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The Economic and Psychological Determinants of Sleep Among Adults in the United States

Caroline Jackson
Pace University

Pace University
Pforzheimer Honors College
Economics Department

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Caroline Jackson
Pace University BA Economics

Faculty Advisor: Dr. Gregory Colman
Pace University Professor of Economics

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Abstract

As many as one-third of Americans report getting too little sleep. Short sleep duration, often defined as less than seven hours, is associated with obesity, decreased cognitive functioning, dementia, heart disease, diabetes, and mortality (Ferrie, 2007). Much of the prior research on sleep duration and its determinants have used data in which respondents are asked to recall their average daily sleep over the past month or longer, data that are known to be inaccurate. Little research has been done using more accurate data available in time diaries, and even this data only extends through 2012, before the full effect of the Great Recession has been seen. For example, the recent recession led to housing loss, increased financial stress, and a restructured labor market that consisted of more precarious work, factors which are associated with lack of sufficient sleep. Additionally, the use of smartphones and tablets has proliferated since 2011; the number of Americans with a smartphone excessively increased from 35% in 2011 to 77% in 2016 (Smith, 2017), an increase linking to a decrease in sleep. Data was derived from the American Time Use Survey (ATUS), collected by the U.S. Census Bureau, to analyze the determinants of sleep duration among Americans ages 18 to 64 from 2009 through 2017. The dependent variable is defined as minutes a person sleeps on an average night. Using Ordinary Least Squares on repeated cross-sectional data, results find that over the period under study, the average amount of sleep people get stays roughly constant. These results are due to offsetting trends. The increase in obesity, education, electronic communication, and average age from 2003 to 2017 has reduced the amount people sleep. This increase is offset by the declining average self-reported health (since healthier people sleep less) and the increasing share of people who have never married and who therefore do not have children.

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Introduction

Time is scarce; and, more than any other single activity in which people engage, sleep is essential. Sufficient sleep is vital for daily functioning as well as physical and mental wellbeing. Short sleep duration, often defined as less than seven hours, is associated with obesity, decreased cognitive functioning, dementia, heart disease, diabetes, and mortality (Ferrie, 2007). Roughly one-third of Americans report experiencing short sleep according to estimates from the 2014 Behavioral Risk Factor Surveillance System (Lui, 2016). The importance of sleep for health has generated considerable interest in determining if sleep duration has changed over time, but research findings have been mixed (Lui, 2016). Previous research results using time use data portray a decrease of short sleep in the U.S. adult population from the 1980s to the mid-2000s, yet find an increase in short sleep among full-time workers (Luckhaupt, 2010). Much of the research linking sleep to health rests on studies of self-reported habitual sleep duration. One study of self-reported sleep found a decline in sleep duration from the 1980s to the early 2000s, but little change from 2004 to 2012, while another study found an increase in short sleep among some workers between 2004 and 2007 (Ford, 2012). Although one study using daily time diary data has reported from 2003 to 2014 an increase in sleep duration, trends in reported sleep since 2012 have yet to be examined (Adams, 2013).

Social, economic, and technological changes in recent years, however, may have resulted in a decline in sleep duration among United States adults. For example, the recent recession led to housing loss, increased financial stress, and a restructured labor market that persisted of more precarious work, factors which are associated with shorter sleep (Ford, 2015). Additionally, there was a rapid rise in smartphones and tablets over a five year period; the number of Americans with a smartphone increased from 35% in 2011 to 77% in 2016 (Smith, 2017). Americans now spend more time looking at a screen,

and, due to the mobility of these devices, technology has increasingly entered the bedroom. Technology use, especially smartphones, has been linked to inadequate and poor sleep as well as daytime sleepiness (Gradisar, 2013). Finally, Americans have reported increased levels of extreme stress in recent years, and researchers have found a robust association between stress and poor sleep outcomes (Colten, 1970). We expect that the reported amount of short sleep has increased in the population over the past few years.

Unfortunately, these trends, whether technological, economic, or social, may disproportionately impact the sleep of ethnic minority populations that are pre-exposed to a higher risk for insufficient sleep. Non-Hispanic black(s) and Hispanic adults, for instance, tend to report less sleep than non-Hispanic white adults and these disparities may have widened following the recent recession, which had more significant negative impacts on the wellbeing of black and Hispanic adults compared to their white counterparts (Margerison-Zilko, 2016). Additionally, ethnic minorities are more likely to be pre-exposed to race-related discrimination, linking to insufficient sleep. Though reports of stress have increased among the majority of U.S. adults, this is particularly true with respect to heightened stress due to police violence towards minorities, suggesting a potential race-based stressor for sleep (Williams, 2008). In addition, previous research has found that the negative influence of screen time on children's sleep duration is significantly stronger among blacks and Hispanics (Yland, 2015). Increasing use of mobile technology and social media could also differentially impact the sleep duration of racial and ethnic minority adults. Prior studies found a much more substantial increase in self-reported short sleep duration among black and Hispanic adults compared to white adults from the 1960s through the 1990s (Colten, 1970), yet little is known about how sleep duration has changed in more recent years across ethnic groups in the United States. This study analyses trends in self-reported sleep duration from 2009

to 2017 and how these trends vary by race and ethnicity. Given recent significant social, economic, and technological changes, it is hypothesized that the proportion of U.S. adults reporting short sleep has increased since 2009 and that this increase has been more substantial for black and Hispanic adults.

Literature Review

Biopsychologists have researched and found that the sleep duration diversity is profound. Numerous early studies, summarized in Kleitman (1963), demonstrate the very wide range of sleep duration among adults. Though 7.5 hours may be the average, "there is no more a 'normal' duration of sleep, for either children or adults. Duration of sleep is now determined by heart rate, or height, or weight." (Kleitman, 1963). Numerous studies demonstrate that sleep is a major expenditure of time that exhibits substantial variation within populations whose sleep has been studied.

However, there is little evidence on the determinants of individual differences in sleep duration. Some results show that women sleep more than men (Kleitman, 1963), and other indicators show that sleep declines with age among adults (Morgan, 1985). Beyond this evidence and the presence of unexplained variation, previous studies offer little suggestions on how to conduct an empirical examination of sleep.

One source of evidence on the relationship between work and sleep is the data in Szalai (1972, p. 618), who reports average sleep duration from time diaries collected at fifteen different locations across twelve countries in the mid-1960s. In each set of data average sleep duration is reported by employment and marital status, presence of children, sex, and whether the diary is kept for a weekday or a weekend. Varying numbers of respondents were included in the surveys.

The average sleep duration with in the survey averaged roughly 8.5 hours per day, slightly above the mean durations discussed above. While this discrepancy can not be explained easily, one can not assume that the it biases the effect of work time on length of sleep.

Webb (1985) examined differences in sleep duration using the same data set focusing on several pairs of demographic categories and concluded that individuals sleep less on workdays, and that women sleep less than men on weekends. Webbs results conclude that the length of sleep is significantly longer among males. WIthin this study the presence of children and time spent working was controlled for yet this does not explain the large time difference spent between females and males. One theory is an inherent biological distinction or differing allocations of time in household production.

Webb concluded that holding other factors constant, each additional hour of work reduces time spent sleeping by about 7 minutes. Additionally, employed people sleep roughly one hour less per day on work days than those who are unemployed. Webb's findings suggest that changes in work-leisure choices are related to fluxuates the amount of time individuals have available for sleep.

The 1975-76 Time Use Study American's Use of Time: Time Use in Economic and Social Accounts conducted by the Survey Research Center, University of Michigan and Ann Arbor. This study collected a range of detail on households in four waves that were spaced over four seasons in a twelve month period to collect a sense of how people's activities change over the year. The collected data was combined into "synthetic weeks," and were used to analyze the relation between length of sleep and various other leisure activities . Of the 1,519 respondents, 421 were omitted if respondents age was above 65, below 23, or their survey was incomplete. The sample size of 706 individuals, of whom 400 were men.

Within the study, results demonstrate an average weekly sleep time of roughly 7.75 hours, consistent with results from Kleitman's study. Results find significant variation on a respondents sleep duration. 12 percent of the sample sleeps more than 9 hours per night, and 10 percent sleeps less than 6.5 hours per night on average.

For the average respondent sleep remains a larger portion of the respondents total time spent on any other activity. This is statement is valid for most of the respondents within the sample. One can assume that if the sample size had not been restricted by age, the standard deviation would have been much larger, meaning a larger range of sleep duration. The data show that sleep is the largest single use of time by most individuals. More interesting, increased educational attainment reduces sleep duration. It is difficult to imagine that the more education one attains causes a reduces the taste for sleep; rather, it is interpreted as operating through wages.

Data

The data set was derived from the American Time Use Survey (ATUS) which is a nationally representative U.S. time diary survey for the period since 2003 (IPUMS, 2018). The ATUS definition of sleeping includes cat napping, dozing, dozing off, dreaming, falling asleep, getting some shut-eye, napping, sleeping and waking up (IPUMS, 2018). To compare findings with prior studies and to explicitly examine what, if at all, affect the length of an individual's sleep, data from 2009 through 2017 was extracted. Restricting the sample to individuals who sleep between 204-720 minutes, or 4-12 hours per night, the analytic sample consisted of 27,700 U.S and Washington DC residents.

To measure sleep duration, respondents who participated in the ATUS reported the activities engaged in over 24-hours from 4 a.m. to 4 a.m. Respondents also reported where and when these

activities took place, whether the individuals were caring for a child under the age of 13, eating or drinking during the activity, or providing eldercare, and who was with them during the activity (IPUMS, 2018). The following is a statistical summary of the data collected:

Table 1. Statistical Summary of Variables (N = 27,700)

Variable (Name)	Mean	Std. Dev.	Min	Max
Sleep (sleep)	480	8.25	240	720
Age (age)	-.1484	.0424	18	64
Very Good Health (verygood_health)	.8753	1.698	0	1
Good Health (good_health)	6.218	1.797	0	1
Fair Health (fair_health)	12.492	2.339	0	1
Poor Health (health_health)	23.573	3.616	0	1
Female (female)	10.555	1.209	0	1
Hispanic (hispanic)	2.976	1.802	0	1
Non-Hispanic Other (nhother)	3.3066	2.572	0	1
Non-Hispanic Black (nhblack)	-6.116	1.828	0	1
Widow (widow)	5.055	2.347	0	1
Divorced (divorced)	2.469	1.697	0	1
Never Married (nevermarried)	12.309	1.621	0	1
Body Mass Index (bmi)	-.3424	.1095	0	1
High School (hs)	-12.865	2.087	0	1
Some College (somecol)	-20.797	2.011	0	1
College Plus (colplus)	-25.006	2.004	0	1

Source: American Time Use Survey via IPUMS

Model

As previously stated, repeated cross-sectional data from the ATUS is used within the model. Each model tested the relationship between an individual's sleep and its independent variables that are expected to have positive and negative impacts on the dependent variable. The model is estimated with ordinary least squares (OLS) as the dependent variable is continuous. Standard errors are robust to possible heteroskedasticity in the error term.

The dependent variable (**Y**) in each model is an individual's amount of sleep, measured in minutes and several independent variables regress against the dependent variable. Independent variables consist of a respondents age ($\mathbf{X}_1$). Health behaviors and health outcomes included self-reported health as very good health ($\mathbf{X}_2$), good health ($\mathbf{X}_3$), fair health ($\mathbf{X}_4$), and poor health ($\mathbf{X}_5$). The health indicator consisted of dummy variables that regress against respondents who report having excellent health. In relation to sleep duration, included in this data is a respondents gender (female or male), having female represented as ($\mathbf{X}_6$). In order to effectively examine how sleep trends may differ by race/ethnicity, categorized separately is self-reported race/ethnicity by Hispanic ($\mathbf{X}_7$), non-Hispanic other ($\mathbf{X}_8$), non-Hispanic black ($\mathbf{X}_9$). The race indicator consists of variables that compare people of race/ethnicity to respondents of a white origin. Dummy variables for an individual's marital status contain respondents of a widow ($\mathbf{X}_{10}$), divorced ($\mathbf{X}_{11}$), and never married ($\mathbf{X}_{12}$). An individual's marital status is regressed against respondents who are married. An additional health measure, body mass index (BMI) ($\mathbf{X}_{13}$), attempts to capture individuals whose health, specifically weight is taken into consideration when measuring the amount of time slept. The ATUS calculates BMI as a respondents (weight in pounds * 703)/height in inches squared. “As the basis for BMI, the survey collected information about the individual's height and weight. For height, interviewers asked, "How tall are you without shoes?"; for

weight, interviewers asked, "How much do you weigh without shoes?" These results report in height and weight, respectively" (IPUMS, 2018).

A respondents socioeconomic status includes educational attainment of high school ($\mathbf{X}_{14}$), some college ($\mathbf{X}_{15}$), college ($\mathbf{X}_{16}$), and college plus ($\mathbf{X}_{17}$). Education dummy variables were created to compare respondent to those with an education level that was less than a high school degree. A vital decision to include a respondent's level of education was necessary because preceding research results show that additional education decreases an individual's amount of time slept. Working (X_{18}) captures time spent working, doing activities as part of one's job, engaging in income-generating activities (not as part of one's job), and looking for jobs and interviewing. This variable is sub-divided to reflect these distinctions. "Working" includes hours spent doing the specific tasks required of one's main or other job, regardless of location. "Work-related activities" include activities that are not obviously work but are done as part of one's job, such as having a business lunch or playing golf with clients. Self-reported length of time spent on telephone calls, email and text messages ($\mathbf{X}_{19}$) is measuring respondents screen time. This variable consists of checking emails, reading and sending emails, phone calls, instant messaging, reading and sending emails. The last independent variable is a respondents number of children under the age of 18 in the household (X_{20}). With variable descriptions, the model is explained as the following:

Dependent Variable:

- sleep - Individual's amount of time spent sleeping (Cat napping, Dozing, Dozing off, Dreaming, Falling asleep, Getting some shut-eye, Getting up, Napping, Sleeping, Waking up)

Independent Variables:

- age - Age
- healthverygood - Respondent self-reported having very good health
- heathgood - Respondent self-reported having good health

- heathfair - Respondent self-reported having fair
- healthpoor - Respondent self-reported having poor
- female - Gender
- hispanic - Respondent self-reported Hispanic race/ethnicity
- nhother - Respondent self-reported other race/ethnicity
- nhblack - Respondent self-reported Black/African American race/ethnicity
- widow - Respondent is widowed
- divorced - Respondent is divorced
- nevermarried - Respondent has never married
- bmi - Respondents height and weight calculated as (weight in pounds * 703)/height in inches squared
- hs - Respondents have a high school degree
- somecol - Respondents have completed some college
- col - Respondents have a college degree
- colplus - Respondents have 5+ years of college
- bls_work_working - Respondents self-reported time spent "Working and work-related activities"
- bls_comm_msgemail - Respondents self-reported time spent on Telephone calls, mail, and e-mail: Household and personal email and messages
- hh_numownkids - Respondents self-reported time spent caring for and helping household children

Estimated Equations:

Model: Sleep = $\beta 0 + \beta 1(age) + \beta 2(very\ good\ health) + \beta 3(good\ health) + \beta 4(fair\ health) + \beta 5(poor\ health) + \beta 6(female) + \beta 7(hispanic) + \beta 8(non\text{-}hispanic\ other) + \beta 9(non\text{-}hispanic\ black) + \beta 10(widow) + \beta 11(divorced) + \beta 12(never\ married) + \beta 13(bmi) + \beta 14(high\ school) + \beta 15(some\ college) + \beta 16(College) + \beta 17(college\ plus) + u$

Empirical Results

The relationship between sleep and survey year determined that sleep duration changed in a non-linear fashion throughout these eight years. The results of the OLS estimation extensively confirm my hypothesis. Sleep declines with age by about half a minute per year. This conclusion may reflect both the increased difficulty of sleeping with the increase of a person's age as well as increases in stress due to added responsibilities. Results find that as self-reported health declines, people need to sleep more. This likely reflects the added sleep needed to recover from illness and disease as well as the effect of certain conditions, such as sleep apnea, on sleep duration. Similarly, I find that a higher body-mass

index is associated with lower amounts of sleep. Women sleep about 8 minutes more than men, likely reflecting the added demands of childcare and housework. Married people sleep less than those who are separated, divorced, widowed, or who have never married, likely reflecting the time-intensive nature of raising children. I find that the more education a person has, the less the individual sleeps. As mentioned above, this fits an economic model of sleep, in which the opportunity cost of sleeping is higher among more highly educated people. The differences in sleep by race and ethnicity are somewhat different from expected. African-Americans sleep about 5 minutes less than non-Hispanic Whites, but Hispanics and people of non-Hispanic other races sleep 5 to 10 minutes more. Regression coefficients, shown in table 2, are with robust standard errors, r-squared, adjusted r-squared and p-values.

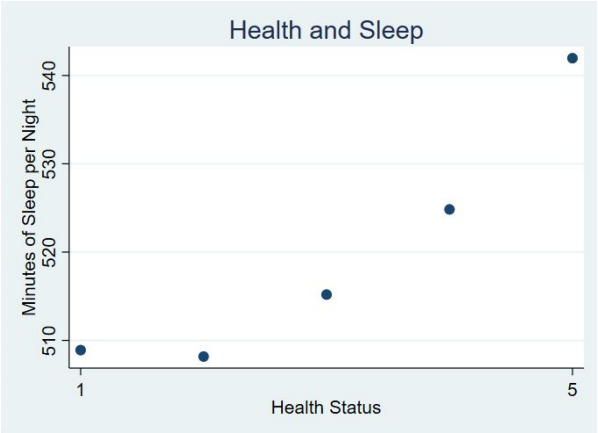

Table 2. Coefficients with Robust Standard Errors, R-squared, Adj. R-squared & Significance Level

Variables	(Model 1)
	Sleep
Age	-0.410***
	(0.0480)
Health very good	3.326**
	(1.298)
Health good	7.503***
	(1.451)
Health fair	13.25***

	(2.074)
Health poor	34.02***
	(3.472)
Female	9.619***
	(0.983)
Hispanic	8.894***
	(1.541)
Non-Hispanic Black	-4.529***
	(1.719)
Non-Hispanic Other	6.583***
	(2.138)
Widowed	3.621
	(3.190)
Divorced	5.150***
	(1.350)
Never Married	9.943***
	(1.366)
Body Mass Index	-0.198**
	(0.0945)
High School	-8.811***
	(2.009)
Some college	-15.61***
	(1.952)
College or more	-18.76***
	(1.926)
Constant	528.0***
	(3.861)

Observations	42423
Adjusted R-squared	0.017

*Robust standard errors are in parentheses; * p<0.1, ** p<0.05, *** p<0.01*

The striking contrast between the means sleep durations for men and women in, and the significant positive coefficients on the dummy variables for women warrants further analysis. We can not conclude from our data whether this represents discrimination due to male dominance in household decision-making, or optimal responses to the differing capacities of men and women to reduce sleep without reducing household and market productivity.

The totality of the results suggests that, at the least, time spent sleeping will be changed by the indirect impacts of economic and demographic factors on decisions about work and leisure. As previous research explain the relation between the amount of education and its impact on sleep duration independently of the amount of time spent working in the market, which may be interpreted as reflecting the direct effect of wages on sleep.

Conclusions, Limitations and Further Research

Although measurement bias in the ATUS sleep measure may have changed over time, it is unlikely there was a sudden shift in the later years that would account for the increase in lack of sleep observed in recent years. Importantly, white adults tend to overestimate their sleep time to a greater extent than black adults, which may explain some of the race gap in sleep duration (Jackson, 2018). However, race differences in reporting bias were unlikely to have shifted substantially after 2012 when the race gap in sleep duration began to widen. Results also show an increasing gap between whites and Hispanics, a population that overestimates their sleep duration at similar levels to whites (Jackson,

2018). Like hypothesized, results found the most substantial increases in insufficient sleep duration is concentrating among black and Hispanic adults. Previous research has found larger statistics of inadequate sleep for black and Hispanic adults compared to white adults, and we see these inequalities are widening, which is consistent with other recent research on sleep duration trends (Basner, 2018). Growing race/ethnic inequalities in sleep duration are concerning as they could worsen already significant and persistent race/ethnic health disparities (Stamatakis, 2007).

These findings indicate an increase in the prevalence of U.S. adults who report sleeping six or fewer hours in recent years. One-third of U.S. adults reported an insufficient amount of time slept in 2017, representing a 15% increase since 2009. Consistent with prior research, no evidence of change in short sleep from 2009 to 2012 was found, but by extending the analysis of sleep duration trends through 2017, results show an increase in short sleep beginning in 2013. The growth observed corresponds with a period of economic instability, a rise in societal stress, and greater use of technology, such as smartphones, that have been shown to impact sleep (Pantic, 2014). These results suggest the increased risk of inadequate sleep duration has been discovered recently and this would not have been observed in prior studies.

However, this contrasts with a recent study using American Time Use Survey (ATUS) data that examined sleep duration trends from 2003 through 2016 and reported a total increase in daily sleep duration of about 19 minutes on weekdays and 10 minutes on weekends (Basner, 2018). Published results of this study are unclear; however, if the increase reflects additional time spent sleeping or more time spent in bed. ATUS interviewers are instructed to count up to 30 minutes after respondents say they went to bed as time spent sleeping, though some of this time was most likely spent trying to fall asleep (BLS, 2018). This time difference may be one of the reasons our findings differ from those published

using ATUS data. Results may vary if self-reported sleep duration captures quality as well as quantity of sleep. For instance, respondents may be sleeping the same amount, but if their sleep quality has declined in recent years, they may feel that they are getting less sleep.

There are important limitations to this study. First, we relied on self-reports of sleep duration, which tend to overestimate sleep time relative to more objective measures of sleep such as polysomnography (Miller, 2015). For instance, respondents tend to round sleep to the nearest hour when asked to report on the typical amount of sleep they get, which can result in a loss of precision, with prior research finding a tendency to heap responses at six, seven, and eight hours of sleep. Sleep duration in the survey is rounded to the nearest hour, for all respondents, which may exacerbate this loss of precision. In addition, the ATUS asks a single question about one's average sleep duration in a 24-hour period and does not distinguish between weekday and weekend sleep, which has been shown to vary substantially in time use studies (Basner, 2018).

Second, the context of the survey can introduce social desirability bias in respondent sleep reports. Prior research suggests respondents would be embarrassed to report inadequate sleep in a survey of health; thus, sleep duration may be overestimated in the ATUS (Ford, 2012). Though we included several controls for social, economic, household, and health characteristics, what is not accounted for is other important factors associated with sleep such as the use of sleep medications, screen time, media consumption around bedtime, or everyday stressors that may have shifted over time. And although we note that the recent increase in inadequate sleep coincides with a period of economic instability following the recent recession, as well as a rise in use of technology near bedtime, we did not dissect these factors directly.

With improvements to the accessibility and cost of sleep tracking technology, such as wearable devices, national surveys can conduct additional studies to investigate potential sources of error in their sleep measures. Calibration across measures derived from respondent reports and actigraphy, for instance, could be used to determine if trends in sleep duration reflect the actual change, change in perception, or merely measurement error. Results could be calibrated more easily across studies if more objective sleep data, such as from actigraphy, were collected. However, data would need to be collected on a sufficiently large sample so group differences can be examined.

This study highlights the importance of continued research of sleep trends among vulnerable populations, particularly following significant social, economic, and technological changes. Much of the existing literature on sleep trends have not examined how sleep has changed across racial and ethnic groups (Youngstedt, 2016). Because inadequate sleep is a proximate determinant of poor health, these trends may have important consequences for population health and ethnic health disparities. This research shows that changes in economic opportunities and health over just one decade have affected sleep in differing ways. In particular, the increasing share of people who are obese and who report poor health has increased the amount people sleep. Although such people do sleep more, results do not imply individuals are getting all the sleep they need, only that they need more.

This conclusion points to the importance of access to adequate health care so that the amount of sleep people can obtain is sufficient for their needs. Prior research documenting the adverse health consequences of sleep at the population level has primarily relied on studies using self-reported sleep measures, including the ATUS, and evidence of increasing reports sleep deficits in the population may have implications for population health trends (Matricciani, 2017). Offsetting these increases in sleep is the decline in sleep among those who are more educated and who are married, relative people who are

less educated and unmarried. The lower sleep among more educated persons may partly reflect longer work hours in highly paid professions as stated previously. Due to the recognized effect of lost sleep on performance in these professions, many have adopted limits on the number of hours their employees can work during the week, to promote a better work-life balance.

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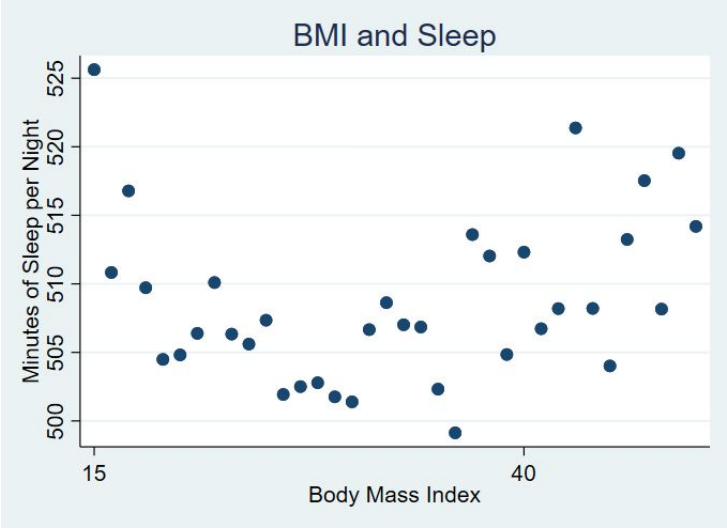
Appendix

I. Model with robust standard errors

Source	SS	df	MS		
Model	7530965.77	17	442997.986	Number of obs =	27700
Residual	264384519	27682	9550.77374	F(17, 27682) =	46.38
				Prob > F =	0.0000
				R-squared =	0.0277
				Adj R-squared =	0.0271
Total	271915484	27699	9816.79788	Root MSE =	97.728

bls_pcare_sleep	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age	-.1484251	.0424191	-3.50	0.000	-.2315686	-.0652816
health_verygood	.8753276	1.698699	0.52	0.606	-2.454208	4.204863
health_good	6.218185	1.797551	3.46	0.001	2.694896	9.741474
health_fair	12.49295	2.339351	5.34	0.000	7.907709	17.0782
health_poor	23.57374	3.616432	6.52	0.000	16.48536	30.66213
female	10.5558	1.209677	8.73	0.000	8.184773	12.92683
hispanic	2.976476	1.802014	1.65	0.099	-.5555603	6.508513
nhother	3.306665	2.572602	1.29	0.199	-1.735764	8.349094
nhblack	-6.116039	1.828955	-3.34	0.001	-9.700881	-2.531198
widow	5.055208	2.34766	2.15	0.031	.4536775	9.656738
divorced	2.469219	1.679749	1.47	0.142	-.8231717	5.761611
nevermarried	12.30959	1.621596	7.59	0.000	9.131186	15.488
bmi	-.3424222	.1095433	-3.13	0.002	-.5571325	-.1277119
hs	-12.86523	2.087046	-6.16	0.000	-16.95594	-8.774513
somecol	-20.79746	2.011222	-10.34	0.000	-24.73956	-16.85537
colplus	-25.00639	2.004407	-12.48	0.000	-28.93512	-21.07765
bls_leis_tv	.0413482	.0035983	11.49	0.000	.0342953	.0484012
_cons	529.3067	4.074599	129.90	0.000	521.3203	537.2932

II. Body Mass Index regressed against Sleep



III. Education Level regress against Sleep