



## Lifestyle and Behavior in Young Adulthood: The National Longitudinal Study of Adolescent to Adult Health

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### OVERVIEW

Young adulthood is associated with increased responsibilities, including financial independence, career development, and starting a family. Young Americans between the ages of 25-34 spend more time at work and caring for others, and have less free time than younger age groups.<sup>1</sup> With more time dedicated to these responsibilities, young adults may not have as much time to maintain a healthy lifestyle. Over time, less healthy lifestyle behaviors set health trajectories into adulthood, increasing the risks of morbidities and chronic disease in the future.

Lifestyle and health related behavioral choices are important factors for understanding health. Physical inactivity and poor diet are major risk factors for obesity and other chronic diseases such as hypertension, cardiovascular disease, diabetes, and some cancers.<sup>2-6</sup> Inadequate sleep is also related to poor health status, including obesity, hypertension, and Type 2 diabetes.<sup>2</sup>

This brief provides a snapshot of the lifestyle habits of young adults in the U.S. in 2008. Using data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), we examine the following lifestyle behaviors known to be related to health: sleep and sleep problems, physical activity, sedentary behaviors, fast food and sweet beverage intake, and smoking habits.

We address the following questions:

- How do young adults' lifestyle behaviors compare to guidelines and recommendations for sleep, diet, physical activity and smoking?
- How do young adults' lifestyle behaviors compare to reported national averages?
- How do patterns in these characteristics change by gender, age, race/ethnicity and obesity status?

### DATA AND MEASURES

We utilized data from Waves I and IV of Add Health [see **"About Add Health" box, page 8**]. Our sample includes 14,800 respondents aged 24-34 in 2008 who completed in-home interviews at Waves I and Wave IV and could be assigned a grand sample weight.<sup>7</sup> The data are weighted to adjust for the Add Health sample design, which intentionally oversampled some population subgroups.

Data on respondents' race/ethnicity are derived from Add Health Wave I questionnaire responses. Respondents were asked to indicate whether they were of Hispanic origin and then to self-select up to five different races: white, black or African American, American Indian or Native American, Asian or Pacific Islander, and other. By coupling the responses to the Hispanic origin and race questions, we construct a "single race" variable with mutually exclusive categories. More details on the creation of this variable are available on the Add Health website.<sup>8</sup>

Data on the remaining demographic variables (age, gender) and the sleep, physical activity and inactivity, diet, smoking, and obesity variables are drawn from Wave IV questionnaire responses. Three age group categories were created to examine potential differences by age: 24-27, 28-29, 30-34.

Number of sleep hours was determined by subtracting self-reported wake and bed times as captured in hours and minutes. A binary sleep problems variable was constructed using responses to the questions, “How often did you have trouble falling asleep?”, “How often did you have trouble staying asleep through the night?”, and “Based on what you have noticed or what others have told you, are there times when you snore or you stop breathing during your sleep?” Those who indicated having any of three sleep problems once a week were coded ‘1’ on sleep problems and those who indicated having none of these sleep problems were coded ‘0’.

A binary physical activity variable was constructed using respondents’ report of frequency of physical activities of varying levels of intensity in the past seven days. Those who indicated answering yes to any of the moderate to vigorous activity in the last seven days questions were coded as ‘1’ on physical activity and those who indicate no to any of the moderate to vigorous activity questions were coded as ‘0’.

Fast food intake per week is a continuous variable based on responses to the question “How many times in the past seven days did you eat food from a fast food restaurant such a McDonald’s, Burger King, Wendy’s, Arby’s, Pizza Hut, Taco Bell, or KFC or local fast food restaurant?” Sweetened beverage intake per week is also a continuous variable based on responses to the question, “In the past 7 days, how many regular (non-diet) sweetened drinks did you have?”

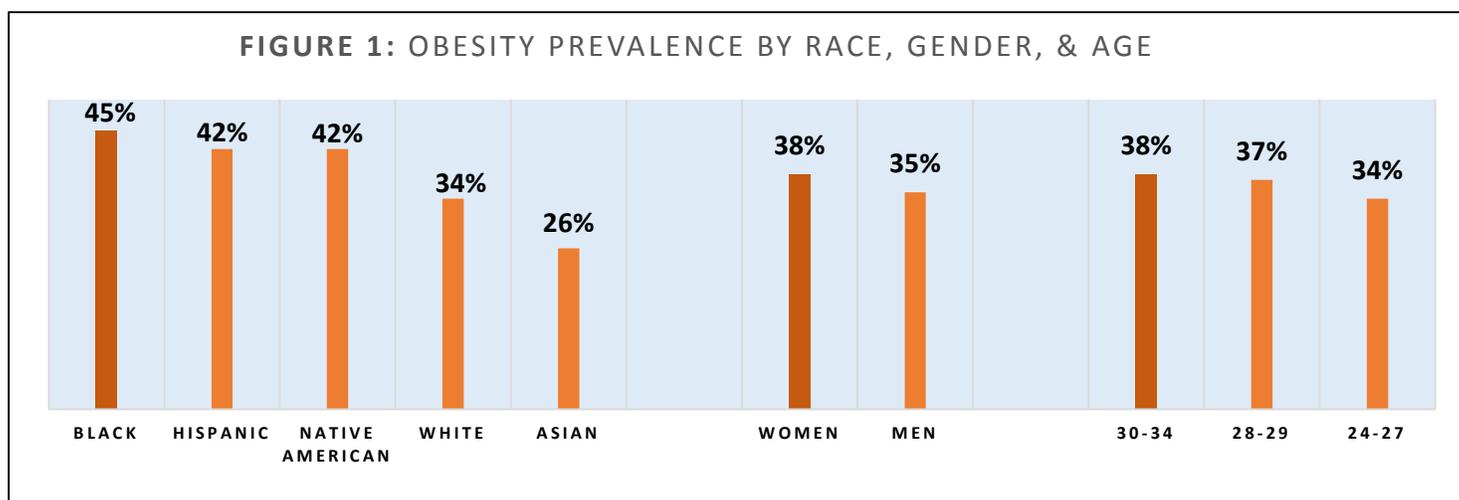
Smoking status was based on respondents’ reports of frequency of smoking in response to the question, “During the past 30 days, on how many days did you smoke cigarettes?” and those who reported 30 days were coded as ‘daily smokers’. Body mass index (BMI), based on measured height and weight, was used to determine obesity status. BMIs greater than or equal to 30.0 were classified as obese.

In our analyses and tabulations, respondents who refused to answer or who answered “other” or “don’t know” are excluded from the denominator and are not shown in figures or tables (less than 5% of all responses).

## RESULTS

### Overview

Young adults in Add Health have a high prevalence of obesity at 37%, slightly greater than the national average (34.9%) for adults of all ages.<sup>9</sup> There are dramatic differences in obesity by race. Blacks (45%), Hispanics (42%), and Native Americans (42%) have the highest prevalence of obesity, and Asians (26%) have the lowest [Figure 1]. National data reflect similar patterns, with Blacks having the highest levels of obesity and Asians the lowest.<sup>9</sup>



Women are slightly more likely to be obese than men; 38% of women are obese compared to 35% of men. Obesity was also higher for older respondents as 34% of 24-27 year olds are obese compared with 38% of 30-34 year olds.

## SLEEP



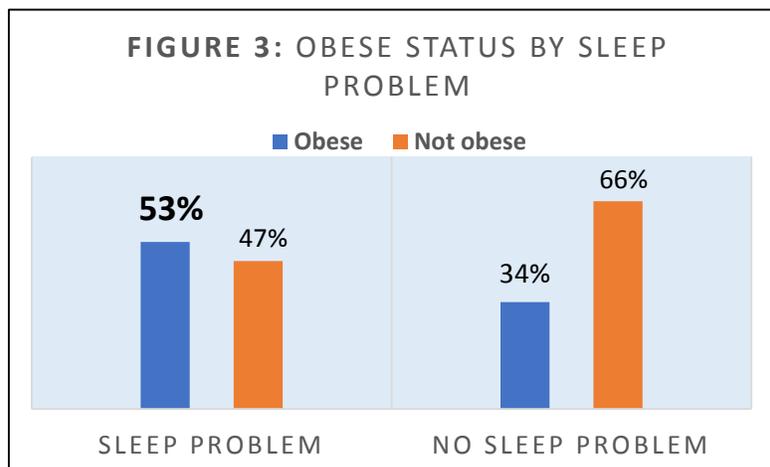
More than half of the Add Health young adults reported getting the recommended amount of sleep (7-9 hours) for their age group [Figure 2]. Adults continue to need 7-9 hours of sleep per night until age 65 and older, when 7-8 hours per night is recommended.<sup>10</sup> Reports about hours of sleep did not vary by age, but did vary substantially by race. 47% of Black respondents reported getting the recommended amount of sleep (7-9 hours). Asian respondents reported the highest amount (59%) of recommended sleep. Whites were the second highest group to report healthy sleep habits (58%), while Hispanics and Native Americans were slightly less likely to get the recommended amount of sleep (54% vs. 53% respectively). Blacks are the most likely to report less than 6 hours of sleep per night, especially Black women, a trend we seeing continuing from early adolescence.<sup>11</sup> The percentage of women meeting the recommended amount of sleep (53%) was slightly lower than men (56%).

Figure 2



Reports about sleep problems were relatively low, and similar across racial groups. Native Americans were most likely to report sleep problems at 16%, while Whites, Blacks and Asians were around 11%. Only 12% of the total participant population reported experiencing a sleep problem; this prevalence matches the national average.<sup>2</sup>

Of the 12% of young adults reporting a sleep problem, 53% were obese, compared to 34% of the group without sleep problems [Figure 3].

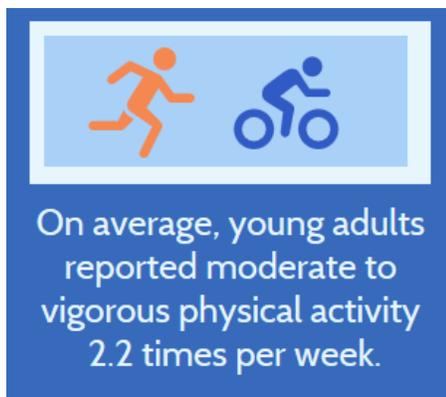


## PHYSICAL ACTIVITY

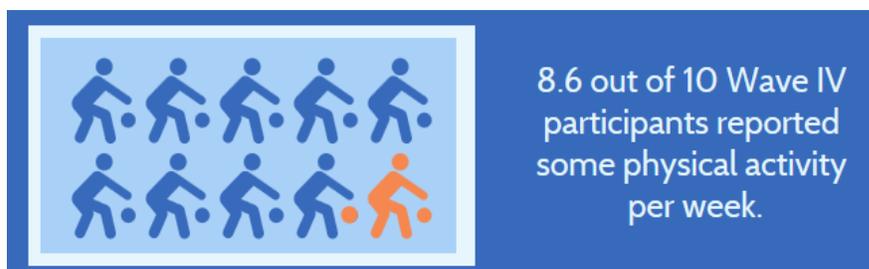


Adequate physical activity is essential for good health as exercise reduces the risk of cardiovascular disease, Type 2 diabetes and some cancers.<sup>3</sup> The American Heart Association recommends that adults engage in aerobic activities at least 5 times per week and muscle-strengthening activities at least twice per week,<sup>12</sup> but many young adults are not meeting those guidelines. On average, young adults reported moderate to vigorous physical activity 2.2 times per week [Figure 4].

**Figure 4**



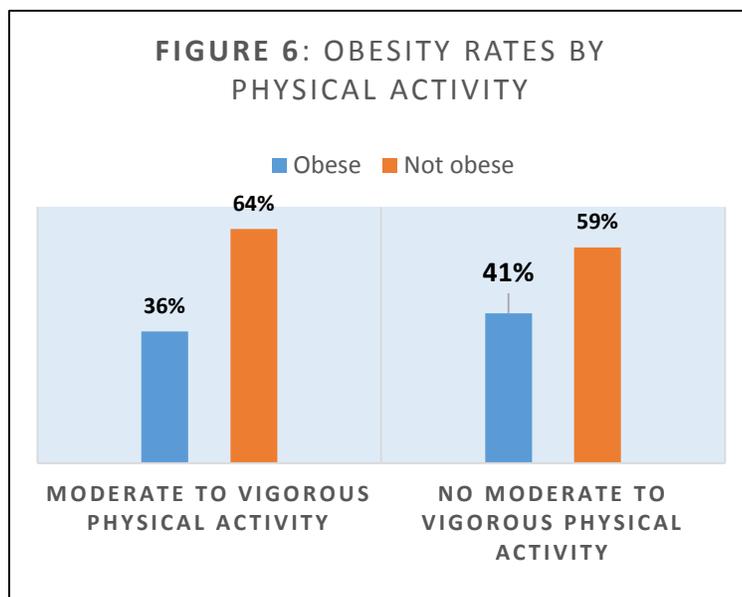
**Figure 5**



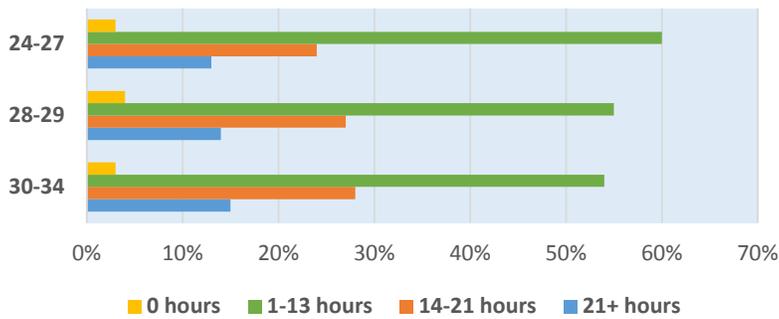
Physical activity did not vary by age. About 15% of all respondents reported no moderate to vigorous physical activity per week [Figure 5]. Racial differences in physical activity indicate that Blacks (20%) and Hispanics (16%) were more likely to report engaging in no moderate to vigorous physical activity per week than Whites (12%) and Asians (10%). The Add Health results match national averages for Blacks, as Blacks are least likely to report moderate to vigorous physical activity, but Add Health results indicate higher levels of physical activity among Asian respondents.<sup>13</sup> Asians report moderate to vigorous physical activity 2.6 times per week on average, while Blacks report only 2.0 times per week.

National averages from the National Center for Health Statistics also show that women are less active than men,<sup>13</sup> which is reflected in the Add Health sample: Men reported getting moderate to vigorous physical activity 2.4 times per week on average, while women only reported 2.0 times. Respondents who were obese were more likely to report no physical activity per week than non-obese respondents [Figure 6].

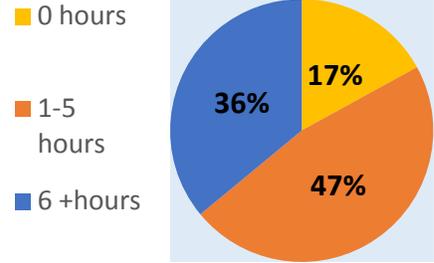
Sedentary behaviors, or inactivity (e.g., watching TV), are also related to health outcomes, as such behavior is linked to an additional risk of developing cardiovascular disease.<sup>4</sup> Time spent watching TV and videos was similar across age and race. 56% of all respondents reported watching TV for 1-13 hours per week, while only 3% reported no TV watching at all per week [Figure 7]. This is slightly lower than national averages, which show that 24 to 32 year olds watched 2-3 hours of TV per day (14-21 hours per week). Women are more likely than men to report watching 1-13 hours of TV per week (60% and 53% respectively). However, more men reported spending over 6 hours on the internet per week (37%) than women (32%). This difference matches reports from other national studies.<sup>1</sup> About 36% of respondents also spend more than 6 hours on the internet outside of work or school per week [Figure 8].



**FIGURE 7: HOURS SPENT WATCHING TV BY AGE GROUP**



**FIGURE 8: HOURS SPENT ON THE INTERNET PER WEEK FOR ALL AGES**



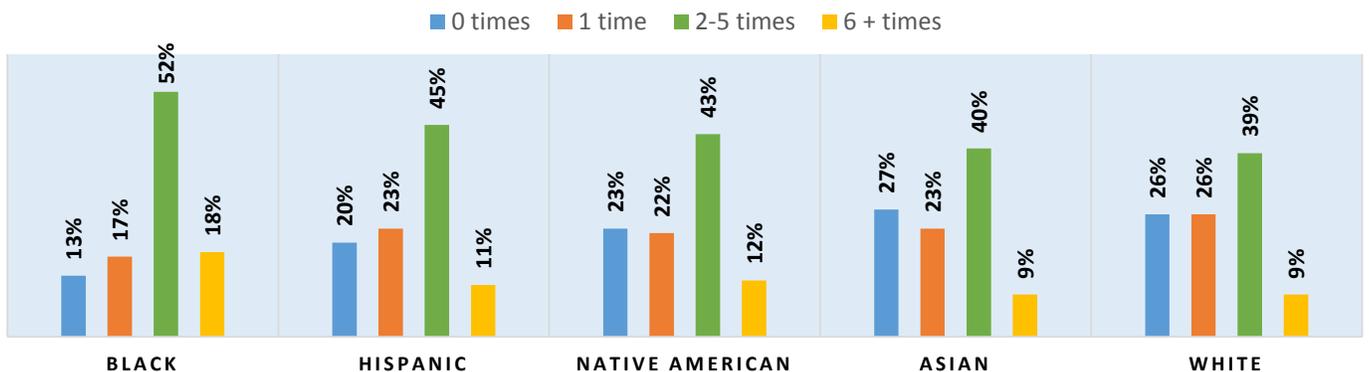
## DIET

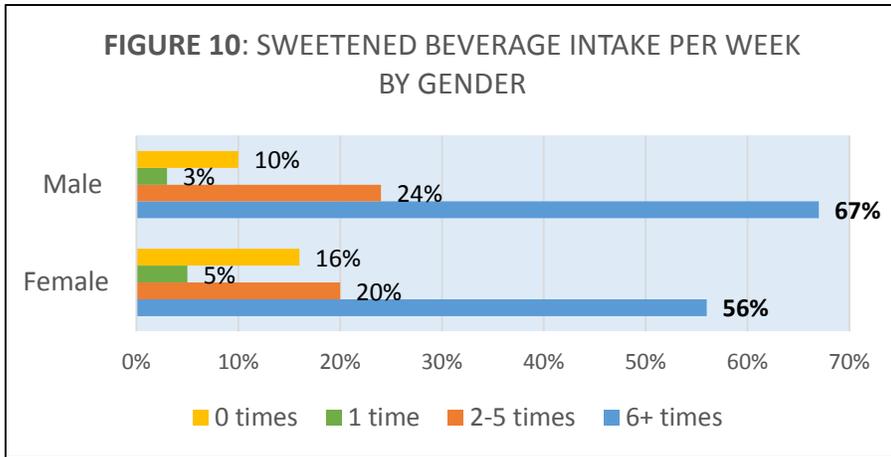
Diet is an important factor associated with obesity and contributing to the risk of chronic disease. For example, controlling the total calories one consumes decreases the risk of heart disease, Type 2 diabetes, and certain types of cancer, while consuming too much sodium increases the risk of high blood pressure, heart disease, and stroke.<sup>3</sup>

Fast food intake was similar across age groups, with 77% of Add Health respondents reporting consumption of fast food every week. Furthermore, 61% of all Add Health respondents reported consuming more than 6 sweetened beverage per week. Only 13% reported consuming no sweetened beverages per week. Fast food consumption and sweetened drink intake differed among racial groups and by gender. Blacks were the most likely to report fast food intake, with 52% eating fast food 2-5 times per week and 18% eating fast food 6 or more times per week [Figure 9]. Asians and Whites were the least likely to report fast food consumption per week. Native Americans and Blacks had the highest percentages of sweetened beverage intake at 70% and 66% respectively for 6 plus beverages per week.

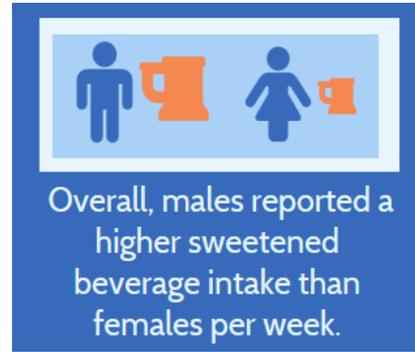
Women were less likely to consume fast food than men. 13% of men reported eating fast food 6 or more times per week, while only 7% of women reported eating fast food 6 or more times per week. Men were also more likely to consume sweetened beverages in larger quantities- more than 6 times per week (67%) when compared to women (56%) [Figure 10].

**FIGURE 9: FAST FOOD INTAKE PER WEEK BY RACE**





**Figure 11**

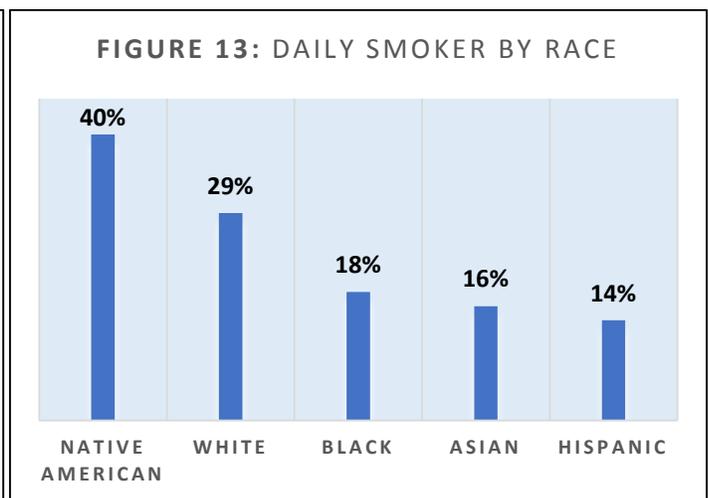
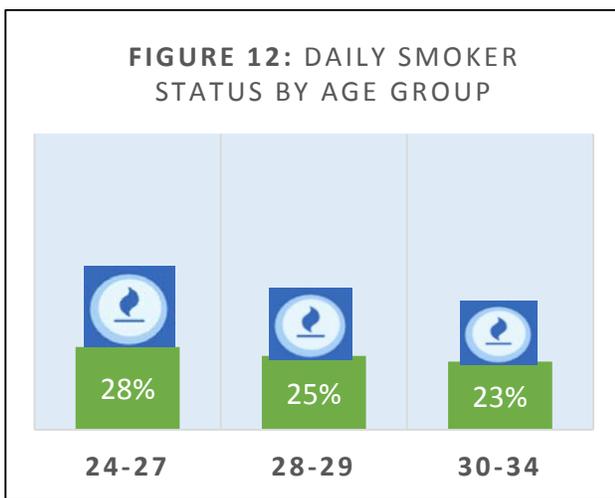


Young adults are consuming more calories and sodium than needed by frequently eating fast food. A large cheeseburger meal can contain 57-88% of an adult’s daily recommended calorie intake and 62-111% of the daily recommended sodium intake.<sup>14</sup> Furthermore, young adults who drink more than 6 sweetened beverages in a week may be exceeding the recommendation for consuming added sugars. A 12oz can of soda contains 132.5 calories from added sugar, which nearly exceeds the recommended 100-150 calories per day.<sup>15</sup> These diet patterns also parallel race and ethnicity differences in obesity rates [Figure 1].

**SMOKING**

Smokers are more likely than nonsmokers to develop heart disease, stroke, and lung cancer.<sup>16</sup> 25% of Add Health respondents identify as daily smokers (i.e., smoked every day in last 30 days), with gradual declines among older respondents [Figure 12].

The highest percentage of self-reported daily smokers is among Native Americans (40%) and the lowest is among Hispanics (13%) [Figure 13]. Nationally, Native Americans are the most likely to smoke, and Asians are the least likely, and Hispanics are the second lowest.<sup>5</sup> Slightly higher percentages of men report daily smoking than women (27% of men and 23% of women).



## Summary and Conclusions

This Research Brief examined the lifestyle behaviors of a cohort of young adults who were in their late twenties and early thirties in 2008. Of the lifestyle behaviors we examined, we found slight differences by gender. Men were more likely to report daily smoking, higher sweetened beverage intake, and fast food intake, although fewer women reported getting the recommended amount of sleep than men.

There were minimal differences in the lifestyle behaviors by age. Given the relatively small (eight year) difference between the youngest and oldest members of the Add Health cohort this is not unexpected, especially given the literature on lifestyle changes among this age group. There is an encouraging downward age trend, however, in the prevalence of smoking, perhaps foreshadowing future declines in smoking as the Add Health cohort moves through adulthood.

Race is strongly correlated with all facets of lifestyle behaviors related to health. These factors also contribute to a higher rate of obesity in these racial groups. Greater percentages of Blacks and Native American report unhealthy behavior, such as greater amounts of fast food intake, higher levels of inactivity, lower levels of moderate to vigorous physical activity and less than the recommended amount of sleep.

The brief focuses particularly on obesity in relation to lifestyle and behaviors of young adults because the Add Health cohort is at the forefront of the obesity epidemic. These young adults were adolescents when obesity rose so precipitously in the 1990s. Although the cohort is still too young to observe a high prevalence of cardiovascular disease, diabetes, or cancer that may be related to obesity, the behaviors discussed in this brief are known risk factors in pre-disease pathways leading to such future chronic diseases. The health risks of obesity and occurrence of future chronic disease in this young adult population will moreover increase health care costs for treating the co-morbidities of these health conditions.

We will continue to track many of these behaviors in Wave V, when all of the respondents will be transitioning into middle adulthood, ages 32-42, and chronic health conditions might worsen based on these behaviors.



### Stayed tuned for Wave V data

Add Health plans to trace, locate, and re-interview cohort members in a Wave V follow-up during the period 2016-2018 to collect social, environmental, behavioral, and biological data with which to track the emergence of chronic disease as the cohort members move through their fourth decade of life.

The Wave V survey will include content that covers the research areas highlighted in this brief. The survey will feature questions on sleep, height and weight, smoking status, physical activity, sedentary behaviors, and diet. The survey will expand the set of sleep questions to collect data on sleep apnea diagnoses, and frequency of sleep disturbances such as snoring and breathing disruptions. Please see our [Wave V webpage](#) for more information.

### References

- 1 American Time Use Survey - 2009 Results. *Bureau of Labor Statistics*, 24 (2010).
- 2 Luyster, F. S., Strollo, P. J., Zee, P. C. & Walsh, J. K. on behalf of the Boards of Directors of the American Academy of Sleep Medicine and the Sleep Research Society. Sleep: A Health Imperative. *Sleep* **35**, 727-734, doi:10.5665/sleep.1846 (2012).
- 3 Dietary Guidelines for Americans, 2010. *U.S. Department of Agriculture and U.S. Department of Health and Human Services* (2010).
- 4 Thorp, A. A., Owen, N., Neuhaus, M. & Dunstan, D. W. Sedentary Behaviors and Subsequent Health Outcomes in Adults: A Systematic Review of Longitudinal Studies, 1996–2011. *American journal of preventive medicine* **41**, 207-215, doi:10.1016/j.amepre.2011.05.004 (2011).
- 5 Vital Signs: Current Cigarette Smoking Among Adults Aged ≥18 Years --- United States, 2009.

- Morbidity and Mortality Weekly Report* **39**, 1135-1140 (2010).
- 6 Harris, K. M. An integrative approach to health. *Demography* **47**, 1-22, doi:10.1353/dem.0.0091 (2010).
- 7 Tourangeau, R. & Shin, H. C. *Grand Sample Weights*, <<http://www.cpc.unc.edu/projects/addhealth/data/guides>> (1999).
- 8 *Program Code for Race*, <<http://www.cpc.unc.edu/projects/addhealth/data/code/race>> (
- 9 Ogden, C. L., Carroll, M. D., Kit, B. K. & Flegal, K. M. Prevalence of childhood and adult obesity in the United States, 2011-2012. *Jama* **311**, 806-814, doi:10.1001/jama.2014.732 (2014).
- 10 Hirshkowitz, M. The National Sleep Foundation's sleep time duration recommendations: methodology and results summary. *Sleep Health*, doi:10.1016/jsleh.2014.12.010 (2015).
- 11 Harris, K. M., King, R. B. & Gordon-Larsen, P. in *Conceptualizing and Measuring Indicators of Positive Development: What Do Children Need to Flourish?* Vol. 3 (eds L. Lippman & K. Moore) 111-132 (Springer, 2005).
- 12 *American Heart Association Recommendations for Physical Activity in Adults*, <[http://www.heart.org/HEARTORG/GettingHealthy/PhysicalActivity/FitnessBasics/American-Heart-Association-Recommendations-for-Physical-Activity-in-Adults\\_UCM\\_307976\\_Article.jsp](http://www.heart.org/HEARTORG/GettingHealthy/PhysicalActivity/FitnessBasics/American-Heart-Association-Recommendations-for-Physical-Activity-in-Adults_UCM_307976_Article.jsp)> (2015).
- 13 Health, United States, 2013: With Special Feature on Prescription Drugs. *National Center for Health Statistics* (2014).
- 14 Urban, L. E., Roberts, S. B., Fierstein, J. L., Gary, C. E. & Lichtenstein, A. H. Temporal Trends in Fast-Food Restaurant Energy, Sodium, Saturated Fat, and Trans Fat Content, United States, 1996-2013. *Preventing Chronic Disease* **11**, E229, doi:10.5888/pcd11.140202 (2014).
- 15 *Sugar 101*, <[http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/HealthyEating/Sugar-101\\_UCM\\_306024\\_Article.jsp](http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/HealthyEating/Sugar-101_UCM_306024_Article.jsp)> (2014).
- 16 The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. (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, Atlanta, 2014).

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## Q ABOUT ADD HEALTH

The National Longitudinal Study of Adolescent to Adult Health (Add Health) is a longitudinal study of a nationally representative sample of adolescents in grades 7-12 in the United States during the 1994-95 school year. The Add Health cohort has been followed into young adulthood with four in-home interviews, the most recent in 2008, when the sample was aged 24-34. Add Health combines longitudinal survey data on respondents' social, economic, psychological and physical well-being with contextual data on the family, neighborhood, community, school, friendships, peer groups, and romantic relationships, providing unique opportunities to study how social environments and behaviors in adolescence are linked to health and achievement outcomes in young adulthood. The fourth wave of interviews expanded the collection of biological data in Add Health to understand the social, behavioral, and biological linkages in health trajectories as the Add Health cohort ages through adulthood.

For more information about the study and the datasets available, please visit the Add Health website at: <http://www.cpc.unc.edu/projects/addhealth>