

Transportation and Leisure Walking Among U.S. Adults: Trends in Reported Prevalence and Volume, National Health Interview Survey 2005–2015

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Introduction: Promotion of walking is a promising strategy for increasing physical activity levels in the U.S. The proportion of adults who report walking for either transportation or leisure has increased in recent years, but evidence on trends in walking for specific purposes is limited.

Methods: The 2005, 2010, and 2015 National Health Interview Survey assessed self-reported participation in and volume (minutes/week) of walking for transportation and leisure in the past week among adults aged ≥ 18 years. Linear and quadratic trends in the prevalence and mean volume of walking for each purpose were evaluated using logistic and linear regression. Analyses were performed in 2017.

Results: The prevalence of transportation walking increased from 28.4% (2005) to 31.7% (2015) (linear trend: $p < 0.05$). Leisure walking prevalence increased from 42.1% (2005) to 52.1% (2015), but the increase stalled from 2010 to 2015 with only a 2.3 percentage point increase (linear and quadratic trends: $p < 0.05$). Across purposes, the mean walking volume decreased from 2005 to 2015, with no significant changes between 2010 and 2015 (linear and quadratic trends: $p < 0.05$). The proportion of adults who walked for both transportation and leisure in the past week increased steadily (linear trend: $p < 0.05$), and this group reported the greatest total volume of walking.

Conclusions: Although the prevalence of self-reported transportation and leisure walking increased during the last decade, the time spent walking has decreased. Strategies that encourage walking for multiple purposes may present an opportunity for increasing both participation in walking and the amount of time spent walking.

Am J Prev Med 2018;000(000):1–8. Published by Elsevier Inc. on behalf of American Journal of Preventive Medicine.

INTRODUCTION

Promotion of walking is widely recognized as an important public health strategy for increasing physical activity levels in the U.S., as highlighted in *Step It Up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities (Call to Action)*.¹ Walking is a simple and accessible way for most individuals to start or continue to be physically active as it does not require special skills or equipment, has little or no associated costs, and is an activity that can be done by most people regardless of sex, age, race, ethnicity, or SES. People walk for many reasons, providing multiple opportunities to engage in physical activity

throughout the day and broadening its potential appeal to individuals with varied interests.¹ Walking can serve as a mode of transportation to get to places, such as

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0749-3797/\$36.00

<https://doi.org/10.1016/j.amepre.2018.05.027>

work, school, or transit stops. People also walk for leisure purposes, including for exercise, to relieve stress, or to socialize.

Studies suggest that walking patterns differ by sex, but the direction of association may vary by walking purpose and setting.^{2,3} Although findings from international settings are mixed,³ nationally representative data from the U.S. indicate that males are more likely than females to walk for transportation, and females are more likely to walk for leisure.² A recent study found that trends in walking also vary by sex, with the prevalence of any walking increasing among females and men from 2005 to 2015, but stalling among males from 2010 to 2015.⁴ Another found that weekly time spent walking (i.e., volume) significantly decreased by an average of 15 minutes from 2005 to 2010.⁵ However, neither of these studies separately examined changes in the prevalence and volume of walking for specific purposes (e.g., transportation, leisure).

The National Health Interview Survey (NHIS) included a Cancer Control Supplement in 2005, 2010, and 2015 that assessed past-week walking for transportation and leisure among U.S. adults, providing a unique opportunity to examine changes in walking behaviors during the past decade in a nationally representative sample. This study expands on previous analyses by examining trends in the prevalence and volume of walking for transportation and leisure from 2005 to 2015, overall and separately among males and females. Consistent and ongoing monitoring of walking behaviors can help identify who is walking and for what purposes. This information can help decision makers prioritize resources to support efforts to increase physical activity levels through walking.

METHODS

Study Sample

NHIS is a continuous, cross-sectional survey of U.S. households that is representative of the civilian, non-institutionalized population and administered using in-person interviews.⁶ NHIS consists of a core questionnaire that collects basic health and demographic information for all family members in a sampled household and periodic supplements that address special topics. Questions on walking for transportation and leisure were included in a Cancer Control Supplement in 2005, 2010, and 2015, which was administered to a randomly selected adult aged ≥ 18 years in each sampled family.

The Cancer Control Supplement included data from 92,257 adults across the three time points. Sample-adult response rates, which account for household and family nonresponse, were 69.0% (2005); 60.8% (2010); and 55.2% (2015).⁷ Individuals were excluded if they were

missing walking data ($n=6,044$). Those with missing data were more likely to be female, non-Hispanic black, older, and have lower education than those with complete data. In addition, individuals who reported being unable to walk were excluded ($n=2,280$). The final analytic sample included 83,933 adults (2005: $n=28,480$; 2010: $n=24,719$; 2015: $n=30,734$).

Measures

To assess participation in transportation walking, respondents in all 3 years were asked, *During the past 7 days, did you walk to get someplace that took you at least 10 minutes?* To assess participation in leisure-time walking, respondents in 2005 were asked, *During the past 7 days, did you walk for at least 10 minutes at a time [for fun, relaxation, exercise, or to walk the dog]?* and in 2010 and 2015, *During the past 7 days, did you walk for at least 10 minutes [for fun, relaxation, exercise, or to walk the dog]?*

In 2005, respondents with affirmative responses to transportation walking were asked, *During the past 7 days, on how many days did you walk for at least 10 minutes at a time to get some place?* and *How much time did you usually spend on one of those days walking to get from place to place?* In 2005, respondents with affirmative responses to leisure walking were asked, *During the past 7 days, on how many days did you usually walk for at least 10 minutes at a time for fun, relaxation, exercise, or to walk the dog?* and *How much time did you usually spend on one of those days walking for fun, relaxation, or exercise?* In 2010 and 2015, respondents were asked, *In the past 7 days, how many times did you do that?* and *On average, how long did those walks take?* for both transportation and leisure walking. Individuals who participated in at least one 10-minute bout of transportation or leisure walking in the past 7 days at the time of the survey were categorized as walkers. For each walker, the volume of walking (minutes per week) was calculated by multiplying the number of bouts per week by the average minutes per bout. Individuals who did not walk for ≥ 10 minutes, or who reported average walking bouts < 10 minutes, were categorized as non-walkers.

Statistical Analysis

In each year, the proportion of adults who reported walking was calculated for nonexclusive purposes (any walking, any transportation walking, any leisure walking) and for exclusive purposes (exclusively transportation walking, exclusively leisure walking, both transportation and leisure walking). Among walkers, the mean volume of walking was also calculated for nonexclusive and exclusive purposes. Because of its approximately log-normal distribution, a log-transformation was applied to walking volume. The mean of the log-transformed values was

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