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Sedentary Behavior in United States Adults: Fall 2019

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Abstract

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Author Contributions

CEM, DB, JNS designed and conducted the research, developed the analysis plan, helped write and revise the paper, and had responsibility for the final content.

SAC, JEF, RPT, PSM contributed to the design of the study, helped develop and refine the analysis plan, contributed to the writing and revision of the paper, and approved the final content.

SP helped refine the analysis plan, completed the statistical analysis, contributed to the writing and revision of the paper, and approved the final content.

CT facilitated reporting of the geographic analysis/figures, contributed to the writing and revision of the paper, and approved the final content.

ES, EL, SK made essential contributions to the interpretation of the results and contributed to the writing and revision of the paper, and approved the final content.

Data described in the manuscript, code book, and analytic code will be made available upon request pending application and approval.

Conflicts of Interest

The authors report no personal of financial conflicts of interest associated with this research report. The results of this study are presented clearly, honestly, and without fabrication, falsification, or inappropriate data manipulation. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the National Cancer Institute or the Centers for Disease Control and Prevention, nor does publication of this report constitute endorsement by the American College of Sports Medicine.

Purpose.—Higher levels of sedentary behavior are associated with early mortality, but the distribution of sedentary time by classes of behavior and demographic groups is poorly described in United States (US) adults. To quantify the amount and sources of sedentary time in US adults we conducted a nationwide survey using a novel validated self-administerd previous-day recall method and compare these values with a commonly used sitting time question.

Methods.—Participants from the AmeriSpeak panel aged 20 to 75 years (N=2,640) completed up to two Activities Completed over Time in 24 Hours (ACT24) previous day recalls. Recalls were conducted on randomly selected days in October and November 2019. Survey sample design were applied to reflect the US population.

Results.—Mean age was 45.3 years, 51% were female, 67% non-Hispanic white, and 37% had a body mass index of ≥30 kg/m^2. US adults reported a mean 9.5 hrs/d of sedentary time (95% confidence interval [CI] 9.4, 9.7 hrs/d), which was 34% more than reported using a common surveillance measure ($p < 0.01$). Most daily sedentary time was accumulated in the leisure and work life domains, with leisure accounting for 47% (4.3 hrs/d [95%CI 4.2, 4.5 hrs/d]) of the total sedentary time. Eighty-two percent of leisure time was spent sedentary, mainly watching television/videos or engaged in internet/computer use.

Conclusions.—US adults appear to spend more time in sedentary behavior than previously thought and the majority of this time is accumulated at work and in leisure-time. Reducing sedentary screen-time during leisure in favor of physically active could be an important intervention target in the effort to increase physical activity in US adults.

Keywords

disease prevention; exercise; physical activity; sitting time; television viewing

INTRODUCTION

Higher levels of sedentary behavior, or too much sitting, is an established risk factor for cardiometabolic diseases and all-cause mortality (1), and reducing sitting time in favor of increased physical activity is now recommended by United States public health agencies (2). Yet, between 2007 and 2016 self-reported daily sitting time appears to have increased from 5.5 to 6.4 hours in United States (US) adults (3)—an unfavorable trend highlighting the need for a better understanding of this modifiable risk factor.

Some information is available about sedentary time in US adults (3–5), although current surveillance data leave important gaps in our understanding of these behaviors. First, the total amount of time US adults spend sedentary each day is not clear because questionnaire-based measures typically used for surveillance may significantly underestimate daily sedentary time (6, 7), likely because of the cognitive challenges associated with recall of these complex and varied behaviors (8, 9). Similar issues may also impact international surveillance efforts (10). Accelerometer-based surveillance measures (11) also appear to underestimate daily sedentary time because of incomplete coverage of the waking day (6), and accurate methods to estimate sedentary time from wrist-worn sensors with more complete wear time have not yet been developed and applied to US population data. A more complete understanding of the amount of daily sedentary time accumulated in the population

would provide insight into the proportion of US adults who may be at increased risk for poor health due to too much sitting. Second, more detailed domain-specific information about sedentary behavior at work, while in transit, doing household chores, and in leisure-time are not currently available from either questionnaire- or accelerometer-based surveillance measures in the US. Absence of this information limits our ability to identify specific behaviors that may be driving the high levels of reported sitting time in the population (3), and to identify the settings most in need of—or potentially amenable to—intervention.

To begin to fill gaps in our understanding of the amount and sources of sedentary time in US adults, we deployed a new approach to surveillance of sedentary behavior in a population-based sample of US adults using previous-day recalls. The objectives were to: 1) estimate the daily sedentary duration (hrs/d) and the prevalence of excessive sedentary time (% > 9.5 hrs/d) and compare these values with a commonly used sitting time question; and 2) describe the sources of sedentary time accumulated on a typical day in major life domains. Previous-day recalls have been shown to capture accurate estimates of mean daily sitting time in convenience samples (6, 12) and can provide detailed information about the life domains within which sedentary behavior accumulates (13, 14).

METHODS

Study population and design

Participants were members of the AmeriSpeak panel, a probability-based survey designed to represent the US population (15, 16). The National Opinion Research Center (NORC) at the University of Chicago developed, maintains, and gathers IRB approved informed consent documents for AmeriSpeak. The initial recruitment rate is 27% and the household retention rate is 86%. Data collection for this study was completed by NORC between 10/16/2019 and 11/11/2019 from a general sample of the AmeriSpeak population 20 to 75 years of age. On an unannounced randomly selected day of the week, participants were sent electronic invitations to complete a short online-survey and a previous-day recall. Those completing the first recall were sent an unannounced invitation to complete a second recall 1–2 weeks later, again on a randomly selected day. Recalls could only be completed on the targeted recall day. The online survey included questions about self-rated health, physical activity, height, and weight. Additional demographic information was derived from previous AmeriSpeak data collection efforts. Race-ethnicity was determined by self-report at enrollment into AmeriSpeak. Participants received $15/recall. Data are available upon request.

Development of survey sample weights

The AmeriSpeak panel is based on a stratified two-stage sampling design. Primary sampling units (PSUs) in the first stage are National Frame Areas and the secondary sampling units are defined from Census tracts or block groups. For estimating variance, the original sampling strata are combined into 47 virtual strata with each stratum divided into 2 to 122 PSUs. To develop the sample weights for this study, we started with the final panel weights calculated for each AmeriSpeak panelist and for each recall we calculated study-specific weights that also adjusted for selection probabilities from the panel, non-response in our

study, and population coverage. Final weights are further adjusted (i.e., raked) to external population totals with respect to age, sex, education, race/Hispanic ethnicity, housing tenure, telephone status, and Census Division derived from the Current Population Survey (15). We calculated study-specific sampling weights for each day of the week separately (e.g., the participants who completed the recall on a Monday are weighted to represent the US population) and then further normalized the weights so each day contributed equally (i.e., after weighting, each day of the week has an equal number of recalls).

Activities completed over time in 24-Hours (ACT24)

Recalls were completed online using a self-administered previous-day tool (6). To complete a recall (via smartphone, tablet, or computer) participants reported how they spent their time sleeping/in-bed, being physically active, and in sedentary behaviors on the previous day (midnight-midnight) by selecting from more than 170 individual activities organized in 14 major categories (see Table, Supplemental Digital Content 1, ACT24 Major Categories and selectable behaviors). After selecting an activity, follow-up questions assessed the duration of the activity, body position, and other details. Activities reported are linked to the Compendium of Physical Activities (17) and each activity was scored to estimate energy expenditure using metabolic equivalents (METs). Sedentary behaviors were defined as those involving sitting/reclining and little energy expenditure (typically ≤ 1.5 METs) outside of time in bed for sleep. Time-use in specific life domains was classified to be consistent with the American Time-use Survey (ATUS) (18) (see Table, Supplemental Digital Content 2, Time-use classifications). During data collection a “provisionally valid” recall was defined as one in which participants reported at least 2 activities and 22 hours of information. After field work was complete additional quality control checks were applied and for recalls with more than one activity reported at the same time, the most active behaviors for the overlapping time period were selected, and the time reported in each behavior was recalculated. An earlier computer-only version of ACT24 was found to be accurate in estimating sedentary time at the population level in comparison to activPAL (6) in middle-aged and older adults, and similar assessment methods have been found to provide useful estimates of domain-specific behaviors (13, 14). In 47 adults 20–73 years of age the current version of ACT24 provided accurate estimates of mean sedentary behavior compared to activPAL (9.1 (SD=2.3) vs. 9.3 (2.1) hrs/d), and a relatively high correlation between measures (Spearman rho=0.61; unpublished observations). ACT24 is freely available for researchers to use and details can be found here (https://dceg.cancer.gov/research/how-we-study/exposure-assessment/physical-activities-completed-over-time-24-hours-act-24).

Questionnaire-based measure of sedentary time

We employed a single question used in the National Health and Nutrition Examination Survey that asks about overall daily sitting, not including sleeping (i.e., How much time do you usually spend sitting on a typical day? “at work, at home, getting to and from places, or with friends, including time spent sitting at a desk, traveling in a car or bus, reading, playing cards, watching television, or using a computer”) (19). In US adults the test-retest reliability of this sitting question is high (r > 0.8) (20) while validity estimates (correlations) with ActiGraph (<100 counts/min) have ranged from low (r=0.12)(20) in US adults to moderate (r=0.47)(21) in Swiss adults.

Statistical analysis

We first described the characteristics for the population, overall and by gender. For continuous variables, we calculated weighted means and standard deviations. For categorical variables, we tabulated the actual (i.e., unweighted) number of participants and the weighted population percentages in each category. Note, we also describe the questionnaire-based sedentary time values and compare them with sedentary time reported on the recall using a paired t-test.

We then described the sedentary behavior of the population using data from both recalls. This approach treats each randomly selected day as a separate observation, and thus interpretations should be focused on sedentary behavior for days rather than individuals. Overall and by demographic categories, we report mean sedentary time (hrs/d) and the proportion of the population with more than 9.5 hours of sedentary behavior per day and associated 95% confidence intervals (95%CI). We chose 9.5 hrs/d to classify excessive sedentary behavior because exceeding that threshold has been associated with significantly increased risk of all-cause mortality in a large meta-analysis of accelerometer-based studies (22). To test for overall associations by demographic factors and for statistical differences between groups, we performed weighted linear and logistic regression with the categorical/ordinal demographic variable as the independent variable using SAS Proc SURVEY with survey weighting as described above. Our primary focus was to test for overall associations with the individual demographic factors, and when statistically significant associations were observed ($p < 0.05$) we then explored more detailed testing within categories (e.g., age 20–29 vs. 70–74 years). We did not adjust for multiple comparisons, but rather provided 95%CIs to aid in understanding differences (or not) between outcome variables.

Finally, we described sedentary behavior patterns over the course of a day. We first identified the total number of sedentary activities in the population and then we calculated the proportion of those activities that started at each minute (e.g. 12:00 am to 11:59 pm) of the day. The distributions of weighted proportions were then smoothed using a kernel smoother.

The *a priori* primary endpoints (outcomes) for this study were overall and domain specific sedentary time. Exploratory analyses were conducted to describe results by time of day. All analyses were conducted using SAS v9.4 and accounted for survey sampling weights and the complex sample design.

RESULTS

Of 15,153 AmeriSpeak panelists invited, 2,877 completed the short survey and at least one provisionally valid recall, for a completion rate of 19.0% (n=2,838 first recalls, n=1,737 second recalls). From 4,575 total recalls, following quality control checks we excluded recalls with more than 1 hr/d of unknown time (gaps; private un-reported time; n=293 [6.4%] recalls), 2 or more hrs/d of overlapping time (n=91 [2.0%] recalls), and recalls with 0 sedentary hours (n=24 [0.5%] recalls). Following exclusions, survey sample weights were recalculated for each valid recall day, among the 2,640 participants with at least one valid recall (n=2,478 first recalls, n=1,689 second recalls). In comparison to US adults, our weighted analytic sample retained a comparable distribution (< 5% difference) of

participants across age, sex, race-ethnicity, education, home ownership, and marital status categories, but included more participants with household income < $75,000 and fewer with income ≥ $125,000 annually [see Table, Supplemental Digital Content 3, Demographic characteristics (%) in the unweighted and weighted samples and the Current Population Survey (CPS)]. Median time to complete ACT24 was 14 minutes (interquartile range = 9 to 24 minutes).”

Mean age of participants was 45.3 years and 51% were females (Table 1). About two-thirds were non-Hispanic-white, 35% had a High School education or less, 41% reported a household income of <$50,000, and 67% were currently working for pay. Thirty-seven percent reported a BMI of 30 kg/m^2 or more and 58% reported meeting the current guideline for aerobic physical activity based on survey responses.

On the single-item questionnaire participants reported an average sitting time of 7.1 hrs/d versus 9.5 hrs/d of sitting time on the previous-day recall—a 2.4 hrs/day (34%) difference in total sedentary time ($p < 0.01$; Table 1). Hereafter, we focus on results from the previous-day recall, where participants also reported spending 8.1 hrs/d in-bed/sleeping and 6.4 hrs/d in physical activity. Fifty percent (50%) of the population of US adults reported spending more than 9.5 hrs/d sedentary on a given day (Figure 1). There was significant variation in the duration (hrs/d) and prevalence of excessive sedentary time (%) by region of the country (Figure 1; p=0.01). The three least sedentary regions were East North Central (9.0 hrs/d), New England (9.3 hrs/d) and South Atlantic (9.3 hrs/d), and the three most sedentary regions were the Middle Atlantic (10.2 hrs/d), East South Central (10.1 hrs/d), and Pacific (9.8 hrs/d) regions.

Men reported more sedentary time than women (9.9 vs. 9.1 hrs/d, $p < 0.01$). Age was significantly associated with sedentary time ($p < 0.01$). Sedentary time was lowest among adults aged 20–29 yrs (9.0 hrs/d) and 30–39 (8.9 hrs/d) and highest among those aged 70–74 yrs (10.9 hrs/d; $p < 0.01$). Race-ethnicity overall was significantly associated with sedentary time (p=0.01) and Asian Americans reported the most (10.5 hrs/d) and Hispanics reported the least (8.9 hrs/d) sedentary time (Figure 2A; see Table, Supplemental Digital Content 4, Mean and 95%CI for Figure 2A).

Most of daily sitting time was accumulated in the leisure and work life domains, with leisure time accounting for 4.3 hrs/d (47% of total) and work 1.9 hrs/d (16% of total) of sedentary time (Figure 2B; see Table, Supplemental Digital Content 5, Mean and 95%CI for Figure 2B). Men reported more sedentary leisure and work time than women (both, $p < 0.05$), and increasing age was strongly associated with greater amounts of leisure-time sitting ($p < 0.01$; Figure 2B). Among the 67% of adults who were currently working, a mean of 3.8 hrs/d of work-related sedentary time was reported on workdays [see Table, Supplemental Digital Content 6, Mean sedentary time (hrs/d) in each domain, by workday, non-workday, and among those unemployed]. Slightly less total sedentary time was reported on workdays compared to non-workdays (9.4 hrs/d vs. 9.7 hrs/d) among those working for pay, with less time reported in sedentary leisure (3.0 hr hrs/d), personal (0.8 hrs/d), household (0.3 hrs/d), and other activities (0.5 hrs/d) on workdays.

Next, we examined the time of day in which the population reported engaging in sedentary behavior in each life domain (Figure 3). Work related sedentary time occurred most frequently between 0600 and 1800 hours with transportation related sitting occurring frequently at the beginning and ends of this time period. Personal care had a tri-phasic pattern, likely driven by mealtimes. The frequency of participation in leisure-time sedentary behavior was greatest later in the day, peaking after 1800 hours (Figure 3).

Given that much of total daily sitting occurs during leisure time and that activities during leisure time are often modifiable, we examined this life domain in more detail. From a total of 5.2 hrs/d of overall leisure time reported, US adults reported spending 4.3 hrs/day, or 82% of their discretionary time—sedentary (Figure 4; see Table, Supplemental Digital Content 7, Mean and 95%CI for Figure 4). Within sedentary leisure-time, 2.4 hrs/d (52% of sedentary leisure-time) was spent watching television and videos and 1.1 hrs/d (22%) was spent engaged in internet and/or computer use. Thus, overall about 3.5 hrs/d was spent sedentary while using electronic media, or in screen time. In each gender, age and race-ethnic group screen-time appeared to be a primary driver of sedentary leisure-time (Figure 4). Adults over 60 years of age reported more than 5 hrs/d being sedentary during leisure-time, particularly with screen time (Figure 4).

DISCUSSION

In this nationwide survey conducted with previous-day recalls, US adults report a mean of 9.5 hours a day being sedentary, substantially more than previous population-based studies (3). Men and older adults reported the most sedentary time. Accumulation of sedentary time occurred in a variety of life-domains, including leisure-time, work, transportation, personal care, and during household activities. Of 5.2 hrs/d of total leisure-time, the majority was spent being sedentary, largely with electronic media (i.e., TV or video viewing, computer use) in the evening.

One striking finding was that compared to a single-item surveillance questionnaire (3), using a more comprehensive previous-day recall approach (6, 12, 14), US adults reported 2.4 hrs/d (34%) more sedentary time. Thus, US adults may be more sedentary than previously thought. The magnitude of the difference between the two measures observed here is consistent with results from investigations in convenience samples that compared estimates of sedentary time from single-item sitting time questions to thigh-worn accelerometers (6, 7). Furthermore, the accuracy of previous day recalls for estimating sedentary time has also been demonstrated in validation studies in comparison to accelerometers (12, 23) and direct observation (13). In a convenience sample of older adults, ACT24-based estimates of sedentary time (9.9 hrs/d) were within 1% ($p > 0.05$) of activPAL values (9.8 hrs/d) (6). Classification of domain-specific behaviors with previous-day recalls is also supported by a small direct observation study (13) and a validation study of comparable time-use diaries vs. wearable cameras (14).

This is the first study of US adults of which we are aware to provide detailed population-based estimates of sedentary behavior including an exploration of all major life domains, overall and within key demographic groups. Men reported more total sedentary time

than women, consistent with a recent international study (23). A nationally representative accelerometer-based study of in US adults (24) also found that older adults recorded the most sedentary time. This earlier study also observed that Non-Hispanic Whites and Blacks were similarly sedentary, and that Hispanic adults were the least sedentary group in the US. Lower levels of sedentary time were reported by Hispanics in the work and leisure-time domains. Higher levels of sedentary behavior among Asian adults was novel but should be interpreted cautiously given the smaller number of participants in this population sub-group.

Adults in the US accumulated sedentary time in a variety of life-domains, including work, transportation, personal care, household, other pursuits, and leisure-time. On workdays, more sedentary time was reported at work (3.9 hrs/d), but less in other domains resulting in slightly less total sedentary time on work days. Notably, leisure time was largely sedentary, consistent with results from the American Time Use Survey where posture is inferred but not reported (25). Our analysis revealed US adults spend a substantial part of their day in discretionary pursuits. Of the 5.2 hrs/d of total leisure-time reported, 4.3 hrs/d (82%) of this time was spent sedentary, largely using electronic media via screen time, typically later in the day. Sturm and Cohen (25) also found that Americans aged 15 years or older spent a similar amount of time viewing screen-based electronic media (men 3.5 hrs/d; women 2.9 hrs/d) in the 2014–16 ATUS. A high level of screen time in US adults in 2019 is consistent with an increase in sitting time in the last decade (3), and upward trends in discretionary screen time since the early 2000's (26). This is worrisome because greater television viewing (27) and leisure-time sitting (28) have been associated with elevated risk for several causes of death, and changes toward more television our present findings highlight the importance of sedentary leisure activities on overall daily sitting, and suggest these discretionary behaviors are important intervention targets for health promotion efforts (26, 29). Two small studies in adults have shown efficacy for reducing television viewing and increasing physical activity (30, 31), but larger more definitive studies are needed.

Another notable finding was regional variation in sedentary behavior among US adults. Regional variation in physical activity is commonly observed in surveillance research. For example, the prevalence of meeting the aerobic physical activity guideline (e.g., at least 150 mins/week moderate activity) appears lower in the East South Central region (43 to 48% in KY, TN, LA, MS) compared to the Pacific region (57 to 58% in CA, OR, WA) (32). Consistent with these patterns, we found the East South Central region to be among the most sedentary regions in the US (i.e., 10.1 hrs/d). Unexpectedly we observed the Pacific region to report higher levels of sedentary behavior (i.e., 9.8 hrs/d). Additional research is needed to confirm this result. If confirmed, this finding reinforces the importance of current public health messages to move more and sit less (33) even in populations that may be physically active (29, 34).

There are several limitations to the study. First, social desirability could lead to an underestimate of daily sedentary time. However, two studies that tested this hypothesis directly using previous-day recalls found no evidence of this bias in reported physical activity (12, 35) or sedentary time (12). Second, we chose 9.5 hrs/d to define excessive sedentary time for descriptive purposes. This threshold may change as our understanding of sedentary time and health evolves. Third, seasonal variation in behavior should also

be considered. Given the larger differences in physical activity between summer and winter (36, 37) we chose to conduct this study in the fall of the year. Fourth, use of unannounced recalls requiring a same-day response may have reduced our recall completion rates, which could lead to bias due to non-response. While the distribution of demographic characteristics in our weighted sample approximated those of the US population for several demographic factors, it is possible that inadequate representativeness or unmeasured factors strongly linked to sedentary behavior could bias our results. Similarly, our results are generalizable to US adults capable of completing surveys online via computer, tablet or smartphone. Collection of these data prior to the onset of the COVID-19 pandemic is both a limitation and a strength of this study. The results may not reflect current distributions of sedentary behavior, but they provide a useful pre-pandemic benchmark for future studies during and after the pandemic. Finally, in this descriptive study we did not adjust for multiple comparisons and given our fixed sample-size 95%CI were often overlapping between groups. Furthermore, we did not seek to identify more specific ***population-based*** determinants of sedentary behavior. These factors should be into account when interpreting the results. Strengths of the study include use of a large nationally representative sample (AmeriSpeak®) (16) and a measurement objective focused on the estimation of *population* mean values of sedentary time in a specific time of year rather estimating the long-term means for individuals. Although our target recall days were randomly selected, intra-individual variation in behavior from day-to-day would be expected to increase the standard deviation of sedentary time observed but should not affect the mean value estimated for the overall population (38). An additional strength was application of a previous-day recall instrument (ACT24) that facilitated assessment of a broad spectrum of behaviors, including sedentary time-use in the major life domains.

CONCLUSION

In this large nationwide study of sedentary behavior, we found US adults to be more sedentary than previously observed in nationwide studies, reporting a mean of 9.5 hours sedentary on a given day. Sedentary time was accumulated in many life-domains including leisure-time, household activities, work, and in transportation. Men were more sedentary than women, older adults reported the most sedentary time. Overall, the largest single source of sedentary time the population was potentially modifiable leisure-time sitting, and more than 80% of this time was attributed to consumption of electronic media. These data reinforce the importance of health promotion and intervention efforts to reduce the time adults spend being sedentary in discretionary leisure-time, in favor of more healthful physically active pursuits (2).

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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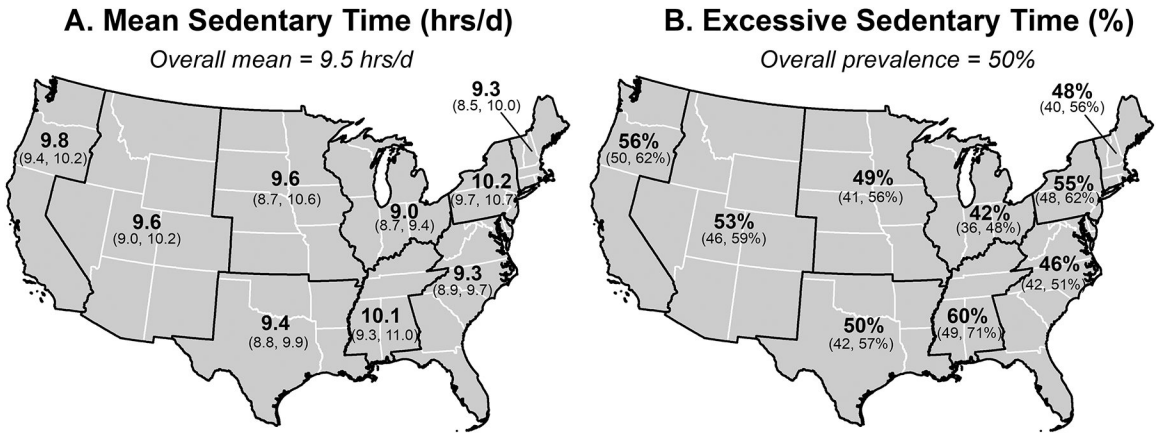


Figure 1.

Time spent in sedentary behavior (hrs/d) and proportion of the population reporting excessive sedentary time (% > 9.5 hrs/d) on a given day—United States adults, October-November 2019.

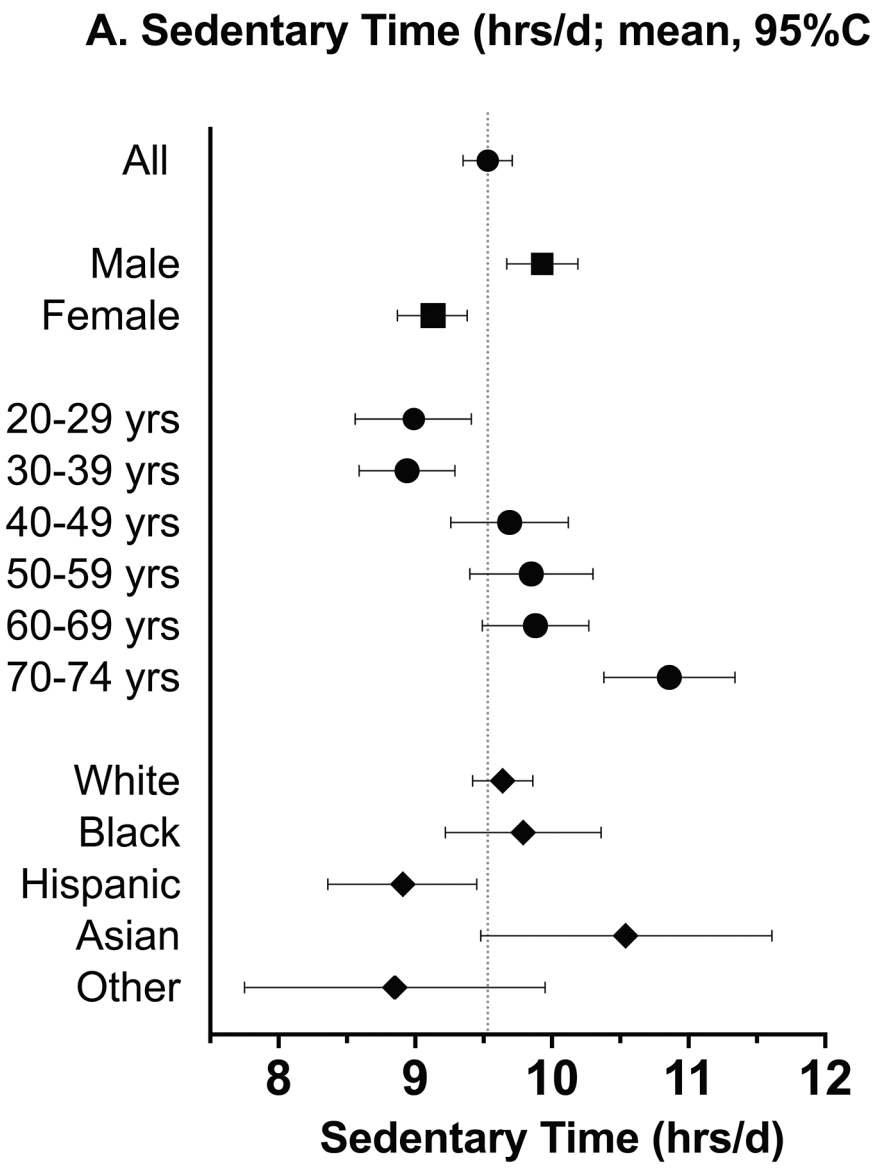
N=2,640

Values are point estimates (95% confidence intervals [95%CI]).

Nine US Census regions indicated with bold outlines

Linear and logistic regression revealed an association (overall) by region; p=0.01.

Regions with overlapping 95% CI are not significantly different from one another.



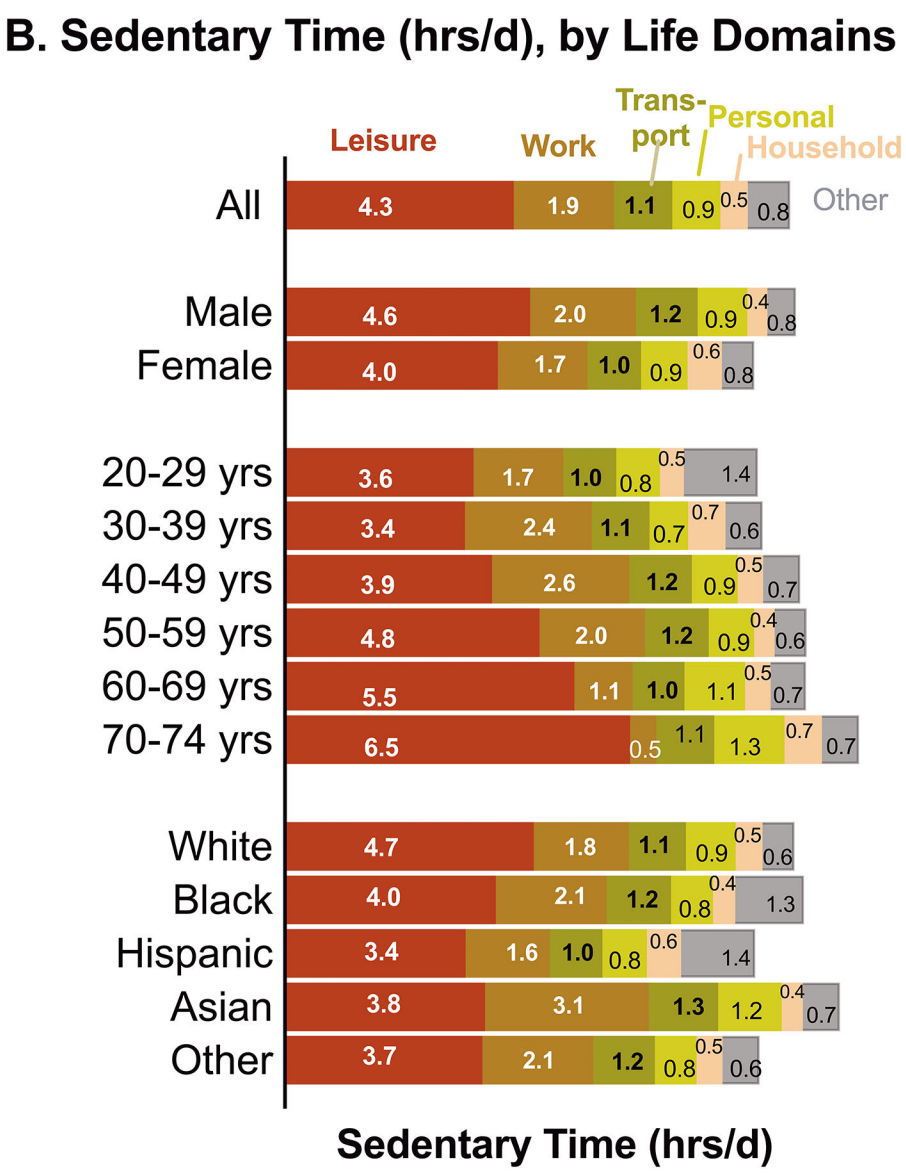


Figure 2.

Time spent in sedentary behavior (Panel A) and in major life domains (Panel B), overall and by gender, age, and race-ethnicity—United States adults, Fall 2019

N=2,640

Panel A. Rregression analysis revealed significant associations for total sedentary time by gender ($p<0.01$), age ($p<0.01$), race-ethnicity (duration only, $p=0.01$). See Table, Supplemental Digital Content 5, for all mean and 95%CIs.

Panel B. Rregression analysis revealed significant associations for leisure sedentary time by gender ($p<0.05$), age ($p<0.01$).

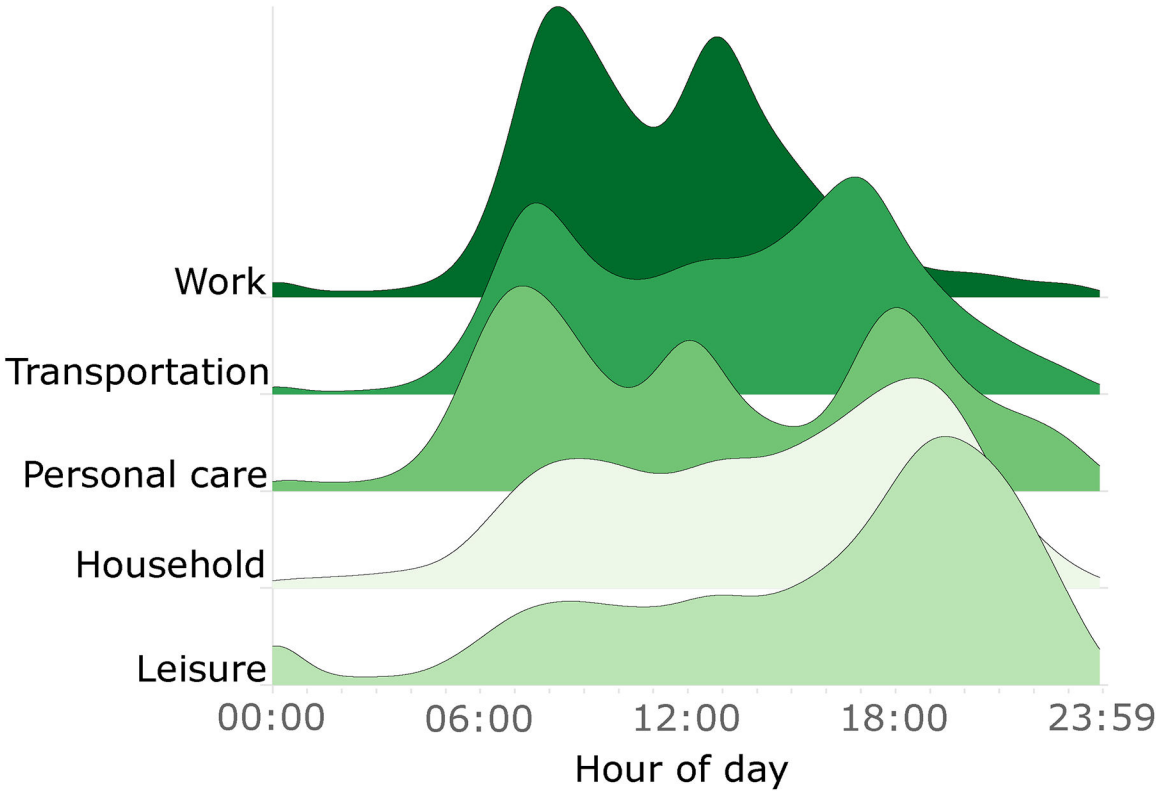


Figure 3.

Participation in domain-specific sedentary behaviors by time of day—United States adults, October-November 2019

N=2,640

Y-axis values for each domain are the % of participants reporting behaviors at a given time of day.

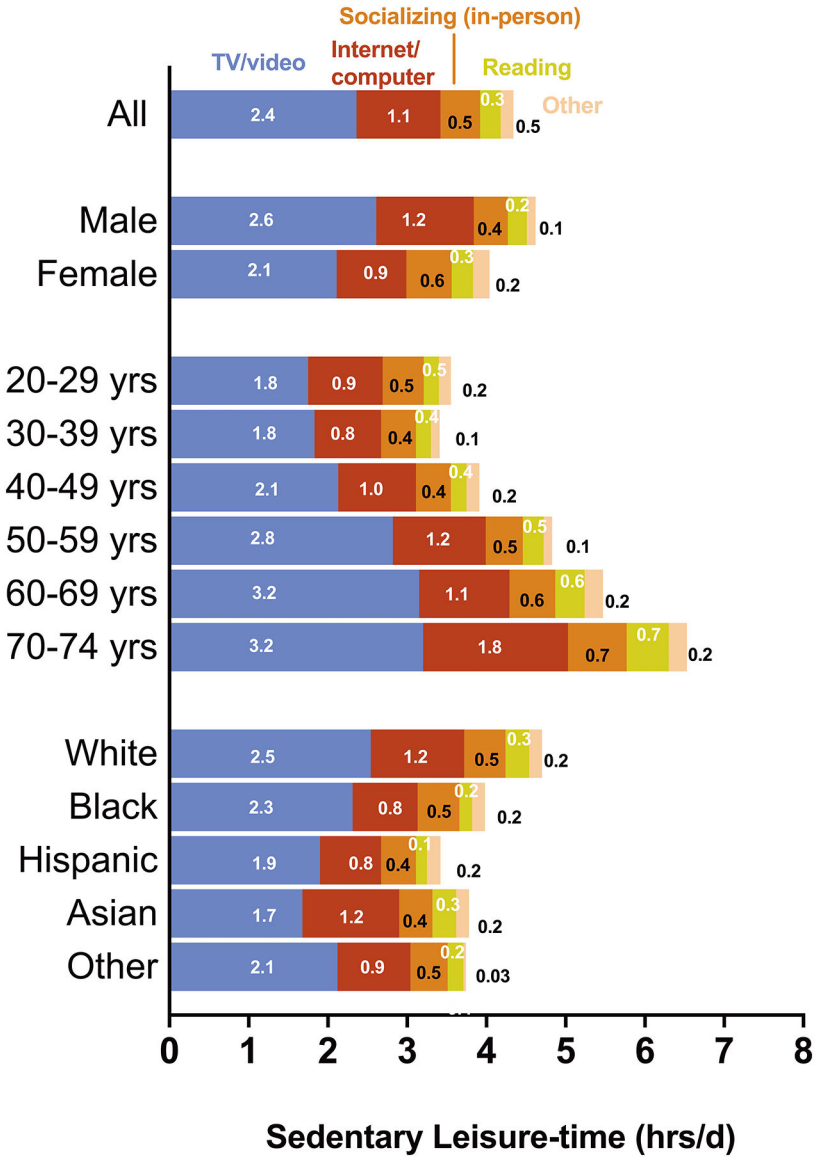


Figure 4.

Sedentary behavior in leisure-time, by type of behavior, gender, age, and race-ethnicity—US adults October-November 2019.

N=2,640

Table 1.

Descriptive characteristics of the study sample. Values are frequency (weighted %) and mean (SD).

	All Participants	Male	Female
Overall	2,640 (100.0)	1,460 (49.4)	1,179 (50.6)
	Mean (SD)	**Mean (SD)**	**Mean (SD)**
Age (years)	45.3 (15.4)	46.5 (15.5)	44.1 (15.2)
Questionnaire Sedentary Time (hrs/d) [1]	7.1 (3.6)	7.0 (3.4)	7.1 (3.8)
ACT24 Recall Durations (hrs/d) [2]			
In-bed/sleep time	8.1 (2.2)	7.9 (2.1)	8.3 (2.4)
Sedentary time[b]	9.5 (3.9)	9.9 (3.9)	9.1 (3.8)
Active time	6.4 (3.7)	6.1 (3.8)	6.6 (3.6)
	Frequency (weighted %)	**Frequency (weighted %)**	**Frequency (weighted %)**
Age (years)			
20–29	435 (20.8)	201 (18.9)	234 (22.6)
30–39	718 (20.1)	366 (17.7)	352 (22.5)
40–49	494 (18.0)	304 (20.3)	190 (15.7)
50–59	468 (18.4)	268 (18.2)	200 (18.6)
60–69	394 (16.8)	237 (17.9)	157 (15.8)
70–74	131 (5.9)	84 (7.1)	47 (4.7)
Race/ethnicity			
White, non-Hispanic	1,797 (63.7)	1,049 (66.2)	748 (61.2)
Black, non-Hispanic	282 (10.9)	104 (8.9)	178 (12.9)
Hispanic	336 (17.0)	148 (14.1)	188 (19.7)
Asian	105 (3.6)	82 (5.0)	23 (2.2)
Othe[3]	120 (4.9)	77 (5.8)	43 (4.0)
Educational Attainment			
High School or less	381 (34.6)	209 (35.4)	172 (33.7)
Some college/Assoc. Degree	1021 (29.0)	524 (27.5)	497 (30.5)
Bachelor's Degree	721 (20.9)	424 (21.9)	297 (19.9)
Graduate Degree	517 (15.5)	303 (15.1)	214 (16.0)
Household Income ($)			
< 50,000	959 (41.3)	448 (37.3)	510 (45.1)
50,000–99,000	950 (34.1)	556 (36.5)	394 (31.8)
100,000–149,000	449 (15.5)	269 (15.6)	180 (15.3)
150,000+	282 (9.2)	187 (10.5)	95 (7.8)
Occupational Status			
Working for pay	1,933 (67.2)	1,113 (70.2)	820 (64.3)
Not working - looking/laid off	130 (6.2)	63 (6.0)	67 (6.4)
Not working - other	174 (7.5)	42 (3.0)	132 (11.8)
Retired	287 (13.4)	173 (14.2)	114 (12.5)
Disabled	116 (5.8)	69 (6.6)	47 (4.9)

Body Mass Index (kg/m ^{2})			
< 25	734 (27.6)	367 (25.2)	367 (30.0)
25–29.9	870 (33.4)	538 (37.5)	332 (29.4)
30+	960 (36.5)	509 (34.9)	451 (38.2)
Missing	76(2.5)	46 (2.5)	30 (2.5)
Aerobic Physical Activity [4]			
Inactive	323 (13.9)	169 (12.7)	154 (15.1)
Insufficiently Active	755 (27.8)	373 (23.9)	382 (31.5)
Sufficiently Active	640 (24.1)	343 (22.4)	297 (25.8)
Highly Active	912 (34.0)	571 (40.9)	341 (27.3)
Missing	10 (0.2)	4 (0.1)	6 (0.4)
Region			
New England	118 (5.0)	71 (5.8)	47 (4.3)
Mid-Atlantic	266 (11.8)	147 (12.7)	119 (11.0)
East North Central	479 (14.7)	257 (14.4)	222 (14.9)
West North Central	258 (6.0)	140 (5.7)	118 (6.2)
South Atlantic	497 (22.1)	261 (20.2)	236 (23.8)
East South Central	112 (4.7)	70 (5.5)	42 (3.9)
West South Central	248 (11.3)	140 (11.2)	108 (11.4)
Mountain	251 (8.9)	147 (9.1)	104 (8.8)
Pacific	411 (15.6)	227 (15.5)	184 (15.6)

[1] Questionnaire: *How much time do you usually spend sitting on a typical day?*

[2] ACT24 Recall Durations: Sum of total duration of individual sedentary behaviors reported on previous day (all recalls)

[3] Other race/ethnicity includes non-Hispanics reporting Other or two or more race/ethnicities

[4] Aerobic Physical Activity: Inactive (0 hrs/wk); Insufficiently active (0.1 to 2.49 hrs/wk moderate or 1.24 hrs/wk vigorous or an equivalent combination); Sufficiently active (2.5 to 5.0 hrs/wk moderate or 1.25 to 2.5 hrs/wk vigorous or an equivalent combination); Highly active (> 5hrs/wk moderate or > 2.5 hrs/wk vigorous or an equivalent combination)