017;66:921–927.
6. Carlson SA, Fulton JE, Lee SM, et al. Physical education and academic achievement in elementary school: Data from the Early Childhood Longitudinal Study. *American Journal of Public Health* 2008;98(4):721–727.

Item Rationale for the 2019 Standard High School YRBS

7. Spriggs AL, Halpern CT. Timing of sexual debut and initiation of postsecondary education by early adulthood. *Perspectives on Sexual and Reproductive Health* 2008;40(3):152–161.
8. Srabstein J, Piazza T. Public health, safety and educational risks associated with bullying behaviors in American adolescents. *International Journal of Adolescent Medicine and Health* 2008;20(2):223–233.
9. Harper S, Lynch J. Trends in socioeconomic inequalities in adult health behaviors among U.S. states, 1990–2004. *Public Health Reports* 2007;122(2):177–189.
10. Vernez G, Krop RA, Rydell CP. The public benefits of education. In: *Closing the Education Gap: Benefits and Costs*. Santa Monica, CA: RAND Corporation; 1999:13–32.
11. National Center for Health Statistics. *Health, United States, 2010: With Special Feature on Death and Dying*. Hyattsville, MD: U.S. Department of Health and Human Services; 2011. Available at: [http://www.cdc.gov/nchs/data/10.pdf](http://www.cdc.gov/nchs/data/hus/10.pdf). Accessed June 25, 2018.
12. Council of Chief State School Officers. Policy statement on school health; 2004. Available at: <https://files.eric.ed.gov/fulltext/ED486226.pdf>. Accessed June 25, 2018.
13. American Association of School Administrators. AASA position statements. Position statement 3: Getting children ready for success in school, July 2006; Position statement 18: Providing a safe and nurturing environment for students, July 2007. Available at: <http://www.aasa.org/uploadedFiles/About/files/AASAPositionStatements072408.pdf>. Accessed June 25, 2018.
14. ASCD. *Making the Case for Educating the Whole Child*. Alexandria, VA: ASCD; 2011. Available at: <http://www.wholechildeducation.org/assets/content/mx-resources/WholeChild-MakingTheCase.pdf>. Accessed June 25, 2018.