

Physical Inactivity Among Adults Aged 50 Years and Older — United States, 2014

Kathleen B. Watson, PhD¹; Susan A. Carlson, PhD¹; Janelle P. Gunn, MPH¹; Deborah A. Galuska, PhD¹; Ann O'Connor, MPA¹; Kurt J. Greenlund, PhD²; Janet E. Fulton, PhD¹

Physical activity can help delay, prevent, or manage many of the chronic diseases for which adults aged ≥ 50 years are at risk (1–3). These diseases can impact the length and quality of life, as well as the long-term ability to live independently.* All adults aged ≥ 50 years, with or without chronic disease, gain health benefits by avoiding inactivity (2,3). To examine the prevalence of inactivity by selected demographic characteristics and chronic disease status in mid-life and older adults, CDC analyzed data on adults aged ≥ 50 years from the 2014 Behavioral Risk Factor Surveillance System (BRFSS). Overall, 27.5% of adults aged ≥ 50 years reported no physical activity outside of work during the past month. Inactivity prevalence significantly increased with increasing age and was 25.4% among adults aged 50–64 years, 26.9% among those aged 65–74 years, and 35.3% among those aged ≥ 75 years. Inactivity prevalence was significantly higher among women than men, among Hispanics and non-Hispanic blacks than among non-Hispanic whites, and among adults who reported ever having one or more of seven selected chronic diseases than among those not reporting one. Inactivity prevalence significantly increased with decreasing levels of education and increasing body mass index. To help adults with and without chronic disease start or maintain an active lifestyle, communities can implement evidence-based strategies, such as creating or enhancing access to places for physical activity, designing communities and streets to encourage physical activity, and offering programs that address specific barriers to physical activity.

BRFSS is a state-based, random-digit-dialed telephone survey of the noninstitutionalized U.S. civilian population aged ≥ 18 years. Data were collected among 304,129 adults aged ≥ 50 years from the 50 states and the District of Columbia (DC). The 2014 median landline and cellphone combined response rate was 47.0%, and ranged from 25.1% to 60.1%.[†]

Inactivity is defined as participating in no activity beyond baseline activities of daily living (2,3). For this analysis, inactivity was operationalized as a “no” response to the question, “During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?” In addition to self-reported sex, age, race/ethnicity, and highest level of

education completed, adults reported weight and height. Body mass index (BMI) was calculated (weight [kg]/height [m]²), and adults were classified as underweight or normal weight (< 25.0 kg/m²), overweight (25.0–29.9 kg/m²) or obese (≥ 30 kg/m²) (4). Questions about seven chronic diseases for which recommendations for physical activity in preventing or treatment of the disease are well-established were included in analyses (2,3,5). Respondents were defined as ever having one of these selected chronic diseases if they responded “yes” to a question asking if a doctor, nurse, or other health care professional ever told them they had the specific condition (stroke, coronary heart disease, arthritis, cancer [excluding skin cancer], diabetes, chronic obstructive pulmonary disease, and depressive disorder). Ever having coronary heart disease was defined as a “yes” response to myocardial infarction or coronary heart disease.

Data were analyzed by selected demographic characteristics and weighted to provide overall prevalence estimates with accompanying 95% confidence intervals (CIs). Linear contrasts and pairwise t tests were used to identify significant trends and differences by subgroups. Only differences and trends that reached statistical significance ($p < 0.05$) were reported. Multiple logistic regression analysis was used to estimate the adjusted prevalence ratio (aPR) after controlling for the potential confounding effects from the following characteristics: sex, age group, race/ethnicity, education level, and BMI category. By using the multiple logistic regression model, the prevalence in activity by each characteristic controlled for the effects from the remaining characteristics in which studies have shown to be associated with inactivity. Statistical software was used to account for the complex sampling design and to provide weighted estimates.

Among the 304,129 adults aged ≥ 50 years living in the 50 states and DC, data from 27,210 adults were excluded because of missing information, resulting in a final sample of 276,919 adults. Overall, 27.5% of U.S. adults aged ≥ 50 years, approximately 31 million persons, were inactive (Table). Inactivity increased with increasing age for adults aged 50–64 years (25.4%), 65–74 years (26.9%), and ≥ 75 years (35.3%). The prevalence of inactivity was higher for women (29.4%) than men (25.5%), and for Hispanics (32.7%) and non-Hispanic blacks (33.1%) than non-Hispanic whites (26.2%) and those of other race/ethnicity (27.1%). The prevalence decreased

* <http://www.cdc.gov/aging/pdf/state-aging-health-in-america-2013.pdf>.

[†] http://www.cdc.gov/brfss/annual_data/2014/pdf/2014_dqr.pdf.

TABLE. Self-reported prevalence of inactivity among adults aged ≥50 years, by selected characteristic — Behavioral Risk Factor Surveillance System, 2014*

Characteristic	Sample	Prevalence of inactivity	
	Unweighted sample size no. (%)	% prevalence [†] (95% CI)	aPR [§] (95% CI)
Total	276,919 (100.0)	27.5 (27.2–27.9)	—
Sex			
Male	114,367 (47.8)	25.5 (25.0–26.0)	Ref
Female	162,552 (52.2)	29.4 (29.0–29.9)	1.1 (1.1–1.2)
Age group (yrs)			
50–64	133,362 (57.8)	25.4 (25.0–25.9)	Ref
65–74	82,474 (24.4)	26.9 (26.3–27.5)	1.1 (1.0–1.1)
>75	61,083 (17.8)	35.3 (34.5–36.1)	1.3 (1.3–1.4)
Race/Ethnicity			
White, non-Hispanic	234,458 (75.4)	26.2 (25.9–26.5)	Ref
Black, non-Hispanic	19,705 (10.7)	33.1 (31.8–34.3)	1.1 (1.1–1.2)
Hispanic	10,309 (8.6)	32.7 (31.0–34.5)	1.0 (0.9–1.0)
Other [¶]	12,447 (5.3)	27.1 (24.9–29.5)	1.1 (1.1–1.2)
Education			
<High school graduate	21,180 (13.9)	44.1 (42.7–45.4)	Ref
High school graduate	82,519 (29.7)	34.7 (34.0–35.3)	0.8 (0.8–0.8)
Some college	74,195 (30.0)	24.6 (24.0–25.2)	0.6 (0.6–0.6)
College graduate	99,025 (26.4)	14.2 (13.8–14.7)	0.4 (0.3–0.4)
Body mass index** (kg/m²)			
Underweight/Normal weight	89,886 (30.5)	23.1 (22.5–23.7)	Ref
Overweight	104,639 (38.3)	24.4 (23.9–25.0)	1.1 (1.0–1.1)
Obese	82,394 (31.2)	35.8 (35.1–36.4)	1.5 (1.5–1.6)
Region			
Midwest	76,631 (22.5)	28.4 (27.8–29.0)	1.1 (1.1–1.2)
Northeast	50,774 (18.8)	26.6 (25.8–27.4)	1.1 (1.1–1.2)
South	84,135 (37.4)	30.1 (29.5–30.6)	1.2 (1.1–1.2)
West	65,379 (21.3)	23.1 (22.2–24.0)	Ref
Ever had the following chronic disease			
Arthritis			
Yes	127,024 (43.4)	33.1 (32.5–33.6)	1.2 (1.2–1.2)
No	149,895 (56.6)	23.3 (22.9–23.8)	Ref
Cancer^{§§}			
Yes	36,293 (11.6)	31.6 (30.6–32.6)	1.1 (1.1–1.2)
No	240,626 (88.4)	27.0 (26.6–27.4)	Ref
Coronary heart disease^{¶¶}			
Yes	36,362 (12.8)	37.2 (36.2–38.2)	1.3 (1.2–1.3)
No	240,557 (87.2)	26.1 (25.8–26.5)	Ref
COPD			
Yes	29,737 (10.6)	44.4 (43.3–45.5)	1.5 (1.5–1.6)
No	247,182 (89.4)	25.6 (25.2–25.9)	Ref
Depressive disorder			
Yes	52,399 (18.5)	38.0 (37.2–38.8)	1.4 (1.4–1.4)
No	224,520 (81.5)	25.2 (24.8–25.6)	Ref
Diabetes			
Yes	47,773 (18.3)	38.4 (37.5–39.3)	1.3 (1.2–1.3)
No	229,146 (81.7)	25.1 (24.7–25.5)	Ref
Stroke			
Yes	15,523 (5.4)	42.9 (41.3–44.5)	1.4 (1.3–1.5)
No	261,396 (94.6)	26.7 (26.3–27.0)	Ref

Abbreviations: aPR = prevalence ratio; CI = confidence interval; COPD = chronic obstructive pulmonary disease; Ref = referent.

* Inactivity is defined as responding “No” to the following question: “During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?”

[†] All pairwise comparisons are significant except for the following two pairs: non-Hispanic black versus Hispanic and non-Hispanic white versus other race; age, education, and BMI have significant linear trends.

[§] aPR is adjusted for sex, age group, race/ethnicity, education, and body mass index.

[¶] Other includes Multiracial, Asian, Native Hawaiian or Other Pacific Islander, or American Indian, or Alaska Native.

** Body mass index classifications are as follows: underweight/normal (<25.0 kg/m²); overweight (25.0–29.9 kg/m²); obese (≥30 kg/m²).

^{††} Excluding skin cancer.

^{§§} Coronary heart disease includes myocardial infarction and coronary heart disease.

from 44.1% to 14.2% with increasing levels of education and increased from 23.1% to 35.8% with increasing BMI category. Differences in prevalence of inactivity by sex, age group, race/ethnicity, education level, and BMI category remained after simultaneously adjusting for these characteristics.

By region, the prevalence of inactivity was highest in the South (30.1%), followed by the Midwest (28.4%) and Northeast (26.6%). The West (23.1%) had the lowest prevalence. After adjusting for demographic characteristics, differences in prevalence by region remained. Among the 50 states and DC, the prevalence ranged from 17.9% in Colorado to 38.8% in Arkansas (Figure 1).

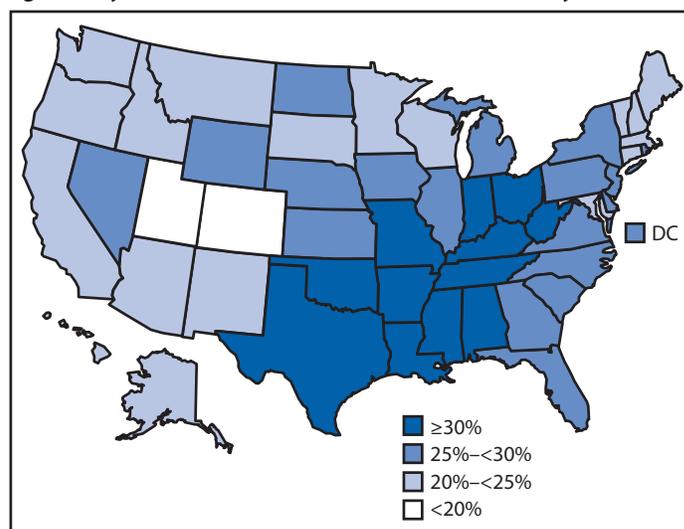
Among those who ever had one of the seven chronic diseases, the prevalence of inactivity was higher among those who ever had any of the diseases compared with those who did not (Table). The magnitude of the difference ranged from an aPR of 1.1 (CI = 1.1–1.2) for cancer to an aPR of 1.5 (CI = 1.5–1.6) for chronic obstructive lung disease. Overall, more adults reporting at least one chronic disease were inactive (31.9%) compared with those not reporting any (19.2%) (Figure 2). The demographics-adjusted prevalence of inactivity among adults with at least one chronic disease was 40% higher (aPR = 1.4; CI = 1.3–1.4) compared with adults without a chronic disease. By age group, the prevalence of inactivity for adults with at least one chronic disease compared with those with no disease was 30.9% versus 18.1% for 50–64 years, 29.6% versus 19.2% for 65–74 years, and 37.3% versus 26.8% for ≥75 years (Figure 2).

Discussion

Approximately 28% of adults aged ≥50 years (31 million persons) were inactive. Inactivity increased with increasing age and BMI, and decreased with increasing levels of education. The prevalence of inactivity was higher among women than among men, and among Hispanics and non-Hispanic blacks compared with non-Hispanic whites. The prevalence was 10%–50% higher among adults who reported having had one of seven specific chronic diseases than among those who reported not having it. The prevalence among the 50 states and DC ranged from 18% to 39%. Results of this analysis are consistent with findings from a national survey showing these differences by demographic characteristics[§] and by chronic disease status (6).

Older adults might be inactive for a number of reasons. Despite benefits of physical activity, it might be that some adults with chronic diseases become inactive because of the disease. However, according to *2008 Physical Activity Guidelines for Americans* (2,3), older adults and adults with chronic

FIGURE 1. Prevalence of self-reported physical inactivity among adults aged ≥50 years — Behavioral Risk Factor Surveillance System, 2014



diseases or disabilities should try to engage in physical activity appropriate for their abilities. Among those with a chronic disease, physical activity can help lessen their condition's severity, manage the disease, or prevent or delay other chronic diseases. For example, among persons with arthritis, joint pain could be reduced through being more active; low impact activity is often recommended (2,3).

Similar to persons with disabilities, older adults might want to be active but face barriers, such as limited places to be safely active in their community or not knowing how to be active given their physical limitations (7). Communities can provide supports that help everyone become more active by using recommended evidence-based strategies.[¶] These community strategies were recently highlighted in *Step It Up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities*^{**} and complement existing recommendations and initiatives to help Americans become more physically active, such as *Healthy People 2020*, the National Prevention Strategy: America's Plan for Better Health and Wellness, Let's Move!, the Go4Life Campaign, the National Physical Activity Plan, and the U.S. Department of Transportation's Safer People, Safer Streets Initiative.^{††}

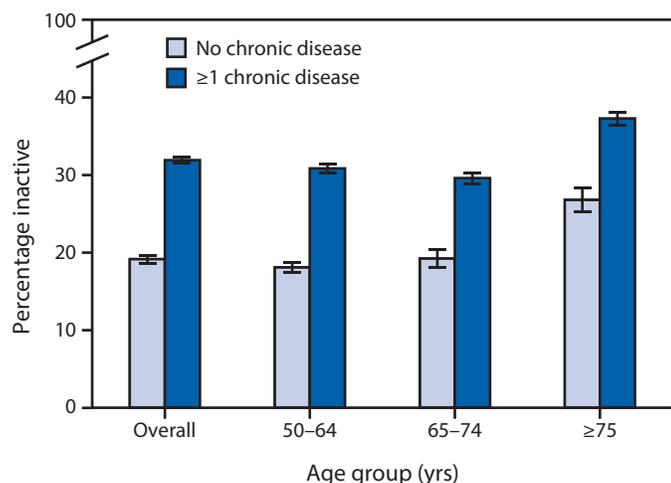
[¶] <http://www.thecommunityguide.org/pa/index.html>.

^{**} <http://www.surgeongeneral.gov/library/calls/walking-and-walkable-communities/call-to-action-walking-and-walkable-communities.pdf>.

^{††} Information can be found for *Healthy People 2020* (<https://www.healthypeople.gov/2020/topics-objectives/topic/physical-activity>), the National Prevention Strategy (<http://www.surgeongeneral.gov/priorities/prevention/strategy/report.pdf>), Let's Move! (<http://www.letsmove.gov/>), Go4Life (<http://go4life.nia.nih.gov>), the National Physical Activity Plan (http://physicalactivityplan.org/docs/2016NPAP_Finalforwebsite.pdf), and the Safer People, Safer Streets: Pedestrian and Bicycle Safety Initiative (<http://www.dot.gov/policy-initiatives/ped-bike-safety/safer-people-safer-streets-pedestrian-and-bicycle-safety>).

[§] <https://www.healthypeople.gov/2020/topics-objectives/topic/physical-activity>.

FIGURE 2. Prevalence of self-reported physical inactivity among adults aged ≥ 50 years, by chronic disease status* and age group — Behavioral Risk Factor Surveillance System, 2014



* Among adults aged ≥ 50 years, 65.7% (confidence interval [CI] = 65.3%–66.1%) had one or more chronic diseases and 34.3% (CI = 33.9%–34.7%) had no chronic disease. Chronic disease is defined as responding yes to at least one of the following conditions: stroke, coronary heart disease, arthritis, cancer (excluding skin cancer), chronic obstructive pulmonary disease, diabetes, and depression. Coronary heart disease includes myocardial infarction and coronary heart disease.

Communities can be enhanced and designed to make it safe and easy for persons of all ages and abilities to be active. Community design can support physical activity, for example, by locating residences within short walking distance of destinations (e.g., stores) and building well-connected safe paths between destinations. Street design can support walking and enhance pedestrian safety through measures that improve safety and aesthetics, as well as addressing barriers for persons with limitations (e.g., using curb cuts). Currently, enhancing and designing communities to promote physical activity is supported in several federally funded programs.^{§§} For example, through the State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health program,^{¶¶} CDC works with state departments of health to increase physical activity by increasing the number of communities that have pedestrian and bike-friendly master transportation plans.

Creating or enhancing access to places for physical activity, combined with information to promote and encourage use of these places, is another recommended strategy to increase physical activity. Examples of such community locations

^{§§} Information can be found for the State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health program (<http://www.cdc.gov/chronicdisease/about/state-public-health-actions.htm>) and the Department of Transportation's Transportation Alternatives Program (http://www.fhwa.dot.gov/environment/transportation_alternatives/).

^{¶¶} <http://www.cdc.gov/chronicdisease/about/state-public-health-actions.htm>.

Summary

What is already known about this topic?

Physical activity has health benefits for persons of all ages. When adults are not able to meet guidelines because of factors such as age, chronic disease, or disabilities, they should engage in physical activity according to their abilities; adults who participate in any physical activity will gain some health benefits. Communities can provide supports that help everyone become more active by using recommended evidence-based strategies.

What is added by this report?

Overall, 27.5% of adults aged ≥ 50 years reported no physical activity outside of work during the past month. Inactivity prevalence significantly increased with increasing age, and was 25.4% among adults aged 50–64 years, 26.9% among adults aged 65–74 years, and 35.3% among adults aged ≥ 75 years. Inactivity prevalence was significantly higher among women than men, among Hispanics and non-Hispanic blacks than among non-Hispanic whites, and among persons reporting ever having had one or more of seven selected chronic diseases than among those not reporting one. Inactivity prevalence significantly increased with decreasing levels of education and increasing body mass index.

What are the implications for public health practice?

Despite the many benefits of being physically active, approximately one in four adults aged ≥ 50 years are inactive. Communities can be designed and enhanced to make it safer and easier for persons of all ages and abilities to be physically active.

include public parks, recreational facilities, senior centers, and malls. Programs, such as an organized mall walking program,^{***} can help enhance access and promote and encourage use of these locations.

Through campaigns and informational approaches, community groups and organizations can also provide access to evidence-based community programs to help adults start and continue to be physically active. Given higher levels of inactivity among persons with chronic conditions, it is important that organizations offer programs that address specific concerns these adults might have and barriers they might face. For example, the Arthritis Foundation's Walk With Ease program has been shown to reduce pain, increase balance and strength, and improve overall health through walking.^{†††} Health care professionals can play a role in promoting physical activity by counseling patients, writing prescriptions for physical activity, and possibly referring them to community programs or facilities where they can be active (8,9).^{§§§}

^{***} <http://www.cdc.gov/physicalactivity/downloads/mallwalking-guide.pdf>.

^{†††} <http://www.cdc.gov/arthritis/interventions/index.htm> and <http://www.arthritis.org/living-with-arthritis/tools-resources/walk-with-ease/about.php>.

^{§§§} <http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/healthy-diet-and-physical-activity-counseling-adults-with-high-risk-of-cvd>.

The findings in this report are subject to at least five limitations. First, BRFSS data are self-reported and subject to recall and social-desirability biases. This can result in an underestimate of physical inactivity (10). Second, BRFSS physical activity questions do not include occupational activities, and not considering a person's work hours might result in overestimates of physical inactivity. Third, the data are from noninstitutionalized adults and are not generalizable to the institutionalized population. Fourth, complete case analysis was used to handle missing data, which could result in an over- or underestimation of physical activity. Finally, the 2014 lowest state-level survey response rate was 25.1%, which can result in response bias. However, BRFSS data are weighted to adjust for nonresponse.

Approximately 28% of adults aged ≥ 50 years are inactive and are missing the opportunity to improve their health through physical activity. Communities can be designed and enhanced to make it safer and easier for persons of all ages and abilities to be physically active.

¹Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion, CDC; ²Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.

Corresponding author: Kathleen Watson, KWatson@cdc.gov, 770-488-5489.

References

1. Ward BW, Schiller JS, Goodman RA. Multiple chronic conditions among US adults: a 2012 update. *Prev Chronic Dis* 2014;11:130389. <http://dx.doi.org/10.5888/pcd11.130389>
2. US Department of Health and Human Services. 2008 physical activity guidelines for Americans. Washington, DC: US Department of Health and Human Services; 2008. <https://health.gov/paguidelines/pdf/paguide.pdf>
3. US Department of Health and Human Services. Physical activity guidelines advisory committee report, 2008. Washington, DC: US Department of Health and Human Services; 2008. <https://health.gov/paguidelines/report/pdf/CommitteeReport.pdf>
4. National Heart Lung and Blood Institute. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: the evidence report. Bethesda MD: US Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute; 1998.
5. Spruit MA, Singh SJ, Garvey C, et al.; ATS/ERS Task Force on Pulmonary Rehabilitation. An official American Thoracic Society/European Respiratory Society statement: key concepts and advances in pulmonary rehabilitation. *Am J Respir Crit Care Med* 2013;188:e13–64. <http://dx.doi.org/10.1164/rccm.201309-1634ST>
6. Brawner CA, Churilla JR, Keteyian SJ. Prevalence of physical activity is lower among individuals with chronic disease. *Med Sci Sports Exerc* 2016;48:1062–7.
7. Rimmer JH, Riley B, Wang E, Rauworth A, Jurkowski J. Physical activity participation among persons with disabilities: barriers and facilitators. *Am J Prev Med* 2004;26:419–25. <http://dx.doi.org/10.1016/j.amepre.2004.02.002>
8. American College of Sports Medicine. Exercise is medicine. Healthcare providers' action guide. Indianapolis, IN: American College of Sports Medicine; 2014.
9. Lin JS, O'Connor EA, Evans CV, Senger CA, Rowland MG, Groom HC. Behavioral counseling to promote a healthy lifestyle for cardiovascular disease prevention in persons with cardiovascular risk factors: an evidence update for the U.S. Preventive Services Task Force. Evidence Synthesis No. 113. Rockville, MD: Agency for Healthcare Research and Quality; 2014.
10. Sallis JF, Saelens BE. Assessment of physical activity by self-report: status, limitations, and future directions. *Res Q Exerc Sport* 2000;71(Suppl):1–14. <http://dx.doi.org/10.1080/02701367.2000.11082780>