

Relationship of Television Time with Accelerometer-Derived Sedentary Time:

NHANES

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TV Time and Sedentary Time

ABSTRACT

Purpose: To examine the relationship of self-reported television (TV) viewing time with accelerometer-derived total sedentary time, and to determine whether it differs by subgroup.

Methods: Using data for adults (≥ 20 years) from the 2003-2004 and 2005-2006 nationally-representative US National Health and Nutrition Examination Surveys (NHANES; $n=5738$), linear regression models examined the associations of categories of self-reported TV viewing time (<1, 1, 2, 3, 4, and 5+ hrs/day) with accelerometer-derived sedentary time (<100 counts/min; hrs/day). Spearman's rho assessed the correlation between participants' rankings on the two measures. Analyses were stratified by gender, age, race/ethnicity, and, in the 2003-2004 NHANES cycle, by work status among working-aged adults (20-65years, $n=2069$).

Results: TV viewing time was significantly associated with sedentary time, with positive associations for all gender, age, race/ethnicity groups, and for those not working or working part-time, but not for those in full-time work. However, correlations between rankings of the measures were only 'fair' overall ($\rho=0.22$) and were similar for all gender and racial/ethnic groups, and for those of mid and older-age, but not for those of younger age (20-39 yrs, $\rho=0.05$). In the working-aged subgroup, there was also a 'fair' correlation between the measures for those not working ($\rho=0.22$), but no significant correlation for those in part-time ($\rho=0.14$) or full-time work ($\rho=0.03$).

Conclusions: Associations of TV viewing time with accelerometer-derived total sedentary time were statistically significant, but correlations were of only fair magnitude and the strength of the relationship was not consistent across all population subgroups. These findings suggest TV viewing time has an influence on overall sedentary time at a population level; however, measurement of sedentary time in other domains is also important.

Key Words: sedentary behavior, measurement, gender, age, race/ethnicity, work status

INTRODUCTION

Paragraph 1 There is a growing body of evidence on the detrimental associations of sedentary behavior (prolonged sitting time) with cardio-metabolic risk biomarkers and health outcomes (28). Much of this research has focussed on television (TV) viewing time: a recent review of measures of non-occupational sedentary behavior found that all relevant papers (n=60) had assessed TV viewing time by self-report, and in 39 papers it was the sole sedentary behavior measured (9). TV viewing is a highly prevalent leisure-time behavior (4, 12, 36) and has been shown to have strong and consistent detrimental associations with cardio-metabolic risk biomarkers and health outcomes, including premature mortality (13-15, 19-22). It is also a specific behavior that may be recalled relatively accurately (9, 26), thus has an advantage over using more-imprecise overall measures (11). However, TV viewing time is one of several sedentary behaviors in which adults engage and thus may or may not be representative of overall sedentary time. In this context, Pate and colleagues (29) highlight inconsistencies in studies on sedentary behavior that report findings solely on TV viewing time, yet discuss these findings in terms of overall sedentary behavior. Evidence is needed to clarify whether TV viewing time can be representative of overall sedentary time.

Paragraph 2 The prevalence of high TV viewing time has been seen to differ by gender, age, race/ethnicity, and work status, with higher levels of TV viewing time observed in men, older adults, those of African American race/ethnicity, and among those not in paid employment (3, 10, 35). Interestingly, those population subgroups who report watching the most TV (3, 10, 35) are not always those who are identified objectively as being the most sedentary overall (25). Thus, the extent to which measures of TV viewing time could be indicative of overall sedentary time may differ between population subgroups. Such variations may provide insights into the differential associations of TV viewing time with health outcomes

that have previously been observed across gender and ethnicity groups (2, 15, 16, 18, 19, 22, 35). To date, no studies have examined this issue, although TV viewing time has been shown to be a marker for self-reported total leisure-time sedentary behavior in women (36).

Paragraph 3 The concurrent assessment of self-reported TV viewing time and accelerometer-measured physical activity in the 2003-2006 population-representative US National Health and Nutrition Examination Surveys (NHANES) provides a unique opportunity to address the relationship of TV viewing time with accelerometer-derived sedentary time in a large, diverse, population-based sample. We examined this relationship in the overall adult population, as well as stratified by gender, age, race/ethnicity (non-Hispanic white, non-Hispanic black and Mexican American) and work status. Relationships were also examined in terms of relative agreement, to explore the extent to which TV viewing time may or may not be representative of total sedentary time across the day.

METHODS

Study Population and Design

Paragraph 4 The study sample was drawn from the 2003-2004 and 2005-2006 cycles of NHANES: a continuous, cross-sectional, observational study conducted by the Centers for Disease Control and Prevention (7, 25, 37). NHANES used a stratified, complex multistage probability design to obtain a nationally-representative sample of non-institutionalized civilian U.S. citizens aged six years and older (7, 25, 37). Certain populations were oversampled, including Mexican and non-Hispanic black Americans. The National Center for Health Studies Ethics Review Board approved the survey protocols, and informed consent was obtained for all participants. Data collection involved an interviewer-administered

questionnaire conducted in participants' homes by trained interviewers; and, health measurements were carried out in specially-designed and equipped mobile examination centers. In the 2003-2004 and 2005-2006 cycles, ambulatory participants were asked to wear an accelerometer (Actigraph model 7164; Actigraph, LLC, Ft. Walton Beach, FL) on an elasticized belt over the right hip during waking hours for the seven consecutive days after their examination in one of the mobile examination centers. Details of the accelerometer protocol have previously been reported (5, 25, 37).

Paragraph 5 For the purposes of the following analyses results were included from participants who: were adults (aged 20 years or older; n=10,020); wore the accelerometer for 10 or more hours per day on at least four days (and including at least one weekend day; n=5,742); and completed the TV viewing item of the questionnaire (n=5,738). A smaller sample of participants aged 20-65 years (nominal working age) was taken from the 2003-2004 survey to examine possible variations by work status (n=2,069). At the time of the current analyses, data on work status were not available for the 2005-2006 survey.

Measures

Paragraph 6 Sociodemographics: Gender, age, race/ethnicity, education and work status were self-reported in the interviewer-administered questionnaire. Age categories were established based on age in whole years at time of interview as follows: 20-39 years, 40-59 years and 60 years and over. Racial/ethnic groups were categorized into non-Hispanic white, non-Hispanic black, Mexican-American and other race (not included in the previous categories) according to NHANES analytic guidelines (6). Work-status categories (non-working, part-time, and full-time work) were derived from participants' self-reported work status in the previous week and the number of hours worked in that week (or hours usually worked for workers who reported less than 35 hours in the previous week). The minimum

requirement for full-time work was 35 hours worked in the previous week or usually worked; less than 35 hours in the previous week was classified as part-time in those that reported working. Education was dichotomized as less than 12 years of schooling or 12 years and over, or equivalent, including post high-school training. Waist circumference was measured by trained staff during the physical examination, with measurements taken at the upper border of the right iliac crest (7).

Paragraph 7 **TV viewing time:** Amount of time spent watching TV or videos was self-reported in the household interview questionnaire as total time on a typical day over the past 30 days, with the following response options: <1 hour, 1 hour, 2 hours, 3 hours, 4 hours, ≥ 5 hours, or, do not watch TV or videos. The category of ‘do not watch TV or videos’ was combined with ‘<1 hour’, due to low numbers reporting these categories.

Paragraph 8 **Accelerometer-derived overall sedentary time:** Accelerometer-derived sedentary time was calculated as time spent in <100 counts per minute (cpm). This cut point has previously been shown to approximate sitting time (25), however, as accelerometers are not able to discriminate between sitting and standing very still, time recorded as sedentary will not strictly represent sitting time. An automated program (SAS 9.1, 25) was adapted and used to derive wear time and summarize sedentary time data. Non-wear time was defined as bouts of 60 minutes or more of consecutive zero counts with interruptions of up to two counts of ≤ 50 cpm (41). Sedentary time (hours per day) was corrected for monitor wear time using the residuals method (39). Non-wear time includes time spent asleep, for showering or bathing and for water-based activities.

Statistical Analyses

Paragraph 9 Analyses were conducted using Stata Statistical Software Release 11.0 (College Station, TX, Stata Corporation). To account for the complex survey design used in NHANES (6), the STATA survey commands with sampling weight, stratification, and clustering (primary sampling unit) variables were used for most analyses. Four-year examination weights (2003-2006), reweighted to correct for non-response to the accelerometry component of NHANES were used. Analyses that included occupational data, which were only available for the earlier NHANES cycle, used two-year (2003-2004) examination weights with reweighting to correct for non-response to the accelerometry component. Weights were not used when testing interactions (1), or in calculating the Spearman's rank order correlations. Strata were collapsed when required due to low numbers in some sub-groups. Significance was set at < 0.05 for main effects and < 0.1 for interactions. Characteristics of the sample (weighted) were described as % (n) or mean (SD).

Paragraph 10 Simple linear regression analyses (with linearized variance estimation and weighting) were used to examine the bivariate association between TV viewing time and sedentary time, with data reported as population weighted mean accelerometer-derived sedentary time across categories (<1 hour, 1 hour, 2 hours, 3 hours, 4 hours, ≥ 5 hours) of self-reported TV viewing time. To examine whether these associations differed across population sub-groups of interest (gender, age, race/ethnicity and work status), stratified analyses were performed and interactions were tested. Interactions were examined unadjusted, then adjusted for age (in completed years), gender, waist circumference, race/ethnicity, and educational level in order to ensure that any difference in the degree of relationship was not due to imbalance of these other characteristics. The "Other Race" category was excluded from the racial/ethnic comparisons due to the diverse ethnic backgrounds within the category (n=379). In adjusted models, participants with missing data for co-variates were dropped (missing data

for co-variates: total sample = 166; non-Hispanic white = 92; non-Hispanic black = 44; Mexican Americans = 26; full-time workers = 29; non-working = 17).

Paragraph 11 Spearman's rank order correlations were used to examine the relative agreement between the participants' rankings of TV viewing time and accelerometer-derived sedentary time overall and separately for each sub-group of interest. Magnitude of relative agreement was described using the scale reported by Landis and Koch (23) as follows: Poor = below 0, Slight = 0.00-0.20, Fair = 0.21-0.40, Moderate = 0.41-0.60, Substantial = 0.61-0.80, Almost Perfect = 0.81-1.00. This scale was developed for the Kappa statistic, however, the range of values and concept of relative agreement examined in this paper using Spearman's rank order correlation is similar. Assessment of agreement between quintiles of TV viewing time (only approximate due to the categorical nature of the data) and sedentary time using the weighted Kappa statistic, revealed similar results to the Spearman's correlation and are therefore not reported in this paper.

RESULTS

Paragraph 12 Attributes of the 5,738 participants included in the study are presented in Table 1. Over half the sample reported their race/ethnicity status as non-Hispanic white. Those reporting the highest category of TV viewing time (≥ 5 hours/day) were more likely to be in the older-age than the younger-age category ($p < 0.001$), of non-Hispanic black than non-Hispanic white race/ethnicity ($p < 0.001$) and working full-time than not working (among the working-aged sub-group, $p < 0.001$). Mexican-Americans were less likely to report this high level of TV viewing time than non-Hispanic whites ($p = 0.02$).

INSERT TABLE 1 ABOUT HERE

Linear regression findings: associations of TV viewing time with total sedentary time

Paragraph 13 Overall associations: Linear regression models revealed a positive association between self-reported TV viewing time and total accelerometer-derived sedentary time (B: 0.22, 95%CI: 0.19, 0.26, $p < 0.001$). However, the R^2 (an indication of the proportion of variance in sedentary time that is explained by the model) was low ($R^2 = 0.039$).

Paragraph 14 Associations by gender: TV viewing time was associated with total sedentary time in both women and men (Figure 1). There was no significant interaction between gender and TV viewing time ($F(df: 5, 26) = 1.52$, $p = 0.22$ without adjustment, $F(df: 5, 26) = 2.03$, $p = 0.11$ with adjustment) and the linear trend was similar for women and men (Figure 1, also see Table, SDC 1, for population weighted percentages of participants in self-reported TV viewing time categories).

INSERT TABLE 2 ABOUT HERE

Paragraph 15 Associations by age: There was an association between TV viewing time and sedentary time in all age groups (Figure 1). The linear trend was least evident in the younger aged (20-39yrs) adults, among whom sedentary time was only significantly different in those reporting the highest category (≥ 5 hrs/day) versus the lowest category (< 1 hr/day) of TV viewing time (Figure 1). The age interaction was significant, with the association between TV viewing time and sedentary time stronger at mid-age (40-59yrs) and older age (60+yrs) than at a younger age (20-39yrs) ($F(df: 10, 21) = 3.52$, $p = 0.01$ without adjustment, $F(df: 10, 21) = 2.65$, $p = 0.03$ with adjustment).

Paragraph 16 Associations by race/ethnicity: Stratified linear regression analyses revealed a positive association between TV viewing time and total sedentary time within all

racial/ethnic groups (Figure 1). Interaction terms showed no significant differences in this association by race/ethnicity (F (df: 10, 21) =1.27, $p=0.31$ without adjustment, F (df: 10, 21) =0.75, $p=0.67$ with adjustment). However, for those of Non-Hispanic black and Mexican American race/ethnicity, the association between TV viewing time categories and mean sedentary time was only significant for those reporting five hours or more of TV viewing per day compared to less than one hour (Figure 1). In contrast, the relationship between the two variables was more linear for Non-Hispanic whites.

Paragraph 17 **Associations by work status:** In working-aged adults (20-65 years, NHANES 2003-04), the association between TV viewing time and total sedentary time was present in the non-working sub-group and marginally significant for those in part-time work but not for those in full-time work (Figure 1). For full and part-time workers, an association between TV viewing time categories and mean sedentary time was only significantly different in those reporting the highest category (≥ 5 hrs/day) versus the lowest category (< 1 hr/day) of TV viewing time, possibly more indicative of a threshold shift at this level than an overall relationship. Despite the apparent differences, the association did not differ significantly by work status (F (df: 5, 11) =2.19, $p=0.13$ without adjustment, F (df: 5, 11) =1.14, $p=0.40$ with adjustment).

INSERT FIGURE 1 ABOUT HERE

Relative agreement between TV and total sedentary time

Paragraph 18 Table 2 presents correlations between participants' self-reported TV viewing time and total accelerometer-derived sedentary time (Spearman's rho). The measures were correlated more than would be expected by chance ($p<0.001$) for the overall population although the strength of the correlation was only fair.

Paragraph 19 Except for full-time workers and young adults (20-39 years), the relative agreement between the TV viewing and sedentary time was either fair or at the upper end of slight classification for all population subgroups. As expected from the linear regressions, relative agreement was lower among the younger age category (20-39 years) than other ages, lower (and not significant) for full-time and part-time workers than non-working adults of working age, and slightly higher among non-Hispanic whites than the other two racial/ethnic groups. Across the board, relative agreement was much below the ‘substantial’ or ‘almost perfect’ relationships that would be expected if TV viewing time was considered to be representative of total sedentary time.

DISCUSSION

Paragraph 20 Our findings show a relationship of TV viewing time with total accelerometer-derived sedentary time in the overall study population, evidenced by a significant association and rank-order correlation between the two measures. However, the strength of the agreement was only fair, and adults that reported less than one hour per day of TV viewing still spent nearly eight hours per day in sedentary time. Thus, self-report TV viewing time may not be truly representative of accelerometer-measured overall sedentary time. To capture a more complete picture of daily sedentary time, measurement of sitting time across other domains (work and travel), as well as other leisure-time behaviors (e.g. reading, computer use) may also be important.

Paragraph 21 The correlation we observed between our measures was similar or slightly lower than findings from criterion-validity studies of total sitting time questionnaires with accelerometer data as the criterion (11, 30) indicating that error associated with self-report may be at issue here. However, despite concerns regarding comparing a self-report to an objective instrument, the impact of TV viewing time on sedentary time cannot be ignored,

given that it is a highly prevalent leisure-time sedentary behavior (4, 36). A recent time use study showed TV viewing was the most common leisure-time activity; over 80% of US adults reported watching TV on the surveyed day and for those who reported watching TV, viewing time averaged close to 3 ½ hrs (4). We found an association between TV viewing time and sedentary time for all groups, except those in full-time work. Therefore, those reporting higher levels of TV viewing time had higher sedentary time on average than those who reported lower levels of TV viewing time. TV viewing time may to some extent reflect a broader pattern of sedentary behavior in the population as a whole, which is important to consider in light of the findings regarding its detrimental associations with risk biomarkers and health outcomes (13-15, 19-22, 40).

Paragraph 22 No gender or race/ethnicity differences were observed in the relationship of TV viewing time with accelerometer-derived sedentary time, suggesting that TV viewing time is a useful measure across these groups. However, there was a non-linear relationship between the two measures for Mexican American and non-Hispanic blacks with a stronger association at high (5+hrs/day) levels of TV viewing time. Where possible, continuous measures of TV viewing time should be used to enable selection of cut points suitable for ethnically diverse populations.

Paragraph 23 TV viewing time was more strongly related to total sedentary time for those in the mid- (40-59yrs) and older-aged groups (60yrs+), compared to the younger age group (20-39yrs) indicating that TV viewing may better reflect total sedentary time in older than younger adults. Other media-based behaviors, such as social networking on computers and mobile 'phones, may be contributing to sedentary time in younger adults. A recent study from Canada showed that the proportion of screen time reported as computer use (as distinct from TV viewing time) was significantly higher in younger compared to older adults (34),

therefore measuring these other screen-based behaviors may be important in research involving younger adults. The age difference may also in part be due to the employment status of the participants, particularly in the oldest age group, many of whom could have retired. In the working-age population, the relationship of TV viewing time with sedentary time was present in the non-working sub-group but not those in full-time work. Previous research has shown those in full-time work are less likely to watch high levels of TV (10). Full-time workers may have less leisure time available for TV viewing, compared to those who do not work, with other sedentary behaviors comprising more of their total sedentary time. Measuring sedentary time in the working population requires development of measures of sedentary behavior in the workplace. The development of such self-report measures has been recommended in a recent review of papers reporting the association between workplace sitting and detrimental health outcomes (38).

Paragraph 24 The key strength of this study is the use of data from a large, multi-ethnic, population representative survey, with concurrent objective and self-report measures. Accelerometer-derived sedentary time, being an objective measure, has the advantage of being unaffected by recall error or self-report biases. There are some limitations, however, in the use of accelerometers as a criterion measure for true sedentary time. First, as accelerometers do not detect body position, the measure is indirect. Therefore, periods of low movement (<100 cpm) may include some time spent standing still, resulting in overestimation of sedentary time. In a small criterion validity study, the correlation between accelerometer-derived sedentary time using the <100 cpm cut point and a more direct measure of body posture (sitting, reclining and lying, 42) was only $r=0.59$ (25). Second, the sedentary time estimate is affected by monitor wear time, which appears to have been less than the intended coverage of “all waking hours” (average wear time=14.6 hours, range 10.3

– 24.0 hours). Times that are not captured are likely to be early mornings and late evenings, which are possibly more sedentary periods of the day, thereby resulting in underestimation of sedentary time.

Paragraph 25 Another limitation of the study is the measure of self-report TV viewing time available in NHANES. Validity of the measure has not been reported, and it has low test-retest reliability (ICC: 0.32, 95%CI: 0.14-0.48) (17) relative to other self-report measures of TV viewing time whose reliability (ICC) typically ranges from 0.7-0.9 (27, 33, 43). We cannot be certain as to whether a different level of relative agreement overall or different patterning across population sub-groups might have been seen with other TV viewing time measures. These variations in self-report measures will remain a limitation in the assessment of TV viewing time, until objective measures of this behavior suitable for use in epidemiological and health-behavior studies have been developed. Furthermore, the relationship between the two measures may have been underestimated as the measurement period for the TV viewing time question differed from the period of accelerometer wear from which sedentary time was derived. Respondents were asked to recall their average hours of daily TV viewing time over the past 30 days, while accelerometer data collection covered seven days, which has been recommended to obtain a representative measure of habitual physical inactivity (24). As our minimum number of valid days for accelerometer wear was only four, we may not have captured a typical pattern of sedentary time, however, close to half of our sample (48.2%) provided seven valid days of monitor wear. The comparison of a categorical measure to a continuous measure also presented difficulties including limiting the analyses that could be performed, and the highest option for TV viewing time (5+hrs/day) was lower than the mean sedentary time.

Conclusions

Paragraph 26 A better understanding of commonly-used indices of sedentary behaviors is a fundamental element for the interpretation of the findings of epidemiological and health-behavior studies, and to guide the development of evidence-based public health interventions (31). Objective measurement of sedentary behavior, such as by accelerometer, is expensive and often not feasible in large-scale studies. Furthermore, objective measures cannot provide domain specific data. Therefore, self-report measures of sedentary behavior, typically TV viewing time, have been widely used (8, 15, 20, 22, 32). Our findings showed that there was an association between self-report TV viewing time and accelerometer-derived sedentary time, indicating that this behavior has an important influence on sedentary time at a population level and therefore may be useful in epidemiological surveys. However, the relative agreement between the two measures was only fair. Therefore, self-reported TV viewing time did not appear to provide a good reflection of total sedentary time captured using accelerometers at the individual level. Importantly, the relationship between TV viewing time and total sedentary time was consistent for subgroups of gender and race/ethnicity, but not age and work status. Future research should take into account these differences in the performance of self-report TV viewing time measures and consider measurement of other sedentary behaviors during leisure-time and the domains of travel and work.

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The results of this study do not constitute an endorsement by the American College of Sports Medicine.

CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

Table 1: Attributes of the total study sample and sub-groups

Characteristic	<i>N</i>	Age (years)	More than high school education, % (n)	Waist Circumference (cm)	TV viewing reported 5+ hrs/day	Sedentary Time (hrs/day)
Total Sample	5738	46.4 (16.8)	59.5% (2811)	97.0 (15.3)	10.8% (800)	8.19 (1.71)
Gender						
Women	2914	47.0 (17.1)	60.6% (1468)	93.8 (15.6)	10.9% (396)	8.25 (1.56)
Men	2824	45.6 (16.4)	58.3% (1343)	100.4 (14.2)	10.7% (404)	8.12 (1.86)
Age Group						
20-39 years	1650	29.7 (5.7)	62.0% (915)	93.2 (15.6)	8.5% (156)	7.79 (1.62)
40-59 years	1785	48.8 (5.5)	64.9% (1013)	98.8 (14.8)	8.9% (195)	7.99 (1.58)
60+ years	2303	70.9 (7.6)	46.1% (883)	100.3 (14.2)	17.9% (449)	9.23 (1.65)
Race/Ethnicity						
Non-Hispanic white	3121	48.1 (17.0)	64.0% (1811)	97.5 (15.4)	9.9% (387)	8.30 (1.68)
Non-Hispanic black	1068	43.6 (16.0)	53.0% (517)	98.0 (16.2)	21.3% (251)	8.18 (1.73)

Mexican-American	1170	38.8 (14.2)	27.9% (279)	95.9 (13.0)	6.7% (120)	7.35 (1.76)
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Working-age population

Full-time work	1218	40.1 (11.0)	64.7% (715)	96.3 (14.5)	5.6% (82)	7.72 (1.59)
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Part-time work	271	39.9 (11.1)	65.5% (140)	96.4 (12.3)	7.8% (32)	8.02 (1.40)
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Non-working	580	44.5 (11.9)	49.8% (236)	97.2 (15.1)	22.4% (139)	8.57 (1.27)
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Data are population weighted unadjusted means (SD) unless otherwise indicated. Total group includes 'other race'. Participants in working-age population are aged 20-65 years and drawn from 2003-4 cycle only. Sedentary time is corrected for wear time using the residuals method.

Table 2: Rank order correlations (Spearman’s rho) for self-reported TV viewing time with accelerometer-derived sedentary time (hrs/day), stratified by gender, age, ethnicity and work status.

	rho	95%CI	p value
Total group	0.22	0.20, 0.25	<0.001
Gender			
Women	0.23	0.20, 0.27	<0.001
Men	0.21	0.17, 0.25	<0.001
Age			
20-39 years	0.05	0.00, 0.10	0.04
40-59 years	0.17	0.12, 0.21	<0.001
60+ years	0.23	0.19, 0.27	<0.001
Race/Ethnicity			
Non-Hispanic white	0.25	0.21, 0.28	<0.001
Non-Hispanic black	0.20	0.14, 0.25	<0.001
Mexican-American	0.20	0.14, 0.25	<0.001
Working-age population			
Full-time work	0.03	-0.02, 0.09	0.26
Part-time work	0.14	-0.02, 0.29	0.09
Non-working	0.22	0.15, 0.30	<0.001

Total group includes ‘other race’. Participants in working-age population are aged 20-65 years from 2003-4 cycle only.

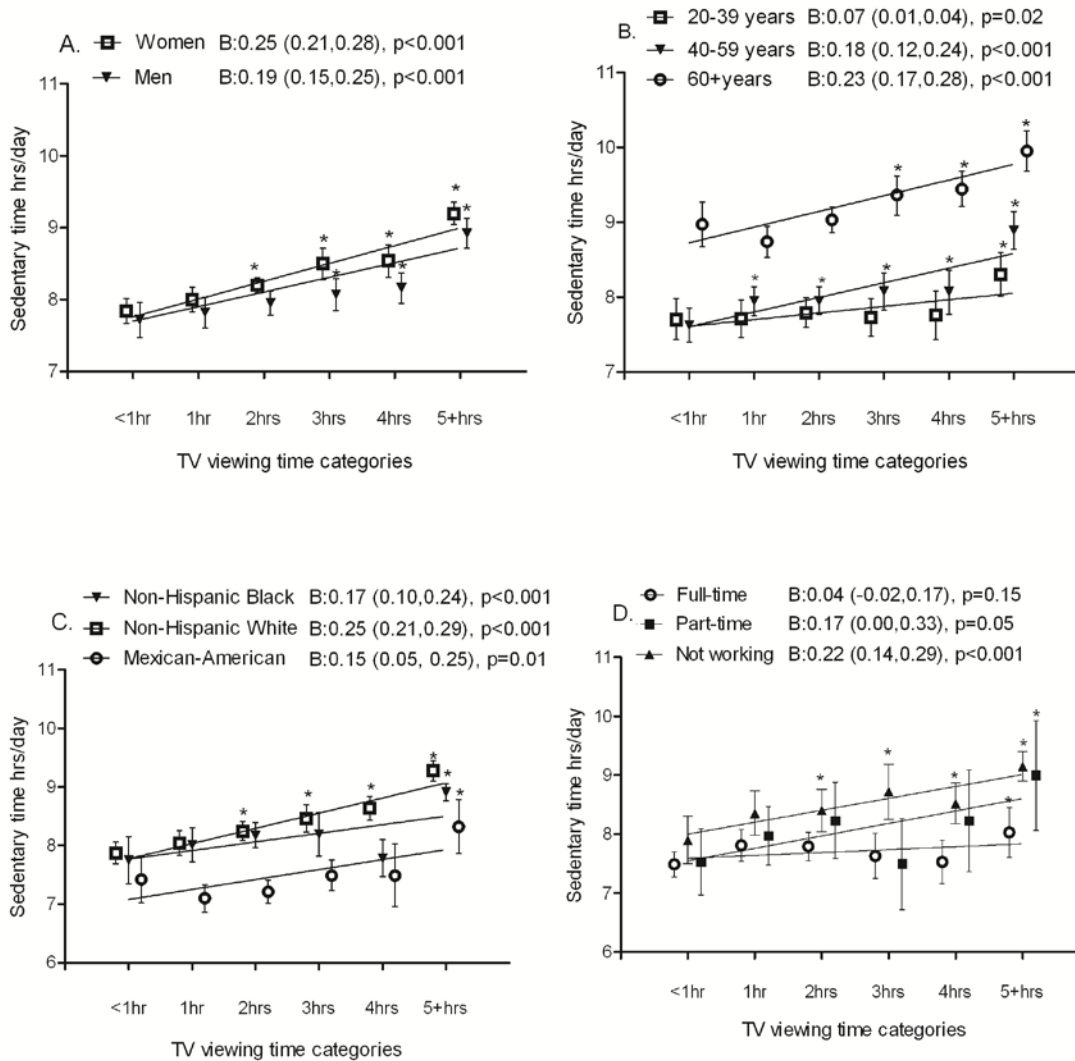


Figure 1- Mean (95%CI) accelerometer-derived sedentary time (hrs/day) by categories of self-reported TV viewing time (hrs/day), and linear trend (B (95%CI), p), for women and men (A), age groups (B), racial/ethnic groups (C) and work status (D). *p<0.05 compared to <1hr TV viewing per day. Population weighted percentages (n) of participants in self-reported TV viewing time categories stratified by gender, age, ethnicity and work status are included in the Table in supplemental digital content 1.

Supplemental Digital Content Table: Population weighted percentages of participants in self-reported TV viewing time categories stratified by gender, age, race/ethnicity and work status.

	TV Viewing Time Categories					
	<1 hr/day	1 hr/day	2 hrs/day	3 hrs/day	4 hrs/day	≥5 hrs/day
Total group	16.8% (845)	17.8% (933)	28.4% (1567)	16.7% (1019)	9.4% (574)	10.8% (800)
Gender						
Women	18.6% (449)	18.0% (485)	27.9% (809)	15.4% (488)	9.3% (287)	10.9% (396)
Men	15.0% (396)	17.6% (448)	29.0% (758)	18.2% (531)	9.6% (287)	10.7% (404)
Age						
20-39 years	18.9% (290)	20.1% (324)	28.9% (466)	15.5% (2735)	8.1% (141)	8.5% (156)
40-59 years	19.2% (330)	19.3% (335)	28.8% (501)	15.3% (263)	8.6% (161)	8.9% (195)
60+ years	9.5% (225)	11.4% (274)	26.8% (600)	21.2% (483)	13.1% (272)	17.9% (449)
Race/ethnicity						
Non-Hispanic white	17.7% (493)	18.1% (494)	27.9% (838)	17.2% (592)	9.3% (327)	9.9% (387)
Non-Hispanic black	13.2% (129)	11.8% (123)	24.6% (262)	15.5% (167)	13.6% (136)	21.3% (251)

Mexican-American	13.8% (158)	21.1% (240)	32.3% (346)	18.1% (218)	8.0% (88)	6.7% (120)
Working-age sub-group						
Full-time work	19.2% (228)	22.9% (269)	30.5% (375)	15.5% (183)	6.4% (81)	5.6% (82)
Part-time work	18.0% (47)	20.7% (48)	27.6% (69)	17.3% (48)	8.5% (27)	7.8% (32)
Non-working	12.8% (65)	12.7% (81)	24.7% (139)	15.8% (94)	11.6% (62)	22.4% (139)

Data are (n) and population weighted percentages %. Total group includes 'other race'. Participants in working-age population are aged 20-65 years and drawn from 2003-4 cycle only.

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Supplemental Digital Content 1. Word doc

List of Captions:

Figure 2- Mean (95%CI) accelerometer-derived sedentary time (hrs/day) by categories of self-reported TV viewing time (hrs/day), and linear trend (B (95%CI), p), for women and men (A), age groups (B), racial/ethnic groups (C) and work status (D). *p<0.05 compared to <1hr TV viewing per day. Population weighted percentages (n) of participants in self-reported TV viewing time categories stratified by gender, age, ethnicity and work status are included in the Table in supplemental digital content 1.