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Walking for Transportation and Leisure Among U.S. Adults—National Health Interview Survey 2010

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Abstract

Background—Walking, the most commonly reported physical activity among U.S. adults, is undertaken in various domains, including transportation and leisure.

Methods—This study examined prevalence, bout length, and mean amount of walking in the last week for transportation and leisure, by selected characteristics. Self-reported data from the 2010 National Health Interview Survey (N = 24,017) were analyzed.

Results—Prevalence of transportation walking was 29.4% (95% CI: 28.6%–30.3%) and of leisure walking was 50.0% (95% CI: 49.1%–51.0%). Prevalence of transportation walking was higher among men; prevalence of leisure walking was higher among women. Most (52.4%) transportation walking bouts were 10 to 15 minutes; leisure walking bouts were distributed more evenly (28.0%, 10–15 minutes; 17.1%, 41–60 minutes). Mean time spent in transportation walking was higher among men, decreased with increasing BMI, and varied by race/ethnicity and region of residence. Mean time spent leisure walking increased with increasing age and with decreasing BMI.

Conclusion—Demographic correlates and patterns of walking differ by domain. Interventions focusing on either leisure or transportation walking should consider correlates for the specific walking domain. Assessing prevalence, bout length, and mean time of walking for transportation and leisure separately allows for more comprehensive surveillance of walking.

Keywords

surveillance; active transport; public health; physical activity

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Regular physical activity is associated with a reduction in risk of early death and chronic diseases such as coronary heart disease, stroke, type 2 diabetes, depression, and some types of cancer.[1,2] The *2008 Physical Activity Guidelines for Americans* recommends adults engage in aerobic physical activity of moderate intensity (like brisk walking) for at least 150 minutes per week, or vigorous intensity (like jogging) for at least 75 minutes per week, or an equivalent combination, in bouts of at least 10 minutes, for substantial health benefits.[1] Almost one-third of U.S. adults, however, report no leisure-time aerobic physical activity, and only around half report levels of leisure time activity sufficient to meet the aerobic physical activity guideline.[3] Walking is the most commonly reported physical activity among U.S. adults overall, as well as among those who meet the aerobic physical activity guideline.[4–6] Most persons can participate in walking because it does not require special skills or facilities.[7] Consequently, promotion of walking is a viable strategy to help adults meet physical activity guidelines.

People walk for transportation and for leisure, which have different correlates. Transportation and leisure walking differ in bout-length distribution, and in mean time spent walking. Previous studies show some consistent patterns: Men are more likely to walk for transportation, but less likely for leisure, than women.[4,8] Prevalence of transportation walking decreases with increasing age, whereas prevalence of leisure walking peaks among older adults.[4,9] Prevalence of walking—in either context—tends to increase with increasing education level and with decreasing adiposity.[4] On average, leisure walking bouts are longer than transportation walking bouts.[10] The measures of walking cited in these studies, however, are derived from different surveillance systems and differ in definition as well as in the demographic characteristics examined.

This study, based on a large, recent, nationally-representative survey, is novel in its use of 3 distinct measures—prevalence, mean weekly time, and bout length—to comprehensively examine walking for transportation and leisure. It is based on data from National Health Interview Survey (NHIS) 2010. The results may be useful for public health monitoring to promote walking.

Methods

Sample Selection

The NHIS is a continuous, cross-sectional survey of U.S. households using in-person interviews conducted by the National Center for Health Statistics and administered by the U.S. Census Bureau (http://www.cdc.gov/nchs/nhis.htm). Supplied survey weights allow generation of nationally representative estimates. The survey consists of a core questionnaire as well as supplements that address specific public health topics. The Cancer Control Supplement, administered in 2000, 2005, and 2010, included questions on leisure and transportation walking in 2005 and 2010. This supplement was administered to a randomly

selected adult (aged 18 years) in each sampled family. The main body of the survey included questions on demographic, socioeconomic, and health-related variables. The overall adult response rate, incorporating family and household response rates, was 60.8% in 2010.

In 2010, from an initial sample of 27,157 adults, the following groups were excluded: 555 because of inability to walk, 1883 because of missing data on walking, and an additional 702 because of missing data on demographic characteristics or body mass index (BMI). The final analytical sample included 24,017 adults. Those excluded were more likely to be female than those in the analytical sample (62.7% versus 55.0%) due mainly to missing BMI data among women. However, the distribution by age group, race/ethnicity, education, and BMI were similar among men and women.

Measurement of Transportation and Leisure Walking

Participation in walking for transportation was assessed with the question, "During the past 7 days, did you walk to get some place that took you at least 10 minutes?" Participation in walking for leisure was assessed with the question, "Sometimes you may walk for fun, relaxation, exercise, or to walk the dog. During the past 7 days, did you walk for at least 10 minutes for any of these reasons? Please do not include walking for transportation." In both cases affirmative responses were followed up with, "In the past 7 days, how many times did you do that?" and "On average, how long did those walks take?" In each domain (ie, transportation and leisure), respondents who did not walk for at least 10 minutes, or reported average bouts shorter than 10 minutes (325 participants, in at least 1 domain), were categorized as nonwalkers, registering 0 time spent walking.

Measurement of Demographic Characteristics and BMI

Demographic measures were based on in-person interviews. Self-reported age was categorized to 18 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64, and 65 years. Ethnicity and race were collapsed into 4 race/ethnicity categories: non-Hispanic white, non-Hispanic black, Hispanic, and other. Education level was categorized by highest level completed: < HS (less than high school, ie, 12th grade or lower, without diploma), HS (high school graduate or GED), some college (some college, including associate but not bachelor's degree), and college graduate (bachelor's, master's, professional, and doctoral degrees). A U.S. Census region—Midwest, Northeast, South, or West—was assigned, based on the location of the interviewed household.

BMI (weight [kg]/height [m]^2) was calculated for each participant, based on self-reported weight and height. Individuals were categorized as underweight/normal weight (< 25 kg/m^2), overweight (25 to < 30 kg/m^2), and obese (30 kg/m^2).[11] The 449 underweight individuals (1.9% of the sample) were not significantly different from those of normal weight in their association with the outcome or with other covariates, and were grouped together for this study.

Statistical Analysis

For each domain, walking was examined using 2 measures, prevalence (proportion participating in walking during the past 7 days) and time spent walking during the past 7 days, by sex, age group, race/ethnicity, education level, BMI category, region of residence, and whether walking was done in the other domain. For ordinal variables, the group with the larger sample size at either end of the range was set as the reference group. For other variables with 3 or more categories, the group with the largest sample size was set as the reference group.

Multivariate logistic regression models that included all covariates were used to obtain adjusted prevalence odds and odds ratios. The distribution of weekly walking time among walkers was found to be approximately log-normal. Multivariate linear regression on log-transformed weekly walking time was used to obtain estimates of mean walking time and adjusted ratios of walking time.

Inclusion of neither household income nor employment status among the covariates changed the adjusted estimates appreciably. Household income was strongly correlated with education level, which therefore provides a good proxy for socioeconomic status. In addition, almost 10% of respondents were missing data on household income. Employment status was strongly correlated with age. For these reasons, neither household income nor employment status was retained in the final analyses.

The distribution of bout duration was examined in each domain, overall, by sex, and by age. The product of survey person weight and the number of bouts reported by each person was used as survey bout-length weight, in each domain, for the bout-based analysis.

All point estimates, 95% confidence interval estimates, multivariate analyses, trend tests on ordinal variables, t tests, and Wald tests for model terms were performed using R version 2.14.1 (R Foundation for Statistical Computing, Vienna, Austria) with the survey package (version 3.29) to account for the complex survey design. Statistical results were deemed significant at $P < .05$.

Results

Sample Characteristics

The analytical sample of 24,017 respondents comprised 10,816 men and 13,201 women (Table 1). A majority of the sample was in each of the following groups: aged 45 years or older, non-Hispanic white, at least some college education, and overweight or obese. The largest regional representation was from the South.

Prevalence

Overall, for the U.S. adult population in 2010, 29.4% walked for transportation and 50.0% walked for leisure in the past 7 days (Table 1). Prevalence was lower for transportation walking than leisure walking, overall and for every group examined.

Prevalence of walking showed significant variation by sex, age, race/ethnicity, education level, and BMI category, although there were differences in the variation by domain (Table 1). For transportation walking, prevalence was lower among women than among men, whereas, for leisure walking, prevalence was higher among women. With increasing age, adjusted prevalence odds of transportation walking decreased significantly, but showed no significant linear trend for leisure walking. The adjusted odds of transportation walking were highest among non-Hispanic blacks, but the adjusted odds of leisure walking were lowest in that group. For both domains, prevalence increased with increasing education level and with decreasing BMI category. The prevalence of transportation walking was lowest in the South, but regional differences in the prevalence of leisure walking were not significant after adjustment.

Adults may walk for both transportation and leisure, exclusively for either, or for neither. Of U.S. adults, 17.8% walked for both transportation and leisure (Table 2), while 38.4% participated in neither. For every group examined, prevalence of walking for leisure exclusively exceeded that for transportation exclusively. Overall, among leisure walkers, 35.6% walked for transportation; among transportation walkers, 60.6% walked for leisure (Table 1). Prevalence of transportation walking among leisure walkers was smaller among women than among men (32.7% versus 38.8%), among those aged 65 years or older than among those younger than 65 years (26.6% versus 37.1%), and among the obese than among those overweight or of BMI < 25 kg/m^2 (31.1% versus 37.1%).

Bout Length

Average walking bout length among walkers differed significantly by domain: 26.3 minutes/bout (24.7–27.9 minutes/bout) for transportation walking compared with 31.7 minutes/bout (30.8–32.6 minutes/bout) for leisure walking. For both transportation and leisure walking, approximately 96% of bouts were between 10 minutes (the shortest reportable duration) and 60 minutes in duration (transportation: 96.5% [95.8%–97.1%]; leisure: 96.1% [95.6%–96.6%]) (Figure 1). However, the distribution of average bout duration differed by domain. Transportation walking was dominated by short bouts of 10 minutes to 15 minutes duration (52.4% [50.2%–54.6%]) while only about 8.0% (7.0%–9.0%) were 41- to 60-minute bouts. In contrast, leisure walking was characterized by a more even distribution between 10 minutes and 60 minutes per bout (28.0% [26.7%–29.3%] were 10- to 15-minute bouts; 17.1% [16.1%–18.1%] were 41- to 60-minute bouts). The contrast in bout distributions between domains was observed in every group examined (Figures 1 and 2).

Mean Weekly Time

Mean weekly time of transportation walking among transportation walkers (58.7 minutes/week) was smaller than that of leisure walking among leisure walkers (80.2 minutes/week) overall, and for every group examined (Table 3).

Mean weekly time of walking among walkers showed variation by sex, age, race/ethnicity, education level, and BMI category, although there were differences in the variation by domain. Among walkers, women walked less time for transportation than men (adjusted time ratio 0.90), whereas there was no significant difference between the sexes in the mean

time of leisure walking. With increasing age, mean time of transportation walking showed no significant variation, whereas adjusted mean time of leisure walking increased significantly. Among racial/ethnic groups, mean time of transportation walking was lowest among non-Hispanic whites, but mean time of leisure walking did not vary significantly after adjustment. With increasing education level, mean time of transportation walking decreased whereas mean time of leisure walking showed no variation after adjustment. Mean time of both transportation and leisure walking decreased with increasing BMI. Regional difference in mean time was significant after adjustment only for transportation walking.

Discussion

This study shows that, among U.S. adults, participation in walking, bout lengths, and time spent walking are different for transportation and leisure walking. More adults walk for leisure and for longer durations accumulated through longer bouts, compared with walking for transportation.

Variations in walking by demographic characteristics depend both on the domain and the measure used to assess walking. Prevalence of transportation walking and the time spent on it are higher among men than among women and show racial and ethnic variation. Prevalence of transportation walking increases, but time spent on it decreases, with increasing education level. Prevalence of leisure walking is higher among women, increases with education level, and varies by race and ethnicity. Racial and ethnic variation in time spent leisure walking was no longer significant when adjusted for other covariates in the study.

Compared with findings reported from the 2005 NHIS,[4] prevalence of transportation walking was similar, whereas prevalence of leisure walking was higher in 2010. Within the context of our study, it is not possible to determine what could be responsible for the increase in self-reported walking, but increased walking for leisure is a positive development. The associations found in 2005 NHIS between walking prevalence and demographic covariates sex, age, education level and BMI are similar to our findings. Time spent walking, by context, has not been examined in detail in 2005 NHIS. The 2005 NHIS questionnaire was slightly different from the 2010 version, so that examination of bout length was not possible with the former.

Four other national surveillance systems assess walking. The American Community Survey assesses mode of transportation to work most days the previous week among workers 16 years and older; 2.8% reported walking in 2012.[12] The American Time Use Survey (ATUS) is based on a time-defined log of activities over 24 hours. In 2003–2005, 4.8% walked for exercise and 12.5% walked for transportation among those 15 years and older, based on ATUS.[9] The National Household Travel Survey (NHTS) assesses walking both for the past 7 days and through a travel diary on a random day. Based on NHTS 2009, 66% of those 16 years and older walked in the past 7 days, and 18% of those 5 years and older walked on a random travel day.[13] Finally, the Behavioral Risk Factor Surveillance System assesses the 2 top nonoccupational physical activities in past month; in 2011, 47% of adults reported

walking as one of the two.[14] The different surveillance systems use disparate measures (bout, trip or principal commuting mode) and methods (diary or questionnaire) to assess walking, yielding estimates that are difficult to compare across systems.

The results of this study show that the prevalence of transportation walking is lower than that of leisure walking among all groups examined; thus, there is more room for improvement in transportation walking. This suggests that, in addition to promoting walking in general, providing opportunities to walk for transportation may be one strategy to increase participation in walking. Transportation walking is associated with characteristics of the built environment and with transit use, suggesting possible strategies to increase walking.[15–17] Our findings on bout-length distribution show that most transportation walking trips are approximately one-half mile (approximately 10 to 15 minutes at a moderate pace of 3.0 miles per hour[18]), and other studies have confirmed that substantial health benefits may be accumulated through short bouts, especially when undertaken regularly.[19] Furthermore, our findings on walking time suggest that higher levels of transportation walking are not associated with lower levels of leisure walking, overall. Thus, a walk-able, mixed land use neighborhood that combines spaces to walk to destinations and services within a reasonable walking distance may be key factors that encourage sufficient walking for health.[15]

Interventions may be more effective when matched or tailored to the walking domain of interest.[20–23] The *National Prevention Strategy*'s priority on Active Living recommends community design and development that support active transportation, especially walking.[24] The recent Institute of Medicine report, *Accelerating Progress in Obesity Prevention*, recommends integrating physical activity into daily life by increasing opportunities and access to places that allow physical activity.[25] This analysis of walking for transportation and leisure by demographic characteristics may help guide the development of walking interventions.

This study found that prevalence, bout-length distribution, and mean weekly time of transportation and leisure walking differ substantially in their association with demographic correlates. The 3 measures assess distinct facets of walking behavior in public health surveillance of walking. Comprehensive surveillance of walking for transportation and leisure is needed for planning, implementation, and evaluation of interventions to promote walking.

This study is subject to a number of limitations. First, the analysis is based on self-reports and may overestimate walking due to recall and social-desirability biases.[26–28] However, there is no reason to believe that the biases differ significantly among the groups examined. Second, while bouts shorter than 10 minutes are not reported as they are not known to be associated with substantial health benefits, they may comprise a substantial proportion of walking bouts, especially for transportation walking. Ability to assess bouts shorter than 10 minutes may enhance our understanding of walking behavior. Third, NHIS does not assess intensity of walking. Our analysis is unable to directly assess whether walking reported is brisk enough to offer substantial health benefits overall. Finally, NHIS currently does not include questions on barriers to and motivators for walking. It is tempting to speculate that

leisure walking behavior is shaped largely by choice while transportation walking behavior is shaped largely by opportunity and necessity. Studies that further explore motivators and barriers to walking by domain may help elucidate these issues.

This study also has a number of strengths. It is based on a nationally representative survey, the NHIS, which, of the 5 national surveys that assess walking among adults (ACS, ATUS, NHTS, BRFSS, and NHIS), is the only one with questions specific to health, and to transportation and leisure walking. The large sample size and the richness of the data collected enable multivariate and stratified analysis of walking among U.S. adults based on a large number of covariates. The study examines transportation and leisure walking, including participation exclusively in each domain as well as in both domains. Finally, walking is assessed using 3 measures—prevalence, bout length, and mean weekly time—making for a more complete description of walking behavior.

Conclusion

In 2010, 29.4% of U.S. adults walked for transportation and 50.0% walked for leisure in the past 7 days. Walking is a common activity across all demographic groups, albeit with significant intergroup disparities. Strategies to increase walking may differ depending on whether it is undertaken for transportation or leisure and on the characteristics of the target population. The findings also suggest that a description of walking adequate to guide interventions should include multiple domains (transportation, leisure) as well as multiple measures (participation, mean time) of walking.

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Figure 1.
Distribution of walking bouts by bout length among U.S. adult walkers, by domain and sex
— National Health Interview Survey 2010. Brackets indicate 95% confidence intervals.

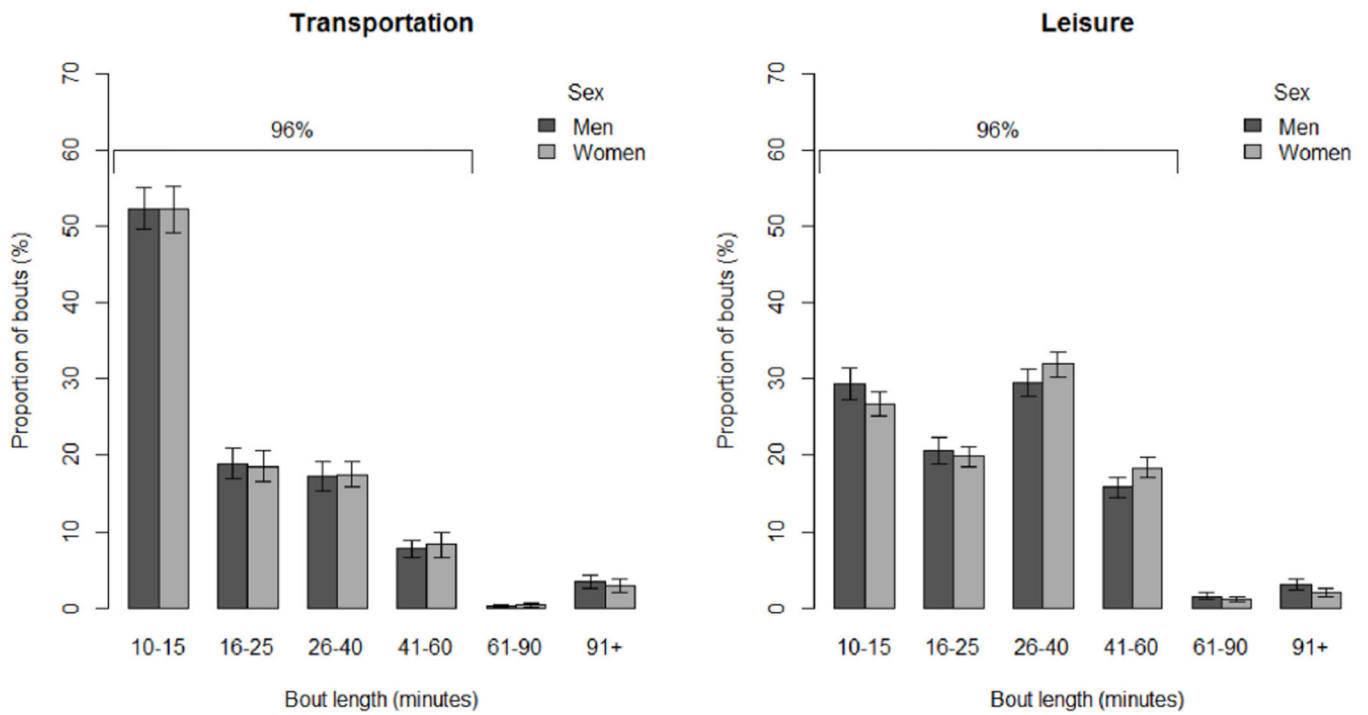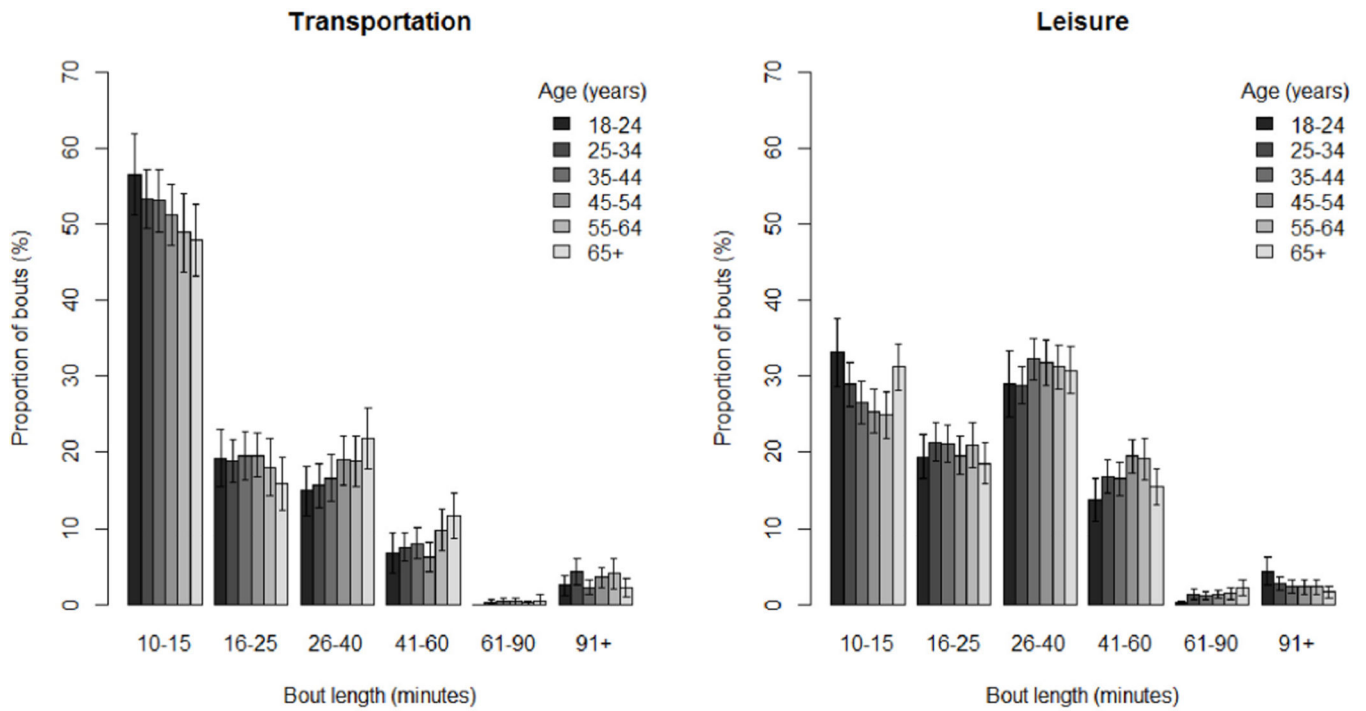**Figure 2.**
Distribution of walking bouts by bout length among U.S. adult walkers, by domain and age
— National Health Interview Survey 2010. Brackets indicate 95% confidence intervals.

Table 1

Sample Characteristics and Prevalence of Walking in the Past 7 Days Among U.S. Adults (Unadjusted and Adjusted), by Selected Characteristics—National Health Interview Survey 2010

Characteristic	Sample (%)	Transportation			Leisure		
		Prevalence (%, 95% CI)	Adjusted odds ratio		Prevalence (%, 95% CI)	Adjusted odds ratio	
Total	24,017 (100)	29.4 (28.6, 30.3)	n/a		50.0 (49.1, 51.0)	n/a	
Sex							
Men	10,816 (45.0)	32.0 (30.8, 33.2)	1.00 (ref)		48.5 (47.3, 49.8)	1.00 (ref)	
Women	13,201 (55.0)	26.9 (25.8, 28.0)	0.76 (0.70, 0.82)		51.5 (50.3, 52.7)	1.17 (1.10, 1.25)	
Wald test P-value		< 0.001	< 0.001		< 0.001	< 0.001	
Age (years)							
18–24	2606 (10.9)	39.0 (36.4, 41.7)	2.44 (2.10, 2.83)		48.2 (45.8, 50.6)	1.12 (0.98, 1.27)	
25–34	4498 (18.7)	33.2 (31.4, 35.1)	1.75 (1.54, 1.98)		51.7 (49.8, 53.6)	1.20 (1.08, 1.33)	
35–44	4308 (17.9)	29.4 (27.8, 31.1)	1.48 (1.31, 1.68)		52.6 (50.6, 54.5)	1.27 (1.14, 1.42)	
45–54	4283 (17.8)	27.9 (26.3, 29.6)	1.42 (1.26, 1.61)		51.5 (49.7, 53.3)	1.26 (1.13, 1.40)	
55–64	3735 (15.6)	27.9 (26.2, 29.7)	1.43 (1.26, 1.62)		51.7 (49.5, 53.8)	1.25 (1.12, 1.40)	
65	4587 (19.1)	20.3 (18.9, 21.8)	1.00 (ref)		43.7 (41.8, 45.5)	1.00 (ref)	
Wald test P-value		< 0.001 *	< 0.001 *		< 0.001 *	< 0.001	
Race/ethnicity							
White, non-Hispanic	13,688 (57.0)	28.1 (27.0, 29.2)	1.00 (ref)		51.7 (50.6, 52.8)	1.00 (ref)	
Black, non-Hispanic	3797 (15.8)	30.6 (28.6, 32.6)	1.38 (1.24, 1.54)		41.2 (39.1, 43.4)	0.73 (0.65, 0.80)	
Hispanic	4590 (19.1)	32.8 (31.0, 34.8)	1.15 (1.04, 1.29)		47.5 (45.6, 49.4)	1.00 (0.91, 1.09)	
Other	1942 (8.1)	33.8 (31.3, 36.4)	1.06 (0.93, 1.20)		53.5 (50.7, 56.3)	0.93 (0.82, 1.05)	
Wald test P-value		< 0.001	< 0.001		< 0.001	< 0.001	
Education							
< High school	4023 (16.8)	28.8 (27.0, 30.6)	0.82 (0.73, 0.92)		37.7 (35.9, 39.6)	0.42 (0.38, 0.47)	
High school	6282 (26.2)	24.1 (22.9, 25.3)	0.64 (0.58, 0.70)		43.6 (42.0, 45.1)	0.55 (0.50, 0.60)	
Some college	7220 (30.1)	29.1 (27.7, 30.5)	0.75 (0.69, 0.82)		51.0 (49.5, 52.6)	0.71 (0.65, 0.78)	
College grad	6492 (27.0)	35.0 (33.6, 36.5)	1.00 (ref)		61.0 (59.4, 62.6)	1.00 (ref)	
Wald test P-value		< 0.001 *	< 0.001 *		< 0.001 *	< 0.001 *	

Characteristic	Sample (%)	Transportation		Leisure	
		Prevalence (%, 95% CI)	Adjusted odds ratio	Prevalence (%, 95% CI)	Adjusted odds ratio
BMI (kg/m²)					
< 25	8896 (37.0)	32.5 (31.2, 33.9)	1.00 (ref)	52.5 (51.1, 53.9)	1.00 (ref)
25 to < 30	8367 (34.8)	30.1 (28.9, 31.4)	0.93 (0.86, 1.00)	51.1 (49.7, 52.5)	1.01 (0.94, 1.08)
30	6754 (28.1)	24.4 (23.0, 25.8)	0.75 (0.68, 0.82)	45.4 (43.9, 47.0)	0.85 (0.78, 0.92)
Wald test P-value		< 0.001*	< 0.001*	< 0.001*	< 0.001*
Region					
Midwest	5315 (22.1)	26.2 (24.4, 28.1)	1.18 (1.05, 1.33)	50.7 (49.1, 52.4)	1.12 (1.02, 1.23)
Northeast	3790 (15.8)	35.4 (32.8, 38.2)	1.82 (1.59, 2.08)	51.5 (49.6, 53.4)	1.07 (0.97, 1.19)
South	8824 (36.7)	23.6 (22.4, 24.8)	1.00 (ref)	46.6 (44.9, 48.2)	1.00 (ref)
West	6088 (25.3)	36.9 (35.2, 38.7)	1.84 (1.66, 2.04)	53.4 (51.2, 55.6)	1.14 (1.02, 1.28)
Wald test P-value		< 0.001	< 0.001	< 0.001	0.055
Transportation walking					
Does not walk	16,626 (69.2)	n/a	n/a	45.6 (44.6, 46.7)	1.00 (ref)
Walks	7391 (30.8)	n/a	n/a	60.6 (59.1, 62.1)	1.75 (1.63, 1.88)
Wald test P-value				< 0.001	< 0.001
Leisure walking					
Does not walk	12,272 (51.1)	23.2 (22.2, 24.3)	1.00 (ref)	n/a	n/a
Walks	11,745 (48.9)	35.6 (34.5, 36.8)	1.76 (1.64, 1.89)	n/a	n/a
Wald test P-value		< 0.001	< 0.001		

Note. Sample percentages are unweighted proportions. Adjusted logistic regression models include all covariates (sex, age-group, race, education, BMI category, and region).

Abbreviations: CI, confidence interval; n/a, not applicable; ref, reference level.

*
Significant (P < .05) linear trend. Only ordinal variables age, education, and BMI tested for linear trend.

Table 2

Prevalence (%) of Walking in the Past 7 Days in Exclusive Domains Among U.S. Adults, by Selected Characteristics—National Health Interview Survey 2010

Characteristic	Neither (95% CI)	Exclusively transportation (95% CI)	Exclusively leisure (95% CI)	Both (95% CI)
Total	38.4 (37.5, 39.3)	11.6 (11.0, 12.2)	32.2 (31.4, 33.1)	17.8 (17.2, 18.5)
Sex				
Men	38.3 (37.2, 39.4)	13.2 (12.4, 14.0)	29.7 (28.6, 30.8)	18.8 (17.9, 19.8)
Women	38.5 (37.3, 39.6)	10.1 (9.4, 10.8)	34.6 (33.6, 35.7)	16.8 (16.0, 17.7)
Age (years)				
18–24	34.7 (32.4, 37.2)	17.1 (15.1, 19.3)	26.3 (24.3, 28.4)	21.9 (19.9, 24.1)
25–34	35.1 (33.2, 37.0)	13.2 (12.1, 14.5)	31.7 (30.0, 33.5)	19.9 (18.5, 21.5)
35–44	36.6 (34.8, 38.3)	10.9 (9.9, 11.9)	34.0 (32.3, 35.8)	18.5 (17.2, 20.0)
45–54	38.2 (36.5, 40.0)	10.3 (9.3, 11.4)	33.9 (32.2, 35.6)	17.6 (16.3, 19.1)
55–64	38.0 (36.0, 40.2)	10.3 (9.1, 11.5)	34.0 (32.0, 36.1)	17.6 (16.2, 19.1)
65	47.6 (45.9, 49.4)	8.7 (7.8, 9.8)	32.0 (30.3, 33.9)	11.6 (10.5, 12.9)
Race/ethnicity				
White, non-Hispanic	37.5 (36.4, 38.5)	10.8 (10.1, 11.6)	34.4 (33.4, 35.5)	17.3 (16.4, 18.1)
Black, non-Hispanic	45.4 (43.0, 47.7)	13.4 (12.1, 14.9)	24.1 (22.3, 25.9)	17.2 (15.6, 18.8)
Hispanic	39.3 (37.4, 41.1)	13.2 (12.0, 14.6)	27.9 (26.3, 29.6)	19.6 (18.2, 21.1)
Other	33.6 (31.1, 36.1)	12.9 (11.3, 14.8)	32.6 (30.3, 35.0)	20.9 (18.8, 23.2)
Education				
< High school	48.4 (46.4, 50.3)	13.9 (12.6, 15.3)	22.8 (21.2, 24.6)	14.9 (13.5, 16.4)
High school	45.8 (44.2, 47.3)	10.7 (9.8, 11.6)	30.2 (28.8, 31.6)	13.4 (12.5, 14.4)
Some college	37.1 (35.6, 38.6)	11.9 (10.9, 12.9)	33.8 (32.4, 35.3)	17.2 (16.1, 18.4)
College grad	28.0 (26.7, 29.4)	11.0 (10.1, 12.0)	37.0 (35.4, 38.5)	24.0 (22.8, 25.3)
BMI (kg/m^2)				
< 25	35.0 (33.7, 36.3)	12.6 (11.7, 13.5)	32.5 (31.2, 33.9)	19.9 (18.9, 21.0)
25 to < 30	37.3 (36.0, 38.6)	11.6 (10.8, 12.5)	32.6 (31.3, 33.9)	18.5 (17.5, 19.5)
30	44.3 (42.8, 45.8)	10.2 (9.4, 11.1)	31.3 (29.9, 32.7)	14.1 (13.0, 15.3)
Region				
Midwest	38.8 (37.1, 40.6)	10.4 (9.5, 11.4)	35.0 (33.3, 36.7)	15.8 (14.4, 17.2)
Northeast	34.7 (32.6, 36.9)	13.8 (12.3, 15.3)	29.8 (27.9, 31.9)	21.7 (19.8, 23.6)
South	43.8 (42.3, 45.4)	9.6 (8.7, 10.5)	32.6 (31.3, 33.9)	14.0 (13.1, 14.9)
West	32.4 (30.7, 34.1)	14.2 (12.8, 15.6)	30.7 (28.8, 32.5)	22.8 (21.3, 24.3)

Note. Adjusted models include all covariates (sex, age-group, race, education, BMI category, and region). Only ordinal variables age, education, and BMI tested for linear trend. Rows may not total 100% due to rounding.

Abbreviations: CI, confidence interval.

Table 3

Mean Walking Time Among U.S. Adult Walkers (Unadjusted and Adjusted), by Selected Characteristics—National Health Interview Survey 2010

Characteristic	Transportation		Leisure	
	Mean minutes/week (95% CI)	Adjusted ratio	Mean minutes/week (95% CI)	Adjusted ratio
Total	58.7 (56.8, 60.7)	n/a	80.2 (78.6, 81.9)	n/a
Sex				
Men	61.2 (58.7, 63.9)	1.00 (ref)	79.9 (77.4, 82.5)	1.00 (ref)
Women	56.0 (53.4, 58.6)	0.90 (0.85, 0.96)	80.6 (78.5, 82.7)	1.00 (0.96, 1.04)
Wald test *P*-value	0.003	0.001	0.680	0.912
Age (years)				
18–24	60.6 (56.1, 65.5)	1.05 (0.93, 1.19)	67.0 (62.2, 72.3)	0.74 (0.68, 0.81)
25–34	59.0 (55.3, 62.9)	1.05 (0.95, 1.17)	74.6 (71.4, 77.8)	0.83 (0.78, 0.89)
35–44	56.8 (53.3, 60.6)	1.02 (0.91, 1.13)	77.0 (73.9, 80.2)	0.87 (0.81, 0.93)
45–54	58.4 (54.5, 62.7)	1.06 (0.95, 1.19)	85.6 (81.6, 89.8)	0.97 (0.90, 1.04)
55–64	61.6 (57.2, 66.4)	1.14 (1.02, 1.27)	90.3 (85.6, 95.3)	1.02 (0.95, 1.09)
65	55.2 (50.7, 60.2)	1.00 (ref)	88.3 (83.9, 93.0)	1.00 (ref)
Wald test *P*-value	0.393	0.180	< 0.001[*]	< 0.001[*]
Race/ethnicity				
White, non-Hispanic	55.3 (53.0, 57.6)	1.00 (ref)	81.6 (79.6, 83.7)	1.00 (ref)
Black, non-Hispanic	61.8 (57.8, 66.0)	1.12 (1.03, 1.21)	74.8 (69.9, 80.0)	0.96 (0.90, 1.03)
Hispanic	71.7 (66.4, 77.5)	1.24 (1.14, 1.35)	77.0 (73.3, 80.7)	0.99 (0.94, 1.05)
Other	60.5 (55.0, 66.5)	1.08 (0.97, 1.19)	80.5 (74.7, 86.7)	0.98 (0.90, 1.06)
Wald test *P*-value	< 0.001	< 0.001	0.034	0.691
Education				
< High school	66.5 (61.8, 71.5)	1.15 (1.05, 1.25)	76.4 (71.7, 81.4)	0.94 (0.87, 1.01)
High school	61.2 (56.8, 65.9)	1.11 (1.02, 1.22)	78.1 (74.8, 81.5)	0.96 (0.91, 1.02)
Some college	57.4 (54.3, 60.6)	1.05 (0.98, 1.14)	79.2 (76.2, 82.4)	0.99 (0.94, 1.04)
College grad	55.6 (52.8, 58.6)	1.00 (ref)	83.9 (81.1, 86.8)	1.00 (ref)
Wald test *P*-value	< 0.001[*]	0.013[*]	0.012[*]	0.284
BMI (kg/m²)				
< 25	60.8 (58.0, 63.8)	1.00 (ref)	84.1 (81.4, 86.9)	1.00 (ref)
25 to < 30	60.1 (57.1, 63.1)	0.95 (0.88, 1.01)	80.6 (77.9, 83.5)	0.93 (0.89, 0.98)
30	53.2 (50.1, 56.6)	0.85 (0.80, 0.92)	74.1 (71.2, 77.2)	0.87 (0.83, 0.92)
Wald test *P*-value	< 0.001[a]	< 0.001[*]	< 0.001[*]	< 0.001[*]
Region				
Midwest	50.6 (46.8, 54.7)	0.91 (0.83, 0.99)	77.0 (73.8, 80.3)	0.97 (0.91, 1.02)
Northeast	64.9 (60.3, 69.9)	1.13 (1.04, 1.23)	82.2 (78.1, 86.4)	1.01 (0.95, 1.08)
South	57.6 (55.1, 60.3)	1.00 (ref)	79.2 (76.3, 82.3)	1.00 (ref)
West	61.9 (57.7, 66.3)	1.06 (0.98, 1.15)	83.4 (80.3, 86.7)	1.04 (0.99, 1.10)
Wald test *P*-value	< 0.001	< 0.001	0.031	0.083

Characteristic	Transportation		Leisure	
	Mean minutes/week (95% CI)	Adjusted ratio	Mean minutes/week (95% CI)	Adjusted ratio
Transportation walking				
Does not walk	n/a	n/a	78.8 (76.8, 80.7)	1.00 (ref)
Walks	n/a	n/a	83.0 (80.2, 85.9)	1.06 (1.02, 1.11)
Wald test *P*-value			0.013	0.004
Leisure walking				
Does not walk	53.8 (51.1, 56.7)	1.00 (ref)	n/a	n/a
Walks	62.2 (59.8, 64.6)	1.17 (1.10, 1.24)	n/a	n/a
Wald test *P*-value	< 0.001	< 0.001		

Note. Adjusted log-linear regression models include all covariates (sex, age-group, race, education, BMI category, and region).

Abbreviations: CI, confidence interval; n/a, not applicable; ref, reference level.

[*] Significant ($P < .05$) linear trend. Only ordinal variables age, education, and BMI tested for linear trend.