MSDH

Inadequate Sleep
Among Adults in Mississippi

Analysis of 2022 Mississippi Behavioral Risk Factor Surveillance System (BRFSS) Data

July 31, 2024

Mississippi BRFSS
Behavioral Risk Factor Surveillance System

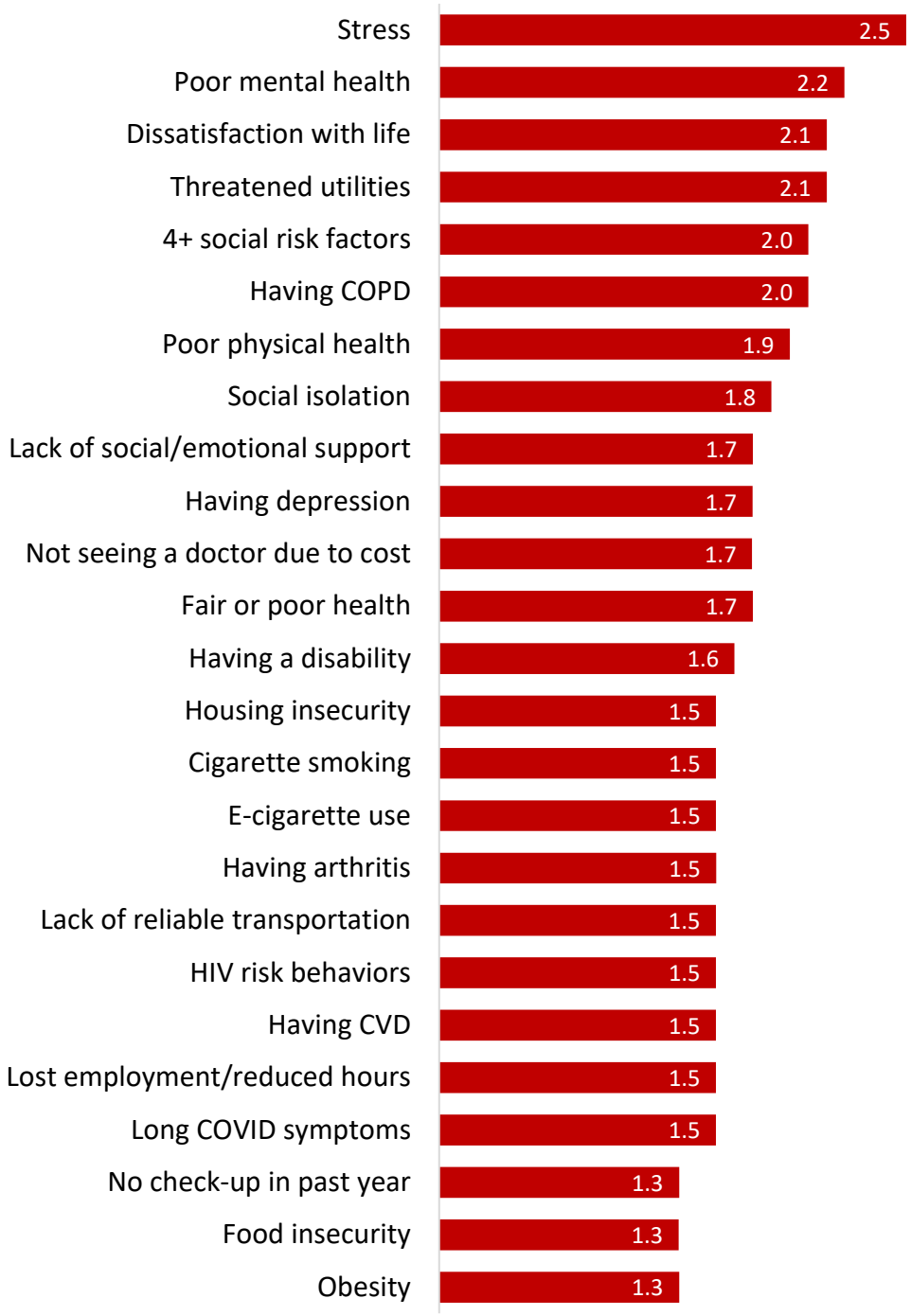
Table of Contents

SUMMARY OF FINDINGS

Inadequate Sleep in Mississippi

- Inadequate sleep is defined as having fewer than 7 hours of sleep in a 24-hour period on average.
- Approximately **3 in 8 adults** (37.8%) had inadequate sleep in Mississippi in 2022.
- Inadequate sleep was found to be higher among **non-Hispanic Black adults**, adults **younger than 65 years old**, adults who have completed **some college**, and adults with **lower annual household incomes**.
- The percentage of inadequate sleep **increased** from 36.4% in 2014 to 37.8% in 2022.

Mississippi adults who have inadequate sleep have significantly higher odds of the following:



Adults who have inadequate sleep have 2.5 greater odds of experiencing stress.

Note: All responses in the MS BRFSS survey are self-reported and may not necessarily represent medical diagnoses.

Important Information

About BRFSS

- The Mississippi Behavioral Risk Factor Surveillance System (BRFSS) is conducted annually to monitor the prevalence of behaviors that contribute to the leading causes of morbidity and mortality among adults in our state.
- The 2022 Mississippi BRFSS was completed by 4,239 Mississippians aged 18 years or older.

About This Report

- The estimates in this report are weighted to represent the adult population of Mississippi.
- Some estimates in this report are based on a cell size (numerator) of less than 20. Use caution when interpreting and comparing these estimates. Cell sizes for each estimate are included in each topic's respective data table.
- For BRFSS data, CDC recommends not interpreting percentages where the denominator is based upon fewer than 50 non-weighted respondents or the relative standard error (RSE) of the estimate is greater than 30%. In the tables of this report, results replaced with a dash (-) indicate a sample size of less than 50 or an RSE greater than 30%.
- The difference between two estimates is considered statistically significant (also stated as "significantly higher/lower" or "significant" in this report) if the 95% confidence intervals do not overlap.
- Multiple logistic regression was used to calculate adjusted odds ratios and 95% confidence intervals for factors associated with alcohol consumption. The odds ratios are adjusted by sex, race, age group, education level, and annual household income. If the confidence interval for the odds ratio does not include the number 1.00, then the calculated odds ratio is considered statistically significant.
- In this report, "Other Race" refers to adults who reported their race/ethnicity as anything other than White, Non-Hispanic (NH) or Black, NH.
- In the 2022 MS BRFSS, the numbers of responses for individual races and ethnicities contained in the "Other Race" demographic group (Table A, below) were too low to allow for meaningful estimates. To request additional race/ethnicity data, please submit a data request using MSDH's online form.

Table A. Races and Ethnicities Included in the "Other Races/Ethnicities" Demographic Group

Race/Ethnicity	TOTAL 2022 SURVEY SAMPLE		
	Unweighted Total	Weighted Total	Weighted Percent
American Indian or Alaskan Native, Non-Hispanic	26	36,684	1.66
Asian, Non-Hispanic	29	32,004	1.45
Any race, Hispanic	67	82,236	3.77
Multiracial, Non-Hispanic	24	22,608	1.03
Native Hawaiian or Pacific Islander, Non-Hispanic	1	1,131	0.05
Other race, Non-Hispanic	0	0	0.0
Total "Other Races/Ethnicities" Demographic Group	147	174,663	7.96

Survey Questions for Topics in This Report
(2022 MS BRFSS Survey)

Inadequate Sleep *(From Core Section 5: Inadequate Sleep)*

- **Inadequate Sleep:** On average, how many hours of sleep do you get in a 24-hour period?

Health Care Access *(All questions from Core Section 3: Health Care Access)*

- **Health Care Coverage:** What is the current primary source of your health insurance?
- **Personal Health Care Provider:** Do you have one person (or a group of doctors) that you think of as your personal health care provider?
- **Doctor Cost:** Was there a time in the past 12 months when you needed to see a doctor but could not because you could not afford it?
- **Routine Checkup:** About how long has it been since you last visited a doctor for a routine checkup?

Self-Reported Health Status

- **General Health:** Would you say that in general your health is excellent, very good, good, fair, or poor? *(Core Section 1: Health Status)*
- **Physical Health:** Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good? *(Core Section 2: Healthy Days)*
- **Mental Health:** Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good? *(Core Section 2: Healthy Days)*

Health Conditions

- **Arthritis:** Has a doctor, nurse, or other health professional ever told you that you had some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia? *(Core Section 7: Chronic Health Conditions)*
- **Cancer** *(All questions from Core Section 7: Chronic Health Conditions):*
    - Has a doctor, nurse, or other health professional ever told you that you had skin cancer that is not melanoma?
    - Has a doctor, nurse, or other health professional ever told you that you had melanoma or any other types of cancer?
- **Cardiovascular Disease (CVD)** *(All questions from Core Section 7: Chronic Health Conditions):*
    - Has a doctor, nurse, or other health professional ever told you that you had a heart attack, also called a myocardial infarction?
    - Has a doctor, nurse, or other health professional ever told you that you had angina or coronary heart disease?
    - Has a doctor, nurse, or other health professional ever told you that you had a stroke?
- **Chronic Obstructive Pulmonary Disease (COPD):** Has a doctor, nurse, or other health professional ever told you that you had COPD (chronic obstructive pulmonary disease), emphysema, or chronic bronchitis? *(Core Section 7: Chronic Health Conditions)*

Health Conditions (continued)

- **COVID-19:** Has a doctor, nurse, or other health professional ever told you that you tested positive for COVID-19? *(Emerging Core Section: Long-term COVID Effects)*
- **Diabetes:** Has a doctor, nurse, or other health professional ever told you that you had diabetes? *(Core Section 7: Chronic Health Conditions)*
- **Disability** *(All questions from Core Section 9: Disability):*
    - Are you deaf or do you have serious difficulty hearing?
    - Are you blind or do you have serious difficulty seeing, even when wearing glasses?
    - Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions?
    - Do you have serious difficulty walking or climbing stairs?
    - Do you have difficulty dressing or bathing?
    - Because of a physical, mental, or emotional condition, do you have difficulty doing errands alone such as visiting a doctor's office or shopping?
- **Depression:** Has a doctor, nurse, or other health professional ever told you that you had a depressive disorder (including depression, major depression, dysthymia, or minor depression)? *(Core Section 7: Chronic Health Conditions)*
- **Long COVID-19 Symptoms:** Did you have any symptoms lasting 3 months or longer that you did not have prior to having coronavirus or COVID-19*? (Emerging Core Section: Long-term COVID Effects)*
- **Obesity** *(All questions from Core Section 8: Demographics):*
    - About how much do you weight without shoes?
    - About how tall are you without shoes?

Health Risk Behaviors

- **Current Binge Drinking** *(All questions from Core Section 14: Alcohol Consumption):*
    - During the past 30 days, how many days per week or per month did you have at least one drink of any alcoholic beverage?
    - Considering all types of alcoholic beverages, how many times during the past 30 days did you have 5 or more drinks for men or 4 or more drinks for women on an occasion?
- **Current Cigarette Smoking** *(All questions from Core Section 12: Tobacco Use)***:**
    - Have you smoked at least 100 cigarettes in your entire life?
    - Do you now smoke cigarettes every day, some days, or not at all?
- **Current E-Cigarette Use:** Would you say you have never used e-cigarettes or other electronic vaping products in your entire life or now use them every day, use them some days, or used them in the past but do not currently use them at all? *(Core Section 12: Tobacco Use)*
- **Current Heavy Drinking** *(All questions from Core Section 14: Alcohol Consumption):*
    - During the past 30 days, how many days per week or per month did you have at least one drink of any alcoholic beverage?
    - During the past 30 days, on the days when you drank, about how many drinks did you drink on the average?
- **Current Illicit Marijuana Use:** During the past 30 days, on how many days did you use marijuana or cannabis? *(Module 17: Marijuana Use)*

Health Risk Behaviors (continued)

- **HIV Risk Behaviors** *(From Core Section 16: HIV/AIDS)***:**

  I am going to read you a list. When I am done, please tell me if any of the situations apply to you. You do not need to tell me which one.

  - You have injected any drug other than those prescribed for you in the past year.
  - You have been treated for a sexually transmitted disease or STD in the past year.
  - You have given or received money or drugs in exchange for sex in the past year.
  - You had anal sex without a condom in the past year.
  - You had four or more sex partners in the past year.

  Do any of these situations apply to you?
- **Sedentary Lifestyle:** During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise? *(Core Section 4: Exercise)*

Social Determinants of Health *(All from Module 16: Social Determinants and Health Equity)*

- **Life Satisfaction:** In general, how satisfied are you with your life?
- **Social/Emotional Support:** How often do you get the social and emotional support that you need?
- **Social Isolation:** How often do you feel socially isolated from others?
- **Lost Employment/Reduced Hours:** In the past 12 months have you lost employment or had reduced hours?
- **Receiving Food Stamps/SNAP:** During the past 12 months, have you received food stamps, also called SNAP, the Supplemental Nutrition Assistance Program on an EBT card?
- **Food Insecurity:** During the past 12 months how often did the food that you bought not last, and you didn't have money to get more?
- **Housing Insecurity:** During the last 12 months, was there a time when you were not able to pay your mortgage, rent or utility bills?
- **Threatened Utilities:** During the last 12 months was there a time when an electric, gas, oil, or water company threatened to shut off services?
- **Lack of Reliable Transportation:** During the past 12 months has a lack of reliable transportation kept you from medical appointments, meetings, work, or from getting things needed for daily living?
- **Stress:** Stress means a situation in which a person feels tense, restless, nervous or anxious or is unable to sleep at night because their mind is troubled all the time. Within the last 30 days, how often have you felt this kind of stress?

Prevalence of Inadequate Sleep

In this report, a respondent is considered to have inadequate sleep if they reported that, on average, they get fewer than 7 hours of sleep in a 24-hour period.

Overall

- Approximately 3 in 8 adults (37.8%) reported inadequate sleep.

Sex (Figure 1.1)

- The percentage of having inadequate sleep was **higher** among **men** (38.3%) compared to women (37.4%). However, the difference was **not statistically significant**.

Race/Ethnicity (Figure 1.2)

- The percentage of having inadequate sleep was **significantly higher** among **Black, Non-Hispanic (NH) adults** (42.2%) compared to White, NH adults (35.1%). The percentage among adults of other races/ethnicities (37.5%) was not significantly different from that of the other race groups.

Age (Figure 1.3)

- The percentage of having inadequate sleep was **significantly lower** among adults aged **65+ years** (30.2%) compared to adults aged 35-44 years (44.4%), 45-54 years (42.7%), and 55-64 years (39.8%).

Educational Attainment (Figure 1.4)

- The percentage of having inadequate sleep was **significantly higher** among adults who had completed **some college post-high school** (42.5%) compared to adults whose highest level of education was high school graduation (35.6%) and college graduation (31.3%).

Annual Household Income (Figure 1.5)

- The percentage of having inadequate sleep was **significantly higher** among adults whose annual household income was **less than 15,000** (42.8%) **and $15,000 to $24,999** (45.3%) compared to adults who earned $75,000 or more (30.9%).

Trend (Figure 1.6)

- The percentage of having inadequate sleep **increased** from 36.4% in 2014 to 37.8% in 2022; however, the difference between the two estimates was **not statistically significant**.

Figure 1.1. Percentage of Respondents With Inadequate Sleep by Sex

Figure 1.2. Percentage of Respondents With Inadequate Sleep by Race/Ethnicity

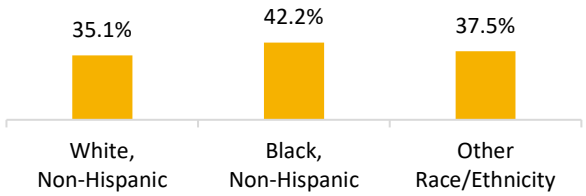


Figure 1.3. Percentage of Respondents With Inadequate Sleep by Age

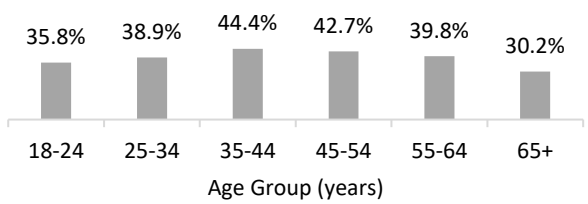


Figure 1.4. Percentage of Respondents With Inadequate Sleep by Education Level

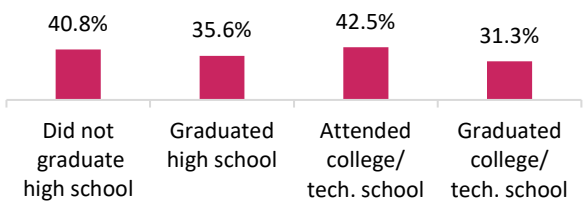


Figure 1.5. Percentage of Respondents With Inadequate Sleep by Annual Household Income

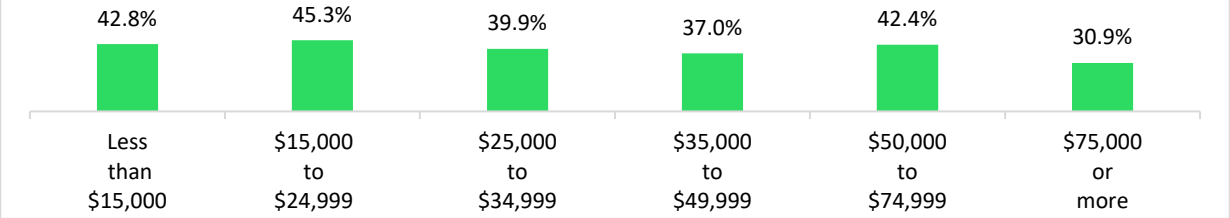


Figure 1.6. 2014-2022 Trend of Inadequate Sleep

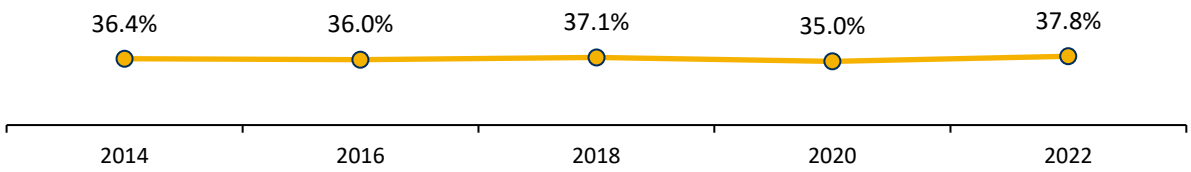


TABLE 1. Prevalence of Inadequate Sleep
Adults Who Received Fewer Than 7 Hours of Sleep in a 24-Hour Period

DEMOGRAPHIC GROUPS	RESPONDENTS		Yes		
	TOTAL	WEIGHTED	N(1)	%(2)	C.I. (95%)
TOTAL	4,169	2,229,733	1,536	37.8	35.9-39.8
Male	1,841	1,060,509	696	38.3	35.5-41.1
Female	2,328	1,169,223	840	37.4	34.7-40.1
White, Non-Hispanic (NH)	2,447	1,254,853	822	35.1	32.6-37.6
Black, Non-Hispanic (NH)	1,485	742,495	618	42.2	38.9-45.5
Other Races/Ethnicities	144	172,848	55	37.5	28.1-46.9
18-24 years	422	290,563	151	35.8	29.9-41.8
25-34 years	560	374,968	230	38.9	34.0-43.8
35-44 years	638	354,512	269	44.4	39.6-49.3
45-54 years	676	317,996	293	42.7	38.1-47.3
55-64 years	756	358,820	277	39.8	34.8-44.7
65+ years	1,066	497,590	302	30.2	26.3-34.1
Less than H.S.	369	313,480	139	40.8	34.1-47.5
H.S. or G.E.D.	1,074	670,421	395	35.6	32.2-39.1
Some Post-H.S.	1,310	767,706	550	42.5	39.2-45.9
College Graduate	1,404	472,505	449	31.3	28.3-34.3
Less than $15,000	285	160,201	127	42.8	35.2-50.4
$15,000-$24,999	463	249,447	198	45.3	39.3-51.2
$25,000-$34,999	534	305,850	208	39.9	34.3-45.5
$35,000-$49,999	554	288,152	218	37.0	32.0-42.0
$50,000-$74,999	557	294,110	211	42.4	36.6-48.2
$75,000+	1,005	506,022	310	30.9	27.3-34.6

(1) Unweighted number
(2) Weighted percent
Note: Denominator excludes respondents with do not know/refused/missing responses

Inadequate Sleep and Health Care Access

CONSIDERATIONS

- When interpreting these results, it is important to keep in mind the existence of potential confounding factors, such as socioeconomic characteristics. For example, the percentage of having inadequate sleep is highest among lower annual household income groups, which may also have higher rates of not having any health insurance.
- To help clarify the relationship between inadequate sleep and health care access, we have included results of logistic regression analyses. The odds ratios presented below were adjusted by age, race, sex, education level, and annual household income.

NO HEALTH CARE COVERAGE

- The percentage of having no health care coverage was **higher** among adults having **inadequate sleep** (11.4%) compared to adults having at least 7 hours of sleep (9.5%). However, the difference was **not statistically significant**.
- The odds of not having any health care coverage among adults having inadequate sleep are 1.0 (95% CI 0.7-1.4) times the odds for adults having at least 7 hours of sleep. In other words, the odds of not having any health care coverage are **the same** between adults who have inadequate sleep and adults who have adequate sleep.

NO PERSONAL HEALTH CARE PROVIDER

- The percentage of not having a personal health care provider was **higher** among adults having **inadequate sleep** (19.1%) compared to adults having at least 7 hours of sleep (17.9%). However, the difference was **not statistically significant**.
- The odds of not having a personal health care provider among adults having inadequate sleep are 1.0 (95% CI 0.8-1.2) times the odds for adults having at least 7 hours of sleep. The odds of not having a personal health care provider are **the same** between adults who have inadequate sleep and adults who have adequate sleep.

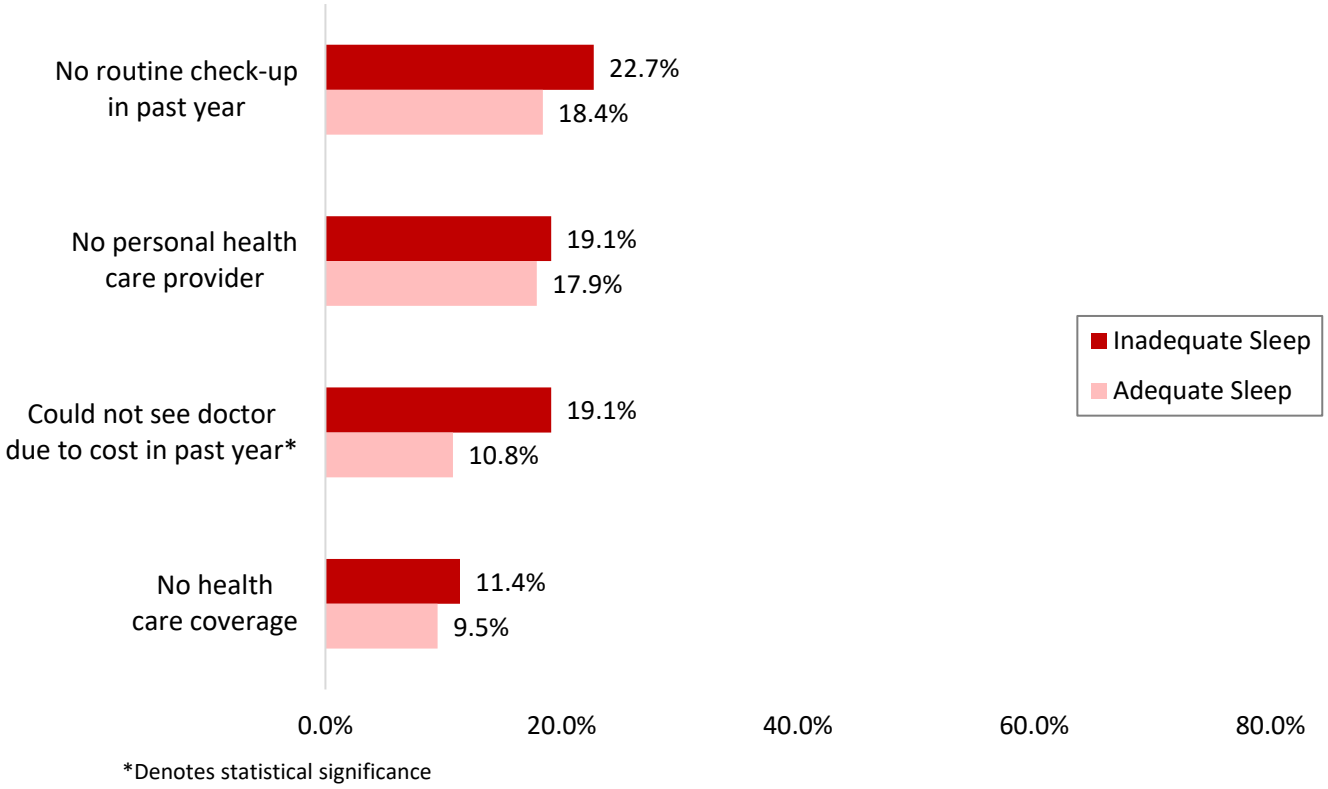
COULD NOT SEE A DOCTOR DUE TO COST IN PAST 12 MONTHS

- The percentage of not being able to see a doctor due to cost was **significantly higher** among adults having **inadequate sleep** (19.1%) compared to adults having at least 7 hours of sleep (10.8%).
- The odds of not being able to see a doctor due to cost among adults having inadequate sleep are 1.7 (95% CI 1.3-2.2) times the odds for adults having at least 7 hours of sleep. The odds of not being able to see a doctor due to cost are **increased by 70%** for adults who have inadequate sleep. This finding is **statistically significant**.

NO ROUTINE CHECK-UP IN PAST YEAR

- The percentage of not having a routine check-up in the past year was **higher** among adults having **inadequate sleep** (22.7%) compared to adults having at least 7 hours of sleep (18.4%). However, the difference was **not statistically significant**.
- The odds of not having a routine check-up in the past year among adults having inadequate sleep are 1.3 (95% CI 1.1-1.6) times the odds for adults having at least 7 hours of sleep. The odds of not being able to see a doctor due to cost are **increased by 30%** for adults who have inadequate sleep. This finding is **statistically significant**.

Figure 2.1. Health Care Access by Inadequate Sleep



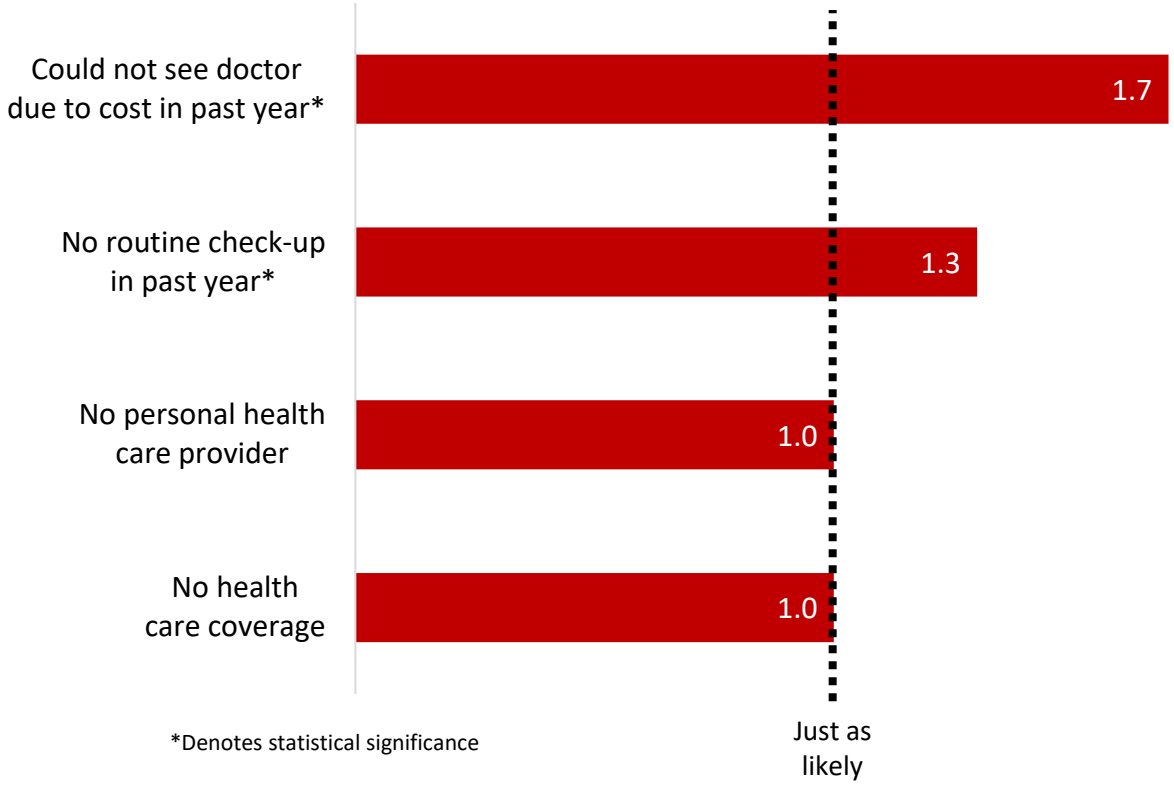
*Denotes statistical significance

TABLE 2. Inadequate Sleep and Health Care Access

	RESPONDENTS		Inadequate Sleep			Adequate Sleep		
	TOTAL	WEIGHTED	N(1)	%(2)	C.I. (95%)	N(1)	%(2)	C.I. (95%)
No health care coverage	337	215,917	152	11.4	9.2-13.7	185	9.5	7.8-11.2
No personal health care provider	660	406,480	281	19.1	16.7-21.6	379	17.9	15.8-19.9
Could not see doctor due to cost in past year	527	310,312	276	19.1	16.4-21.7	251	10.8	9.2-12.5
No routine check-up in past year	746	436,211	319	22.7	19.9-25.5	427	18.4	16.5-20.4

(1) Unweighted number
(2) Weighted percent
Note: Denominator excludes respondents with do not know/refused/missing responses

Figure 2.2. Adjusted Odds Ratios for Health Care Access Factors
Inadequate sleep compared to baseline for at least 7 hours of sleep



Inadequate Sleep and Self-Reported Health Status

CONSIDERATIONS

- When interpreting these results, it is important to keep in mind the existence of potential confounding factors, such as socioeconomic characteristics. For example, the percentage of inadequate sleep is highest among lower annual household income groups, which may also have higher rates of self-reported poor mental health.
- To help clarify the relationship between inadequate sleep and self-reported health status, we have included results of logistic regression analyses. The odds ratios presented below were adjusted by age, race, sex, education level, and annual household income.

FAIR OR POOR HEALTH

- The percentage of having fair or poor self-reported health was **significantly higher** among adults having **inadequate sleep** (30.4%) compared to adults having at least 7 hours of sleep (20.3%).
- The odds of having fair or poor health among adults having inadequate sleep are 1.7 (95% CI 1.4-2.1) times the odds for adults having at least 7 hours of sleep. In other words, the odds of having fair or poor health are **increased by 70%** for adults having inadequate sleep. This finding was **statistically significant**.

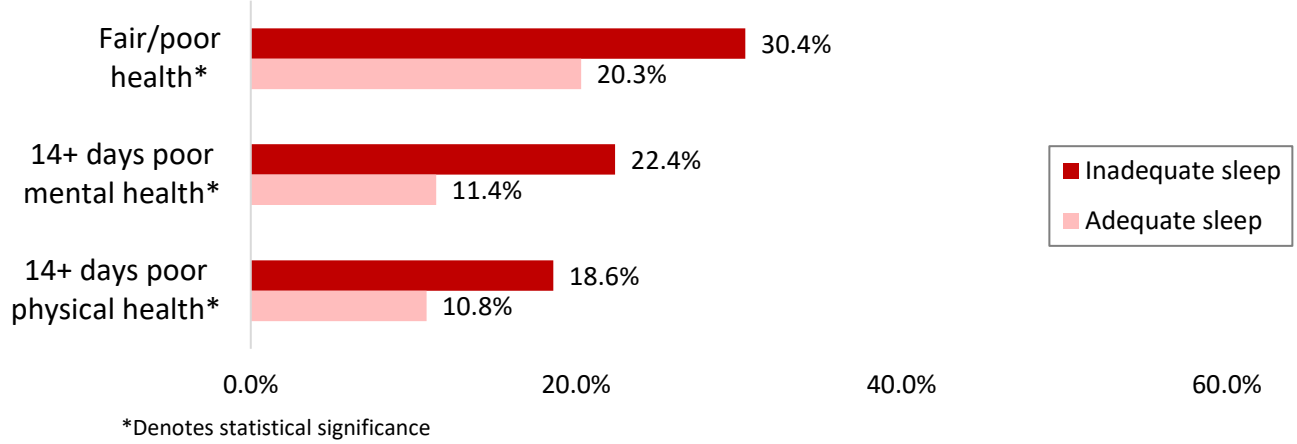
POOR PHYSICAL HEALTH

- The percentage of having 14+ poor physical health days was **significantly higher** among adults having **inadequate sleep** (18.6%) compared to adults having at least 7 hours of sleep (10.8%).
- The odds of having 14 days or more of poor physical health in the past 30 days among adults having inadequate sleep are 1.9 (95% CI 1.5-2.4) times the odds for adults having at least 7 hours of sleep. The odds of having 14 days or more of poor physical health in the past 30 days are **increased by 90%** for adults having inadequate sleep. This finding was **statistically significant**.

POOR MENTAL HEALTH (HEALTHY DAYS)

- The percentage of having 14+ poor mental health days was **significantly higher** among adults having **inadequate sleep** (22.4%) compared to adults having at least 7 hours of sleep (11.4%).
- The odds of having 14 days or more of poor mental health in the past 30 days among adults having inadequate sleep are 2.2 (95% CI 1.7-2.8) times the odds for adults having at least 7 hours of sleep. The odds of having 14 days or more of poor mental health in the past 30 days are **increased by 120%** for adults having inadequate sleep. This finding was **statistically significant**.

Figure 3.1. Self-Reported Health Status by Inadequate Sleep

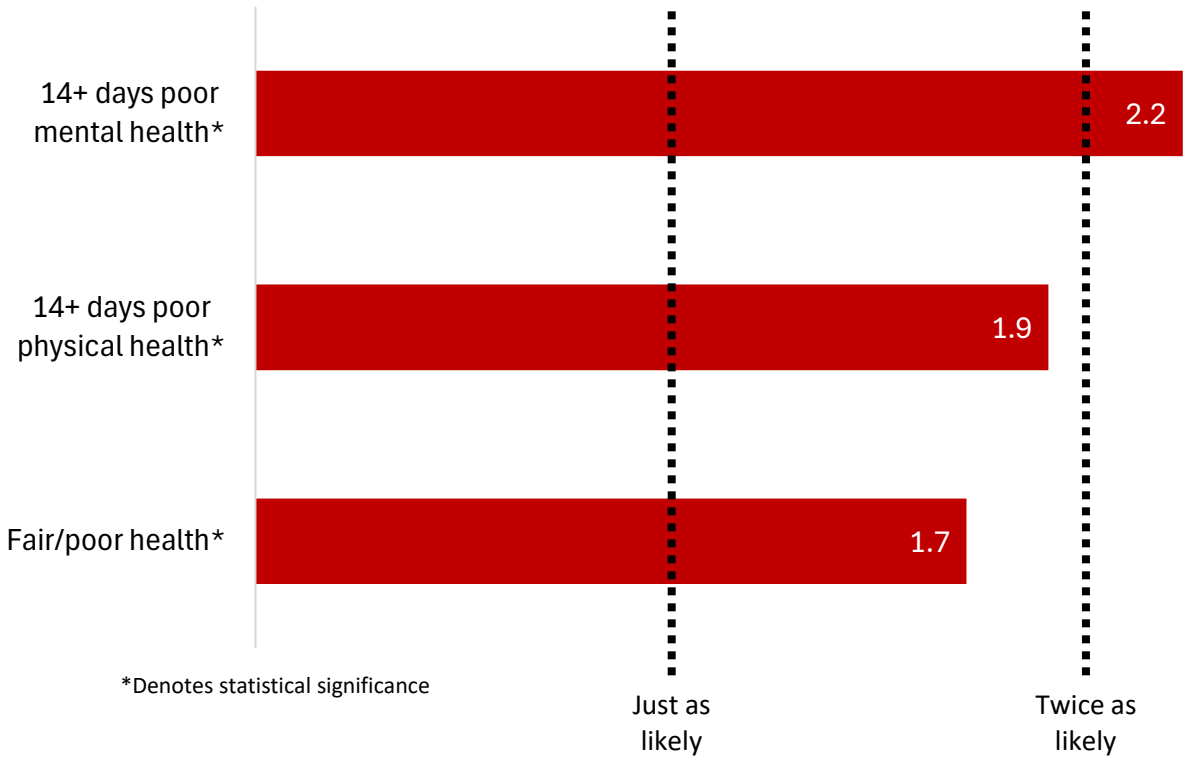


*Denotes statistical significance

TABLE 3. Inadequate Sleep and Self-Reported Health Status								
	RESPONDENTS		Inadequate Sleep			Adequate Sleep		
	TOTAL	WEIGHTED	N(1)	%(2)	C.I. (95%)	N(1)	%(2)	C.I. (95%)
Fair or poor health	960	536,070	443	30.4	27.3-33.5	517	20.3	18.3-22.3
14+ days poor physical health	547	297,485	271	18.6	15.9-21.2	276	10.8	9.2-12.4
14+ days poor mental health	597	338,755	329	22.4	19.6-25.2	268	11.4	9.8-13.0

(1) Unweighted number
(2) Weighted percent
Note: Denominator excludes respondents with do not know/refused/missing responses

Figure 3.2. Adjusted Odds Ratios for Self-Reported Health Status Factors
Inadequate sleep compared to baseline for at least 7 hours of sleep



Inadequate Sleep and Health Conditions

CONSIDERATIONS

- When interpreting these results, it is important to keep in mind the existence of potential confounding factors, such as socioeconomic characteristics. For example, the percentage of inadequate sleep use is highest among lower annual household income groups, which may also have higher rates of some of the examined health conditions.
- To help clarify the relationship between inadequate sleep and health conditions, we have included results of logistic regression analyses. The odds ratios presented below were adjusted by age, race, sex, education level, and annual household income.

ARTHRITIS

- The percentage of having arthritis was **significantly higher** among adults having **inadequate sleep** (37.1%) compared to adults having at least 7 hours of sleep (31.3%).
- The odds of ever having arthritis among adults having inadequate sleep are 1.5 (95% CI 1.2-1.9) times the odds for adults having at least 7 hours of sleep. In other words, the odds of ever having arthritis are **increased by 50%** for adults having inadequate sleep. This finding was **statistically significant**.

CANCER

- The percentage of ever having any type of cancer was **lower** among adults having **inadequate sleep** (10.1%) compared to adults having at least 7 hours of sleep (11.7%). However, the difference was **not statistically significant**.
- The odds of ever having cancer among adults having inadequate sleep are 1.1 (95% CI 0.8-1.4) times the odds for adults having at least 7 hours of sleep. The odds of ever having cancer are **increased by 10%** for adults having inadequate sleep. This finding was **not statistically significant**.

CARDIOVASCULAR DISEASE (CVD)

- The percentage of having CVD was **higher** among adults having **inadequate sleep** (13.7%) compared to adults having at least 7 hours of sleep (11.0%). However, the difference was **not statistically significant**.
- The odds of ever having CVD among adults having inadequate sleep are 1.5 (95% CI 1.1-2.0) times the odds for adults having at least 7 hours of sleep. The odds of ever having CVD are **increased by 50%** for adults having inadequate sleep. This finding was **statistically significant**.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

- The percentage of ever having COPD was **significantly higher** among adults having **inadequate sleep** (14.0%) compared to adults having at least 7 hours of sleep (8.1%).
- The odds of ever having COPD among adults having inadequate sleep are 2.0 (95% CI 1.4-2.7) times the odds for adults having at least 7 hours of sleep. The odds of ever having COPD are **increased by 100%** for adults having inadequate sleep. This finding was **statistically significant**.

COVID-19

- The percentage of ever testing positive for COVID-19 was **the same** between adults having **inadequate sleep** (41.0%) and adults having at least 7 hours of sleep (41.0%).
- The odds of ever having COVID-19 among adults having inadequate sleep are 1.0 (95% CI 0.8-1.2) times the odds for adults having at least 7 hours of sleep. The odds of ever having COVID-19 are **the same** for adults having inadequate sleep compared to adults having at least 7 hours of sleep.

DEPRESSION

- The percentage of ever having depression was **significantly higher** among adults having **inadequate sleep** (27.1%) compared to adults having at least 7 hours of sleep (16.6%).
- The odds of ever having depression among adults having inadequate sleep are 1.7 (95% CI 1.4-2.1) times the odds for adults having at least 7 hours of sleep. The odds of ever having depression are **increased by 70%** for adults having inadequate sleep. This finding was **statistically significant**.

DIABETES

- The percentage of ever having diabetes was **higher** among adults having **inadequate sleep** (16.9%) compared to adults having at least 7 hours of sleep (14.2%). However, the difference was **not statistically significant**.
- The odds of ever having diabetes among adults having inadequate sleep are 1.3 (95% CI 1.0-1.6) times the odds for adults having at least 7 hours of sleep. The odds of ever having diabetes are **increased by 30%** for adults having inadequate sleep. This finding was **not statistically significant**.

DISABILITY

- The percentage of having a disability was **significantly higher** among adults having **inadequate sleep** (43.7%) compared to adults having at least 7 hours of sleep (33.4%).
- The odds of having a disability among adults having inadequate sleep are 1.6 (95% CI 1.3-1.9) times the odds for adults having at least 7 hours of sleep. The odds of having a disability are **increased by 60%** for adults having inadequate sleep. This finding was **statistically significant**.

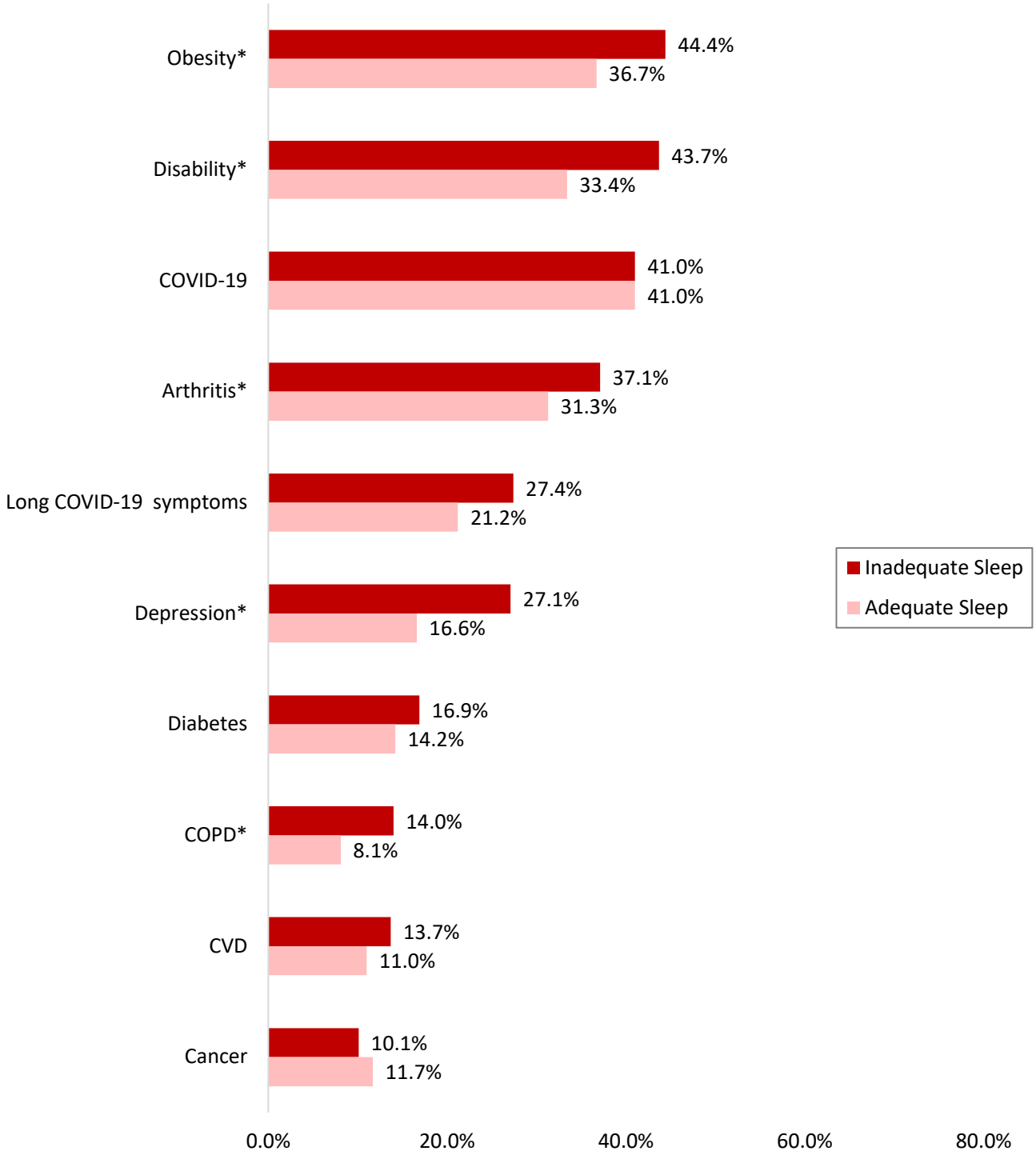
LONG COVID-19 SYMPTOMS

- The percentage of long COVID-19 symptoms was **higher** among adults having **inadequate sleep** (27.4%) compared to adults having at least 7 hours of sleep (21.2%). However, the difference was **not statistically significant**.
- The odds of ever having long COVID-19 symptoms among adults having inadequate sleep are 1.5 (95% CI 1.1-2.0) times the odds for adults having at least 7 hours of sleep. The odds of ever having COPD are **increased by 50%** for adults having inadequate sleep. This finding was **statistically significant**.

OBESITY

- The percentage of obesity was **significantly higher** among adults having **inadequate sleep** (44.4%) compared to adults having at least 7 hours of sleep (36.7%).
- The odds of ever having obesity among adults having inadequate sleep are 1.3 (95% CI 1.1-1.5) times the odds for adults having at least 7 hours of sleep. The odds of ever having obesity are **increased by 30%** for adults having inadequate sleep. This finding was **statistically significant**.

Figure 4.1. Health Conditions by Inadequate Sleep

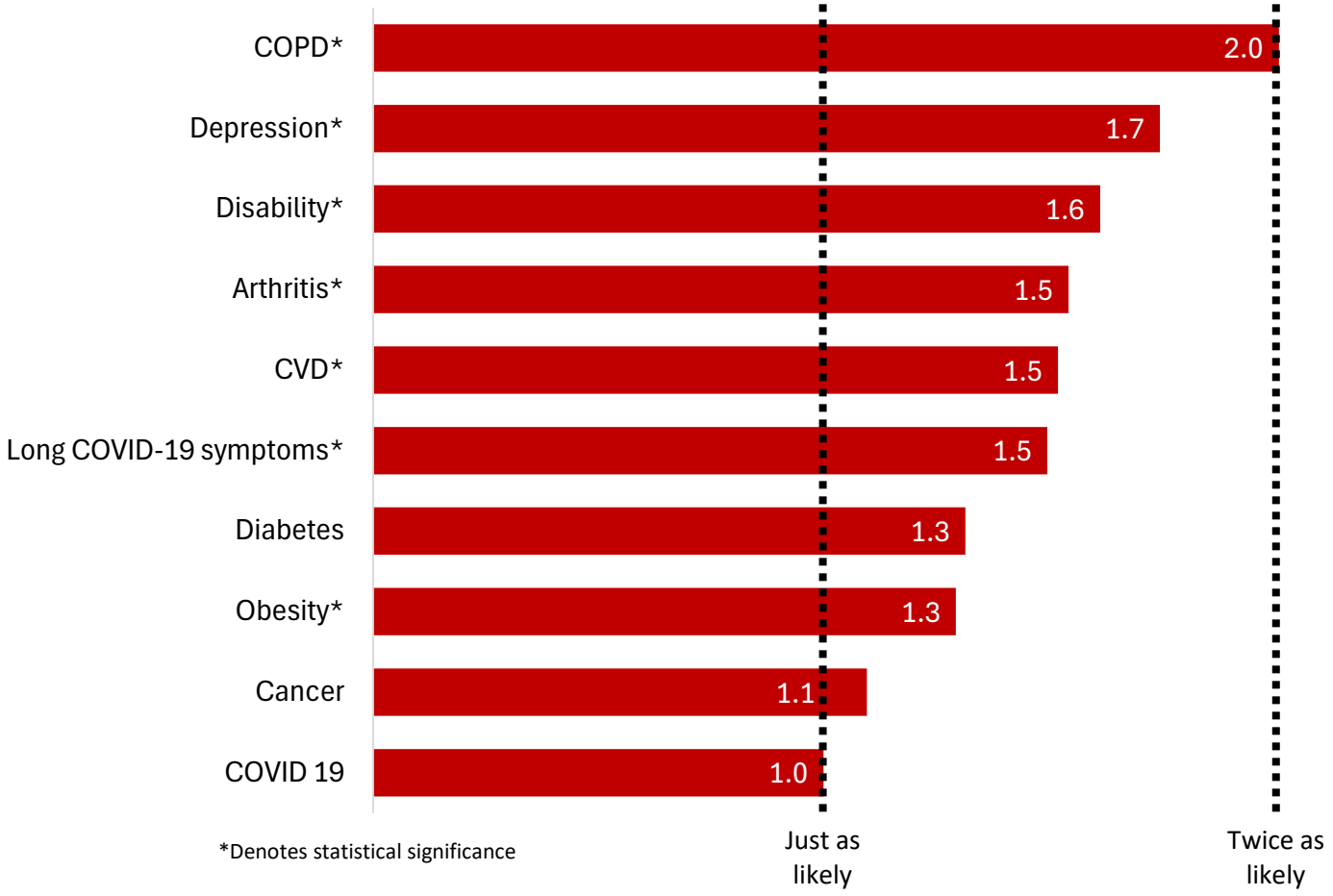


*Denotes statistical significance

TABLE 4. Inadequate Sleep and Health Conditions								
	RESPONDENTS		Inadequate Sleep			Adequate Sleep		
	TOTAL	WEIGHTED	N(1)	%(2)	C.I. (95%)	N(1)	%(2)	C.I. (95%)
Arthritis	1,443	740,820	600	37.1	33.9-40.2	843	31.3	28.9-33.6
Cancer	501	244,926	156	10.1	8.0-12.1	345	11.7	10.1-13.3
Cardiovascular Disease (CVD)	511	26,495	209	13.7	11.4-16.0	302	11.0	9.4-12.5
Chronic Obstructive Pulmonary Disease (COPD)	383	228,672	186	14.0	11.4-16.7	197	8.1	6.7-9.4
COVID-19	1,591	848,596	605	41.0	37.7-44.3	986	41.0	38.5-43.5
Depression	830	454,710	412	27.1	24.3-30.0	418	16.6	14.7-18.4
Diabetes	685	338,440	259	16.9	14.3-19.5	426	14.2	12.6-15.9
Disability	1,498	798,427	667	43.7	40.4-47.0	831	33.4	30.9-35.8
Long COVID-19 Symptoms	373	196,624	162	27.4	22.8-32.1	211	21.2	17.9-24.4
Obesity	1,602	812,606	673	44.4	41.0-47.7	929	36.7	34.2-39.1

(1) Unweighted number
(2) Weighted percent
Note: Denominator excludes respondents with do not know/refused/missing responses

Figure 4.2. Adjusted Odds Ratios for Health Conditions
Inadequate sleep compared to baseline for at least 7 hours of sleep



Inadequate Sleep and Health Risk Behaviors

CONSIDERATIONS

- When interpreting these results, it is important to keep in mind the existence of potential confounding factors, such as socioeconomic characteristics. For example, the percentage of inadequate sleep is highest among lower annual household income groups, which may also have higher rates of some of the examined health risk behaviors.
- To help clarify the relationship between inadequate sleep and health risk behaviors, we have included results of logistic regression analyses. The odds ratios presented below were adjusted by age, race, sex, education level, and annual household income.

BINGE DRINKING

- The percentage of binge drinking was **higher** among adults having **inadequate sleep** (15.6%) compared to adults having at least 7 hours of sleep (12.4%). However, the difference was **not statistically significant**.
- The odds of binge drinking among adults having inadequate sleep are 1.3 (95% CI 1.0-1.7) times the odds for adults having at least 7 hours of sleep. In other words, the odds of binge drinking are **increased by 30%** for adults having inadequate sleep. This finding was **not statistically significant**.

CURRENT CIGARETTE SMOKING

- The percentage of current cigarette smoking was **significantly higher** among adults having **inadequate sleep** (22.0%) compared to adults having at least 7 hours of sleep (14.2%).
- The odds of current cigarette smoking among adults having inadequate sleep are 1.5 (95% CI 1.2-1.9) times the odds for adults having at least 7 hours of sleep. The odds of current cigarette smoking are **increased by 50%** for adults having inadequate sleep. This finding was **statistically significant**.

CURRENT E-CIGARETTE USE

- The percentage of current e-cigarette use was **significantly higher** among adults having **inadequate sleep** (11.9%) compared to adults having at least 7 hours of sleep (7.9%).
- The odds of current e-cigarette use among adults having inadequate sleep are 1.5 (95% CI 1.2-1.9) times the odds for adults having at least 7 hours of sleep. The odds of current e-cigarette use are **increased by 50%** for adults having inadequate sleep. This finding was **statistically significant**.

CURRENT HEAVY DRINKING

- The percentage of current heavy drinking was **higher** among adults having **inadequate sleep** (6.6%) compared to adults having at least 7 hours of sleep (5.5%). However, the difference was **not statistically significant**.
- The odds of heavy drinking among adults having inadequate sleep are 1.3 (95% CI 0.9-1.9) times the odds for adults having at least 7 hours of sleep. The odds of heavy drinking are **increased by 30%** for adults having inadequate sleep. This finding was **not statistically significant**.

CURRENT ILLICIT MARIJUANA USE

- The percentage of current illicit marijuana use was **higher** among adults having **inadequate sleep** (13.9%) compared to adults having at least 7 hours of sleep (9.8%). However, the difference was **not statistically significant**.
- The odds of current illicit marijuana use among adults having inadequate sleep are 1.2 (95% CI 0.9-1.6) times the odds for adults having at least 7 hours of sleep. The odds of current illicit marijuana use are **increased by 20%** for adults having inadequate sleep. This finding was **not statistically significant**.

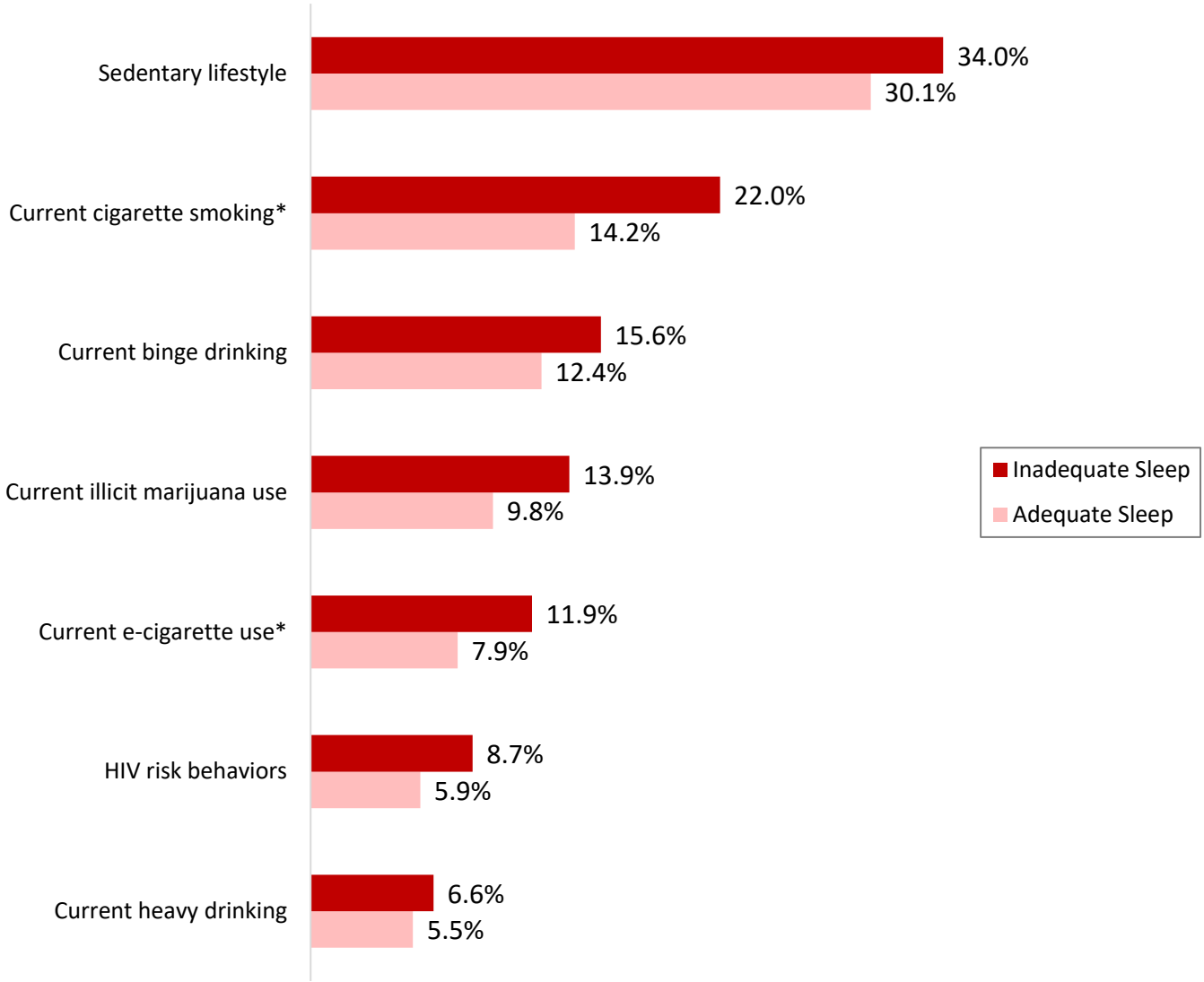
HIV Risk Behaviors

- The percentage of HIV risk behaviors was **higher** among adults having **inadequate sleep** (8.7%) compared to adults having at least 7 hours of sleep (5.9%). However, the difference was **not statistically significant**.
- The odds of HIV risk behaviors among adults having inadequate sleep are 1.5 (95% CI 1.03-2.14) times the odds for adults having at least 7 hours of sleep. The odds of HIV risk behaviors are **increased by 50%** for adults having inadequate sleep. This finding was **statistically significant**.

Sedentary Lifestyle

- The percentage of having a sedentary lifestyle was **higher** among adults having **inadequate sleep** (34.0%) compared to adults having at least 7 hours of sleep (30.1%). However, the difference was **not statistically significant**.
- The odds of sedentary lifestyle among adults having inadequate sleep are 1.1 (95% CI 0.9-1.4) times the odds for adults having at least 7 hours of sleep. The odds of sedentary lifestyle are **increased by 10%** for adults having inadequate sleep. This finding was **not statistically significant**.

Figure 5.1. Health Risk Behaviors by Inadequate Sleep

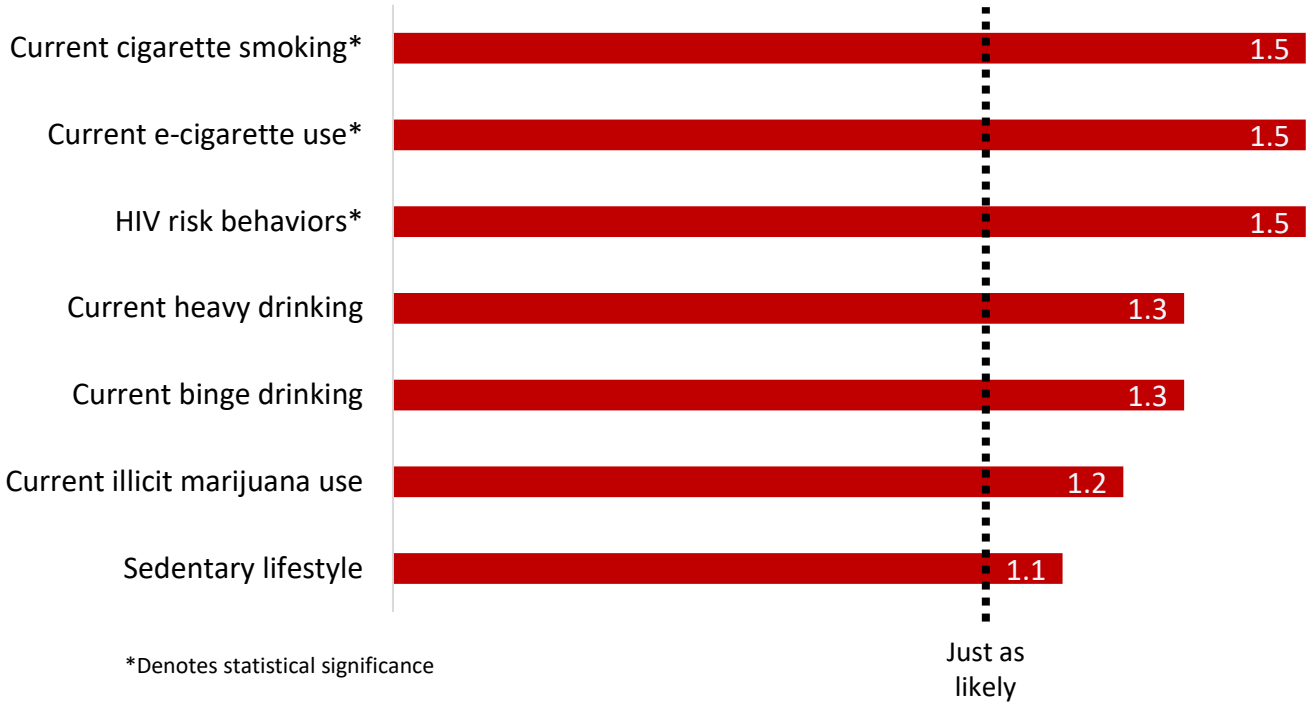


*Denotes statistical significance

TABLE 5. Inadequate Sleep and Health Risk Behaviors								
	RESPONDENTS		Inadequate Sleep			Adequate Sleep		
	TOTAL	WEIGHTED	N(1)	%(2)	C.I. (95%)	N(1)	%(2)	C.I. (95%)
Current binge drinking	481	276,457	208	15.6	13.1-18.1	273	12.4	10.7-14.1
Current cigarette smoking	619	361,812	286	22.0	19.0-25.0	333	14.2	12.4-15.9
Current e-cigarette use	313	199,932	147	11.9	9.6-14.2	166	7.9	6.5-9.3
Current heavy drinking	214	120,807	85	6.6	4.8-8.3	129	5.5	4.3-6.8
Current illicit marijuana use	326	215,886	157	13.9	11.3-16.6	169	9.8	8.1-11.5
HIV risk behaviors	222	143,751	104	8.7	6.6-10.7	118	5.9	4.6-7.3
Sedentary lifestyle	1,284	701,966	518	34.0	30.8-37.1	766	30.1	27.8-32.4

(1) Unweighted number
(2) Weighted percent
Note: Denominator excludes respondents with do not know/refused/missing responses

Figure 5.2. Adjusted Odds Ratios for Health Risk Behaviors
Inadequate sleep compared to baseline for at least 7 hours of sleep



Inadequate Sleep and Social Determinants of Health

CONSIDERATIONS

- When interpreting these results, it is important to keep in mind the existence of potential confounding factors, such as socioeconomic characteristics. For example, the percentage of inadequate sleep is highest among lower annual household income groups, which may also have higher rates of some of the examined social determinants.
- To help clarify the relationship between inadequate sleep and social determinants of health, we have included results of logistic regression analyses. The odds ratios presented below were adjusted by age, race, sex, education level, and annual household income.

DISSATISFACTION WITH LIFE

- The percentage of being dissatisfied with life was **significantly higher** among adults having **inadequate sleep** (9.2%) compared to adults having at least 7 hours of sleep (4.5%).
- The odds of being dissatisfied with life among adults having inadequate sleep are 2.1 (95% CI 1.5-3.2) times the odds for adults having at least 7 hours of sleep. In other words, the odds of being dissatisfied with life are **increased by 110%** for adults having inadequate sleep. This finding was **statistically significant**.

LACK OF SOCIAL AND EMOTIONAL SUPPORT

- The percentage of sometimes, rarely, or never getting needed social and emotional support was **significantly higher** among adults having **inadequate sleep** (39.5%) compared to adults having at least 7 hours of sleep (26.2%).
- The odds of sometimes, rarely, or never getting needed social and emotional support among adults having inadequate sleep are 1.7 (95% CI 1.4-2.1) times the odds for adults having at least 7 hours of sleep. The odds of sometimes, rarely, or never getting needed social and emotional support are **increased by 70%** for adults having inadequate sleep. This finding was **statistically significant**.

SOCIAL ISOLATION

- The percentage of always, usually, or sometimes feeling socially isolated from others was **significantly higher** among adults having **inadequate sleep** (42.8%) compared to adults having at least 7 hours of sleep (28.1%).
- The odds of always, usually, or sometimes feeling socially isolated from others among adults having inadequate sleep are 1.8 (95% CI 1.4-2.1) times the odds for adults having at least 7 hours of sleep. The odds of always, usually, or sometimes feeling socially isolated from others are **increased by 80%** for adults having inadequate sleep. This finding was **statistically significant**.

LOST EMPLOYMENT/REDUCED HOURS

- The percentage of experiencing lost employment or reduced hours was **significantly higher** among adults having **inadequate sleep** (13.9%) compared to adults having at least 7 hours of sleep (8.5%).
- The odds of losing employment/reduced hours among adults having inadequate sleep are 1.5 (95% CI 1.1-2.0) times the odds for adults having at least 7 hours of sleep. The odds of losing employment/ reduced hours are **increased by 50%** for adults having inadequate sleep. This finding was **statistically significant**.

Receiving Food Stamps/SNAP

- The percentage of receiving food stamps/SNAP was **higher** among adults having **inadequate sleep** (14.1%) compared to adults having at least 7 hours of sleep (11.0%). However, the difference was **not statistically significant**.
- The odds of receiving food stamps/SNAP among adults having inadequate sleep are 1.1 (95% CI 0.8-1.5) times the odds for adults having at least 7 hours of sleep. The odds of receiving food stamps/SNAP are **increased by 10%** for adults having inadequate sleep. This finding was **not statistically significant**.

Food Insecurity

- The percentage of experiencing food insecurity was **significantly higher** among adults having **inadequate sleep** (25.1%) compared to adults having at least 7 hours of sleep (18.2%).
- The odds of experiencing food insecurity among adults having inadequate sleep are 1.3 (95% CI 1.02-1.65) times the odds for adults having at least 7 hours of sleep. The odds of experiencing food insecurity are **increased by 30%** for adults having inadequate sleep. This finding was **statistically significant**.

Housing Insecurity

- The percentage of experiencing housing insecurity was **significantly higher** among adults having **inadequate sleep** (19.3%) compared to adults having at least 7 hours of sleep (11.4%).
- The odds of experiencing housing insecurity among adults having inadequate sleep are 1.5 (95% CI 1.2-2.0) times the odds for adults having at least 7 hours of sleep. The odds of experiencing housing insecurity among are **increased by 50%** for adults having inadequate sleep. This finding was **statistically significant**.

Threatened Utilities

- The percentage of experiencing threatened utilities was **significantly higher** among adults having **inadequate sleep** (14.5%) compared to adults having at least 7 hours of sleep (6.3%).
- The odds of experiencing threatened utilities among adults having inadequate sleep are 2.1 (95% CI 1.6-2.9) times the odds for adults having at least 7 hours of sleep. The odds of experiencing threatened utilities are **increased by 110%** for adults having inadequate sleep. This finding was **statistically significant**.

Lack of Reliable Transportation

- The percentage of experiencing a lack of reliable transportation was **significantly higher** among adults having **inadequate sleep** (13.3%) compared to adults having at least 7 hours of sleep (7.8%).
- The odds of having a lack of reliable transportation among adults having inadequate sleep are 1.5 (95% CI 1.1-2.0) times the odds for adults having at least 7 hours of sleep. The odds of having a lack of reliable transportation are **increased by 50%** for adults having inadequate sleep. This finding was **statistically significant**.

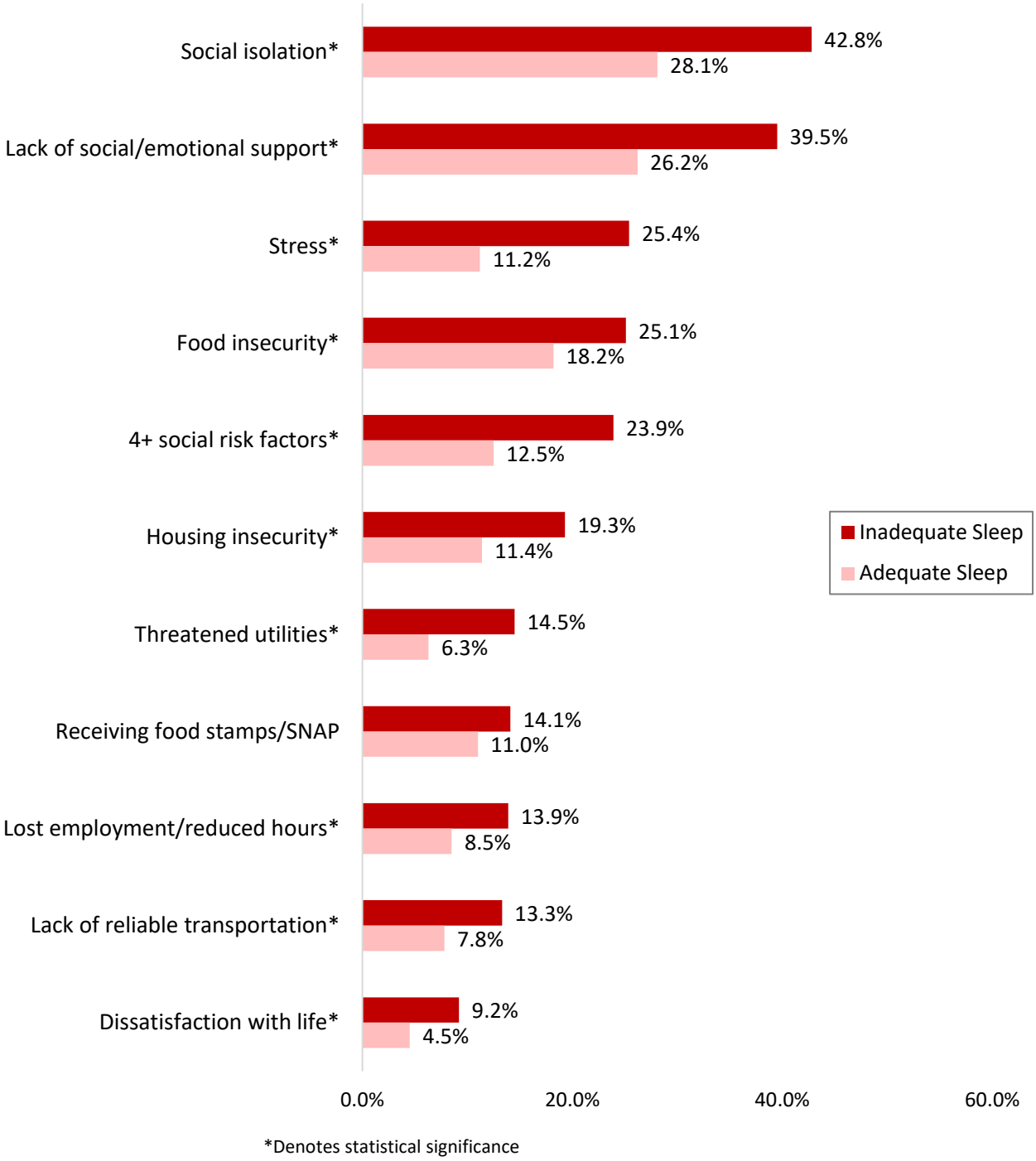
Stress

- The percentage of always or usually feeling stress in the past 30 days was **significantly higher** among adults having **inadequate sleep** (25.4%) compared to adults having at least 7 hours of sleep (11.2%).
- The odds of always or usually feeling stress in the past 30 days among adults having inadequate sleep are 2.5 (95% CI 2.0-3.2) times the odds for adults having at least 7 hours of sleep. The odds of always or usually feeling stress in the past 30 days are **increased by 150%** for adults having inadequate sleep. This finding was **statistically significant**.

Experiencing 4 or More Social Risk Factors

- The percentage of experiencing four or more social risk factors was **significantly higher** among adults having **inadequate sleep** (23.9%) compared to adults having at least 7 hours of sleep (12.5%).
- The odds of experiencing four or more social risk factors among adults having inadequate sleep are 2.0 (95% CI 1.5-2.6) times the odds for adults having at least 7 hours of sleep. The odds of experiencing four or more social risk factors are **increased by 100%** for adults having inadequate sleep. This finding was **statistically significant**.

Figure 6.1. Social Determinants of Health by Inadequate Sleep



*Denotes statistical significance

TABLE 6. Inadequate Sleep and Social Determinants of Health								
	RESPONDENTS		Inadequate Sleep			Adequate Sleep		
	TOTAL	WEIGHTED	N(1)	%(2)	C.I. (95%)	N(1)	%(2)	C.I. (95%)
Dissatisfaction with life	201	122,197	115	9.2	7.1-11.4	86	4.5	3.2-5.8
Lack of social and emotional support	1,062	601,292	515	39.5	36.1-43.0	547	26.2	23.8-28.6
Social isolation	1,185	646,915	563	42.8	39.3-46.3	622	28.1	25.7-30.5
Lost employment or reduced hours	350	203,108	176	13.9	11.5-16.2	174	8.5	7.0-9.9
Receiving food stamps/SNAP	449	235,582	199	14.1	11.6-16.6	250	11.0	9.4-12.6
Food insecurity	709	399,619	329	25.1	22.1-28.1	380	18.2	16.0-20.3
Housing insecurity	509	276,853	261	19.3	16.6-22.0	248	11.4	9.7-13.0
Threatened utilities	321	182,119	176	14.5	12.0-17.1	145	6.3	5.2-7.5
Lack of reliable transportation	342	190,689	177	13.3	11.0-15.6	165	7.8	6.4-9.2
Stress	567	318,338	337	25.4	22.5-28.4	230	11.2	9.5-13.0
Experiencing 4+ social risk factors	542	310,149	303	23.9	20.9-26.9	239	12.5	10.7-14.4

(1) Unweighted number
(2) Weighted percent
Note: Denominator excludes respondents with do not know/refused/missing responses

Figure 6.2. Adjusted Odds Ratios for Social Risk Factors
Inadequate sleep compared to baseline for at least 7 hours of sleep