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State Variation in Meeting the 2008 Federal Guidelines for Both Aerobic and Muscle-strengthening Activities Through Leisure-time Physical Activity Among Adults Aged 18–64: United States, 2010–2015

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Abstract

Objective—This report presents national and state-level age-adjusted estimates of percentages of U.S. adults aged 18–64 who met the 2008 federal guidelines for both aerobic and muscle-strengthening activities during leisure-time physical activity (LTPA) in 2010–2015, by sex and work status (working compared with nonworking). State variation in work status, health status and difficulty in physical functioning, and occupational distributions for men and women were also considered.

Methods—The 2008 physical activity guidelines recommend muscle-strengthening activities at least twice weekly, with either moderate-intensity aerobic physical activity for at least 150 minutes per week, vigorous-intensity aerobic physical activity for at least 75 minutes per week, or an equivalent combination. Percentage estimates are based on pooled data from the 2010–2015 National Health Interview Survey for all 50 states and the District of Columbia. A series of maps show how state estimates for meeting the guidelines during LTPA differ by sex and current work status.

Results—Nationally, 22.9% of U.S. adults aged 18–64 met the guidelines for both aerobic and muscle-strengthening activities during LTPA in 2010–2015. However, the extent to which adults met these guidelines varied by state, sex, and current work status. Fourteen states and the District of Columbia had significantly higher percentages of adults meeting the guidelines through LTPA than the national average, while 13 states had percentages that were significantly below the national average. The percentage of men who met the guidelines through participation in LTPA varied from 17.7% in South Dakota to 40.3% in the District of Columbia, with the national average being 27.2%. Among women, percentages varied from 9.7% in Mississippi to 31.5% in Colorado, with the national average for women being 18.7%. Percentages meeting the guidelines among men were less regionally concentrated than among women, especially with respect to exceeding the guidelines.

Keywords: National Health Interview Survey • work status

Introduction

Regular participation in physical activity lowers the risk of many chronic conditions, disability, and mortality (1,2). The 2008 U.S. Department of Health and Human Services (HHS) federal physical activity guidelines recommend that, for substantial health benefits, adults perform at least 150 minutes per week of moderate physical activity, or 75 minutes per week of vigorous physical activity, in addition to muscle-strengthening activities 2 or more days per week (3). *Healthy People 2020* (HP) considers adequate physical activity a “leading health indicator,” with 20.1% of adults meeting physical activity guidelines being the 2020 target (4,5). The Centers for Disease Control and Prevention (CDC) also has set a goal of increasing physical activity among all Americans and has measured progress, at least in part, by examining state-level information on physical activity (6).

Physical activity can be recreational (taking place during leisure time); occupational (taking place during the performance of work, including household tasks); or it can include walking or cycling specifically for transportation or commuting. Historical and technological changes in the nature of work in the United States have reduced the contribution of occupational physical



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activity to total physical activity. The United States now has a service economy that requires minimal physical activity from a majority of workers who perform work that is largely sedentary (7–10). Consequently, most adults who currently meet the 2008 federal physical activity guidelines do so by participating in leisure-time physical activity (LTPA).

Both LTPA and occupational physical activity contribute to total physical activity, but they may not be equivalent activities, and even more importantly, may not have comparable health benefits. While previous research has consistently demonstrated that LTPA has positive benefits across a variety of health outcomes, findings regarding the health benefits of occupational physical activity have been mixed (11–15), with some studies concluding that occupational physical activity can have less-than-positive effects on various health outcomes as well as mortality (16–17). Thus, even among adults who are physically active on the job every workday, those who engage in LTPA are likely to report better health than those who do not engage in LTPA.

A recent National Center for Health Statistics (NCHS) report showed that among all working adults aged 18–64, those in professional and managerial occupations were most likely to meet the 2008 federal physical activity guidelines for both aerobic and muscle-strengthening activities performed during their leisure time, while adults working in production and related occupations were least likely to meet the guidelines through LTPA (18). That report did not include nonworking adults or take state of residence into account. Understanding differences in LTPA by state is important because states have the ability to support physical activity goals and objectives (6). Previous research has also demonstrated that one's state of residence is related to both morbidity and mortality (19–23). Furthermore, employment rates and occupational distributions can vary across states, which may in turn be related to the likelihood that adults engage in LTPA on any given day (24). Using the 2010–2015 National Health Interview Survey (NHIS), this report examines, in a series of maps, the extent to which adults aged 18–64 in each of the 50 states and

the District of Columbia met the 2008 federal guidelines for both aerobic and muscle-strengthening activities through LTPA, by sex and work status (working compared with nonworking). State variation in health status, difficulty in physical functioning, and occupational distributions for men and women are also considered as possible explanatory factors for the variation presented in the maps.

Methods

Data source

Data in this report come from the combined 2010–2015 NHIS, a multipurpose, cross-sectional health survey of the U.S. civilian noninstitutionalized population based on a stratified multistage sample of U.S. households (25). NHIS is conducted continuously for the NCHS by trained interviewers from the U.S. Census Bureau. Data are collected in person at the respondent's home using computer-assisted personal interviewing, but follow-ups to complete interviews may be conducted over the telephone if necessary. The main objective of NHIS is to monitor the health of the U.S. population through the collection and analysis of data on a broad range of health topics. More information on NHIS is available from: <http://www.cdc.gov/nchs/nhis.htm>.

The survey consists of both a core set of questions that remain relatively unchanged from year to year as well as supplemental questions that are not asked every year (26). The core consists of four main components: Household Composition Section, Family Core, Sample Child Core, and Sample Adult Core. The Household Composition Section collects basic demographic and relationship information about all household members of all families living in a household at the time of interview. The Family Core, which is administered separately for each family in the household, collects sociodemographic and basic health information about all family members. For the Sample Child Core, a knowledgeable adult (usually the parent) responds to detailed health

questions for one randomly selected child per family (the sample child).

The Sample Adult Core obtains additional information on the health of one randomly selected adult (the “sample adult”) in the family. The sample adult generally responds for himself or herself, but in rare instances when the sample adult is mentally or physically incapable of responding, proxy responses are accepted. The Sample Adult Core collects information on health conditions, functional limitations, health behaviors (including LTPA), access to and use of health care services, and whether the sample adult was working during the week before the interview (and if so, their occupation). The 2010–2015 NHIS Sample Adult data files include a total of 199,622 respondents; of these, 155,134 were aged 18–64.

Variables of interest

Information on LTPA was obtained from a series of questions in the Sample Adult Core that ask about frequency and duration of vigorous-intensity physical activities (that “cause heavy sweating or large increases in breathing or heart rate”), light or moderate-intensity physical activities (that “cause only light sweating or a slight to moderate increase in breathing or heart rate”), and muscle-strengthening activities (“such as lifting weights or doing calisthenics”). These questions are all phrased in terms of current leisure-time behavior and lack a specific reference period (e.g., “How often do you do vigorous leisure-time physical activities for at least 10 minutes that cause heavy sweating or large increases in breathing or heart rate?”). Thus, no information was obtained regarding how long the respondent had been engaging in LTPA. Answers could be provided in any time unit (per day, per week, per month, or per year). Roughly 1.9% of sample adults aged 18–64 refused to answer or did not know how much time they spent performing LTPA, and thus could not be coded ($n = 2,980$).

Responses to these questions were used to identify sample adults who, in their leisure time, performed muscle-strengthening activities two or more times per week and participated in either moderate-intensity aerobic physical

activity for at least 150 minutes per week or vigorous-intensity aerobic physical activity for at least 75 minutes per week (or an equivalent combination)—in other words, adults who met the 2008 physical activity guidelines for both muscle-strengthening and aerobic activities (available from: <http://www.health.gov/PAGuidelines/>). Only sample adults who met the guidelines for both muscle-strengthening and aerobic activities are the focus of this report ($n = 32,942$). Sample adults meeting only one guideline ($n = 48,810$) or neither guideline ($n = 70,402$) are not shown separately, but are included in the denominators.

The HHS federal guidelines for physical activity were released in 2008 and served as the basis for formulating the HP 2020 physical activity objectives (5). Note that these guidelines include all types of aerobic and muscle-strengthening activities and are not restricted to LTPA alone. Because NHIS questions ask only about LTPA, the estimates presented in this report may underestimate the proportion of U.S. adults who meet the 2008 physical activity guidelines. Also, the terms “2008 federal guidelines,” “2008 guidelines,” or simply “guidelines” are used interchangeably to refer to the 2008 Physical Activity Guidelines for Americans (3).

The Sample Adult Core also obtained information from respondents on their work status during the week before the interview. Working adults include those who were working for pay at a job or business, those with a job or business but not at work, or those working, but not for pay, at a family-owned job or business. Adults who were with a job or business but not at work during the week before the interview could be absent for various reasons such as a planned vacation (the most common response among both men and women), being temporarily unable to work for health reasons, or they had a job or contract but were interviewed during their off-season (e.g., teachers). Working adults' occupations reflect their job or business during the week before the interview. A six-category indicator distinguishes between managerial occupations, professional occupations, teaching or social service occupations, services occupations, sales occupations,

and production and related occupations, and is explained in detail elsewhere (18). This indicator is not available for respondents who were not working during the week before the interview.

Respondents aged 18–64 who were not working included those looking for work as well as those not working at a job or business and not looking for work. This report also examined information on the health and disability status of adults (both working and nonworking) as possible explanatory factors, since these are related to the ability to engage in physical activity.

Information on fair or poor health status is based on a question in the Family Core that asked whether each family member's “health in general is excellent, very good, good, fair, or poor” For this report, “fair” and “poor” responses were combined into a single category. In addition, a separate indicator of disability is obtained from a series of questions in the Sample Adult Core that asked respondents about their ability to perform various physical activities without using any special equipment (e.g., a cane or wheelchair). These activities included walking three city blocks; walking up 10 steps without resting; standing for 2 hours; sitting for 2 hours; stooping; bending, or kneeling; reaching over one's head; grasping or handling small objects; carrying something weighing 10 pounds; and pushing or pulling large objects. Substantive response categories were “not at all difficult,” “only a little difficult,” “somewhat difficult,” “very difficult,” “can't do at all,” and “do not do this activity.” For this report, “very difficult” or “can't do at all” responses to any one of the nine activity questions were combined into a single category that identifies adults with difficulty in physical functioning. A small number of respondents said that they “do not do” one or more of the activities, and were treated as missing along with “refused,” “don't know,” and “not ascertained” responses ($n = 465$, or 0.23% of the sample). Fair or poor health status and difficulty in physical functioning are treated as separate indicators even though it is likely that some respondents are simultaneously in fair or poor health and disabled.

Statistical analysis

The estimates presented in this report are based on data from the Sample Adult files of the 2010–2015 NHIS. Respondents with missing data or unknown information were excluded from the analysis. Across these 6 years of data, the conditional response rate for the Sample Adult interview was 80.1%, and the final response rate was 60.6% (26). Six years of data were combined to increase reliability of the estimates for the smaller states. In addition, reliability of estimates was evaluated using the relative standard error (RSE), which is the standard error divided by the estimate. Tabular estimates with an RSE greater than 30% and less than or equal to 50% are preceded by an asterisk (*) and should be used with caution. Estimates with an RSE greater than 50% are not shown.

Estimates in this report were calculated using the sample adult sampling weights (adjusted for the number of survey years combined in the analysis), and are representative of the noninstitutionalized population of U.S. adults aged 18–64. Percentage estimates are based on pooled data from the 2010–2015 NHIS for all 50 states and the District of Columbia, and are age-adjusted using three age groups (18–24, 25–44, and 45–64) and the projected 2000 U.S. population as the standard population. All estimates and their variances were calculated using SUDAAN software to account for the complex sample design of NHIS (27). The Taylor series linearization method was used for estimating the variance for the 10 states with the largest populations of adults aged 18–64 (California, Texas, Florida, New York, Illinois, Pennsylvania, Ohio, Michigan, Georgia, and North Carolina). For the 40 smaller states and the District of Columbia, the standard error was calculated by multiplying the square root of the average design effect based on the 10 states with the largest populations by the standard error of the estimated percentage under a simple random sample (28). All differences were evaluated using two-tailed significance tests that were adjusted to account for dependent samples where necessary. Estimates were

compared using two-sided *t* tests at the 0.05 level. Terms such as “higher than” and “lower than” indicate a statistically significant difference. Terms such as “not significantly different” or “no difference” indicate that no statistically detectable differences were seen between the estimates being compared.

Lastly, in an effort to gain more understanding of the findings shown in the figures, an ordinary least squares (OLS) regression analysis was conducted to predict the percentage of adults at the state level who met the guidelines, using as explanatory variables, sex, work status (working compared with nonworking), health status (fair or poor compared with excellent, very good, or good), disability (relative to nondisabled), and the adult occupational distribution. In order to minimize multicollinearity issues, a stepwise approach was also used to identify the most parsimonious models given the explanatory variables.

Strengths and Limitations of Data

The estimates presented in this report are based on data collected from a nationally representative sample of civilian noninstitutionalized U.S. adults. Survey questions that were the sources for the variables used in the analysis did not change during these 6 years. Additionally, there was no significant change in the prevalence of persons meeting the federal physical activity guidelines during 2010–2015—approximately 22% of U.S. adults aged 18 and over met the guidelines for both muscle-strengthening and aerobic activities in each survey year.

There are several limitations to this study. Using 6 years of combined data yielded larger sample sizes for smaller population subgroups and states. Nevertheless, it is likely that some relatively large differences remained nonsignificant for less-populated states with smaller samples, either when these estimates were compared with the national average or when the estimate of one subgroup was compared with that of another subgroup within the same state. To this end, the color-coding of all maps indicates which states have estimates

that were greater or less than the national average, even if they were not statistically different than that average.

In addition, NHIS obtains information from most respondents via an in-person interviewing process, with a typical interview averaging about 1 hour. As a result, all NHIS data are based on subjective self-reports collected from Sample Adult respondents. Self-reporting enhances the accuracy of the data to the extent that respondents willingly provide information. However, respondents may provide incorrect information due to recall issues, because they did not understand the question, or because they have different cultural definitions of some of the concepts used in the survey questions. Also, respondents may inflate self-assessments of their LTPA to avoid embarrassment or to create a favorable impression on the interviewer. Additionally, while proxy answers are accepted when the sample adult is physically or mentally incapable of self-response, those respondents are few in number (0.9% among respondents aged 18–64).

Furthermore, NHIS is a cross-sectional survey that does not obtain retrospective information from sample adults regarding their job or working histories, residential mobility (i.e., how long they have lived in their current state), or how long they have been engaging in LTPA. In particular, NHIS

does not collect the information needed to calculate employment, unemployment, or “out of the labor force” in a manner consistent with the methods used by the U.S. Bureau of Labor Statistics. Therefore, this report refers to adults as either “working” or “nonworking,” and these estimates should not be compared with the federal government’s official employment or unemployment rates. In addition, the estimates presented in this report can only be used to understand the extent to which work status, sex, state of residence, and LTPA vary together. Causality or directionality cannot be determined from NHIS data. Lastly, the estimates in this report are based on physical activity performed during respondents’ leisure time. No information was obtained regarding occupation-related, transportation-related, or other types of physical activity performed during nonleisure time; thus, total physical activity is underestimated to an unknown extent.

Results

Table A shows age-adjusted percentages of adults aged 18–64 who met the federal government’s 2008 guidelines for both aerobic and muscle-strengthening activities through participation in LTPA, adults who met either the aerobic or the muscle-strengthening guideline through

Table A. Age-adjusted percentages and standard errors of adults aged 18–64 who met both aerobic and muscle-strengthening guidelines through leisure-time physical activity, who met one guideline through leisure-time physical activity, or who met neither guideline, by sex and work status: United States, 2010–2015

Characteristic	Met both guidelines through LTPA	Met one guideline through LTPA	Met neither guideline
Percent (standard error)			
All adults aged 18–64	22.9 (0.20)	32.4 (0.20)	44.7 (0.28)
All men aged 18–64	27.2 (0.27)	32.0 (0.27)	40.8 (0.33)
All women aged 18–64	18.7 (0.23)	32.8 (0.25)	48.4 (0.32)
All working ¹ men aged 18–64	28.8 (0.31)	32.6 (0.30)	38.6 (0.36)
All working ¹ women aged 18–64	20.9 (0.28)	33.6 (0.30)	45.5 (0.36)
All nonworking ¹ men aged 18–64	21.3 (0.45)	29.7 (0.54)	49.0 (0.61)
All nonworking ¹ women aged 18–64	14.6 (0.31)	31.4 (0.38)	54.0 (0.46)

¹Sample adults were asked whether they were working during the week before the interview. Response categories included, “working for pay at a job or business,” “with a job or business but not at work,” “looking for work,” “working, but not for pay, at a family-owned job or business,” and “not working at a job or business and not looking for work.” Respondents “working for pay at a job or business,” “with a job or business but not at work,” or “working, but not for pay, at a family-owned job or business” are considered to be working. Those “looking for work” or “not working at a job or business and not looking for work” are considered to be nonworking.

NOTES: Estimates are based on household interviews of a sample of the civilian noninstitutionalized population. U.S. adults aged 18–64 with unknown information for either leisure-time physical activity or working status were not included in the denominators when calculating percentages. Estimates are age-adjusted using the projected 2000 U.S. population as the standard population and using three age groups: 18–24, 25–44, and 45–64. LTPA is leisure-time physical activity.

SOURCE: NCHS, National Health Interview Survey, 2010–2015.

participation in LTPA (in other words, only one guideline), and adults who met neither guideline. Percentages are shown separately for men and women, for working men and women, and for nonworking men and women.

Nationally, 22.9% of adults aged 18–64 met both guidelines through LTPA, 32.4% met one guideline through LTPA, and 44.7% met neither guideline. More than 27.0% of men met both guidelines through LTPA compared with 18.7% of women. Among working adults, 28.8% of men met both guidelines compared with 20.9% of women; and among nonworking adults, 21.3% of men met both guidelines compared with 14.6% of women.

Table B shows age-adjusted percentages of adults aged 18–64 who met both guidelines through LTPA, by state, for all adults, for men and women separately, for working men and women

separately, and for nonworking men and women separately. Figures 1–7 display each of the columns in Table B as separate maps. The maps consequently show the same outcome of interest—percentages of adults who met the 2008 guidelines for both types of activities—for different subgroups of adults. Four categories are shown in each map: states with a percentage estimate significantly lower than the U.S. average, those with an estimate less than but not significantly different from the U.S. average, those with an estimate greater than but not significantly different from the U.S. average, and states with an estimate significantly higher than the U.S. average.

Figure 1 shows age-adjusted percentages of adults aged 18–64 who met the guidelines for both aerobic and muscle-strengthening activities through participation in LTPA, by state. Nationally, 22.9% of adults aged

18–64 met these guidelines through LTPA in 2010–2015. Percentages of adults meeting the guidelines varied across states, from 13.5% of adults in Mississippi to 32.5% of adults in Colorado. Thirteen states (Alabama, Arkansas, Florida, Georgia, Indiana, Kentucky, Mississippi, New York, Oklahoma, South Carolina, South Dakota, Tennessee, and West Virginia) had significantly lower percentages of adults who met the guidelines through LTPA when compared with the national average. Regionally, most of these states are concentrated in the southeastern United States, with the exception of Indiana (in the Great Lakes region), New York (in the Northeast), Oklahoma (in the Southwest), and South Dakota (in the Plains). Fourteen states (Alaska, Arizona, California, Colorado, Idaho, Illinois, Massachusetts, Minnesota, New Hampshire, Pennsylvania, Vermont, and West Virginia) had significantly higher percentages of adults who met the guidelines through LTPA when compared with the national average. These states are concentrated in the western United States, with the exception of New York (in the Northeast), Vermont (in the Northeast), and West Virginia (in the South).

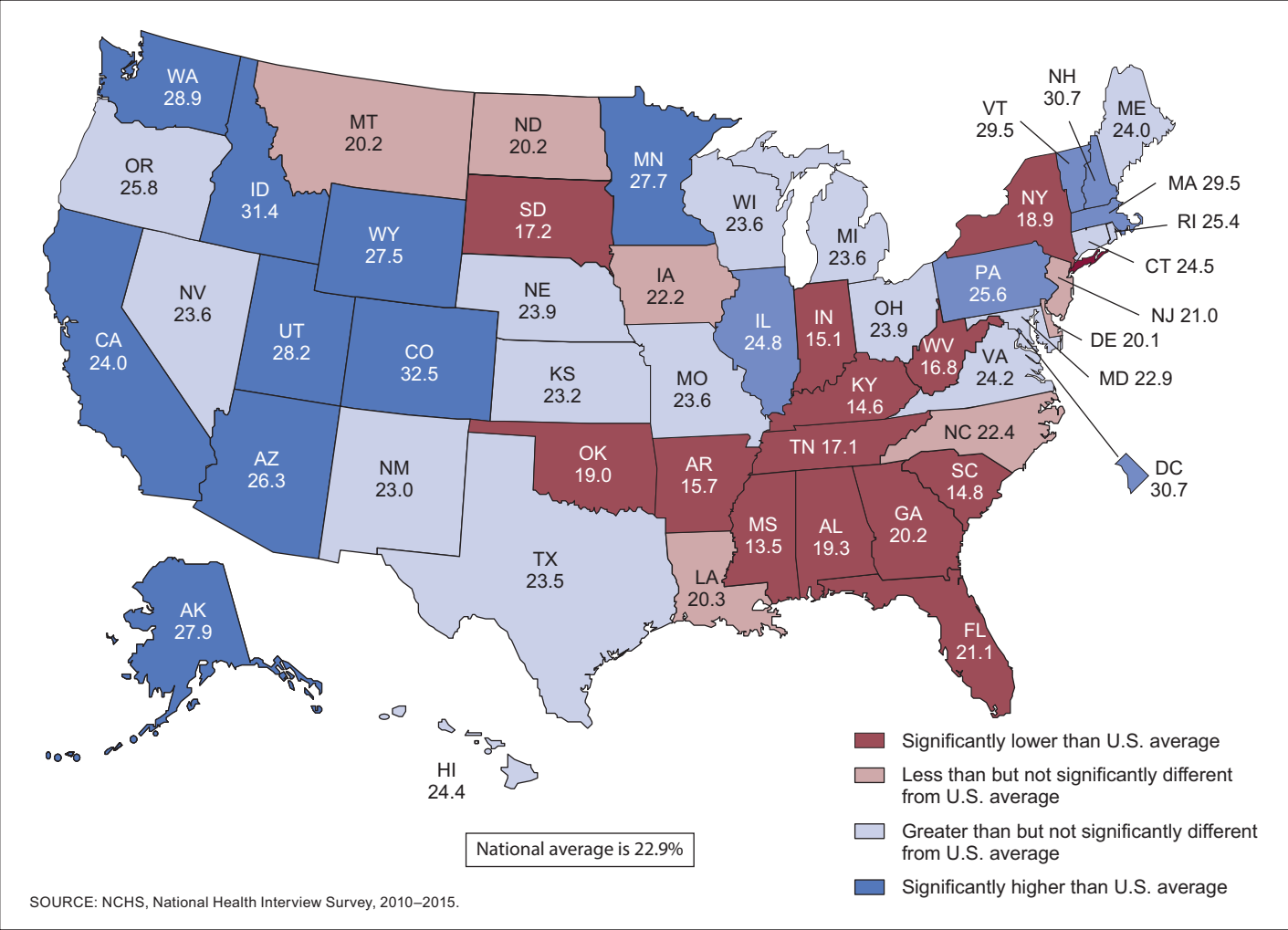


Figure 1. Age-adjusted percentages of adults aged 18–64 who met both aerobic and muscle-strengthening federal guidelines through leisure-time physical activity, by state: United States, 2010–2015

Table B. Age-adjusted percentages and standard errors of adults aged 18–64 who met both aerobic and muscle-strengthening federal guidelines through leisure-time physical activity, by state, sex, and work status: United States, 2010–2015

Characteristic	All adults aged 18–64	All men aged 18–64	All women aged 18–64	All working ¹ men aged 18–64	All working ¹ women aged 18–64	All nonworking ¹ men aged 18–64	All nonworking ¹ women aged 18–64
Percent (standard error)							
All states (average)	22.9 (0.20)	27.2 (0.27)	18.7 (0.23)	28.8 (0.31)	20.9 (0.28)	21.3 (0.45)	14.6 (0.31)
Alabama	19.3 (1.41)	24.6 (2.05)	14.9 (1.51)	25.6 (2.44)	15.2 (1.95)	23.0 (3.37)	13.3 (2.04)
Alaska	27.9 (2.04)	33.2 (2.70)	23.3 (2.40)	31.6 (2.93)	24.4 (2.68)	33.4 (5.59)	17.8 (4.11)
Arizona	26.3 (1.48)	29.2 (1.91)	23.0 (1.77)	31.3 (2.23)	26.7 (2.28)	22.4 (3.18)	16.9 (2.37)
Arkansas	15.7 (1.32)	19.7 (1.84)	11.9 (1.45)	21.4 (2.23)	13.1 (1.82)	14.7 (2.79)	9.6 (2.05)
California	24.0 (0.53)	28.5 (0.75)	19.3 (0.58)	29.9 (0.84)	21.5 (0.72)	24.5 (1.34)	15.5 (0.78)
Colorado	32.5 (1.49)	33.4 (1.87)	31.5 (1.85)	34.8 (2.07)	33.6 (2.19)	26.9 (3.69)	27.1 (2.94)
Connecticut	24.5 (1.62)	28.0 (2.20)	21.2 (1.86)	29.0 (2.52)	24.8 (2.31)	22.6 (3.79)	13.6 (2.54)
Delaware	20.1 (1.81)	24.5 (2.44)	15.8 (2.04)	23.6 (2.65)	17.3 (2.39)	25.4 (5.20)	11.4 (3.21)
District of Columbia	30.7 (1.74)	40.3 (2.45)	22.2 (1.88)	40.5 (2.72)	24.0 (2.20)	43.0 (4.95)	18.5 (3.08)
Florida	21.1 (0.93)	27.2 (1.14)	15.5 (1.04)	27.7 (1.31)	17.3 (1.24)	25.2 (2.07)	12.2 (1.25)
Georgia	20.2 (1.18)	27.1 (1.72)	14.2 (1.11)	29.9 (2.05)	15.2 (1.38)	21.1 (2.48)	12.8 (1.52)
Hawaii	24.4 (1.93)	31.2 (2.64)	18.3 (2.14)	32.8 (3.01)	19.7 (2.53)	25.6 (4.77)	14.6 (3.36)
Idaho	31.4 (1.92)	35.2 (2.46)	27.4 (2.32)	36.5 (2.76)	27.0 (2.73)	34.8 (4.88)	28.5 (3.77)
Illinois	24.8 (0.81)	28.5 (1.11)	20.9 (1.00)	29.9 (1.24)	24.0 (1.06)	21.7 (1.91)	15.0 (1.90)
Indiana	15.1 (1.16)	20.0 (1.64)	10.1 (1.21)	21.8 (1.92)	12.5 (1.55)	11.7 (2.44)	5.1 (1.47)
Iowa	22.2 (1.41)	24.2 (1.76)	19.9 (1.76)	23.6 (1.90)	20.9 (1.98)	23.7 (3.79)	16.4 (3.11)
Kansas	23.2 (1.48)	24.7 (1.90)	21.7 (1.79)	26.2 (2.10)	23.8 (2.15)	16.1 (3.61)	16.3 (2.67)
Kentucky	14.6 (1.18)	17.9 (1.66)	11.4 (1.29)	21.7 (2.21)	14.6 (1.80)	9.3 (1.89)	5.9 (1.40)
Louisiana	20.3 (1.41)	23.5 (1.95)	17.8 (1.61)	25.5 (2.38)	20.0 (2.06)	15.5 (2.75)	14.0 (2.22)
Maine	24.0 (1.72)	27.3 (2.32)	20.6 (1.99)	32.4 (2.71)	23.3 (2.36)	*7.0 (2.63)	11.9 (2.81)
Maryland	22.9 (1.43)	29.4 (1.99)	16.2 (1.54)	29.8 (2.20)	18.3 (1.84)	26.6 (3.94)	11.3 (2.30)
Massachusetts	29.5 (1.56)	32.9 (2.06)	26.1 (1.84)	34.1 (2.38)	28.8 (2.20)	25.1 (3.46)	18.6 (2.74)
Michigan	23.6 (0.94)	28.2 (1.36)	18.7 (1.18)	30.5 (1.63)	21.9 (1.54)	21.7 (2.27)	13.0 (1.56)
Minnesota	27.7 (1.40)	31.1 (1.81)	24.3 (1.68)	30.5 (1.95)	26.8 (1.89)	32.8 (4.16)	15.0 (2.75)
Mississippi	13.5 (1.25)	17.9 (1.86)	9.7 (1.30)	19.8 (2.25)	10.5 (1.68)	13.0 (2.79)	8.9 (1.84)
Missouri	23.6 (1.41)	29.9 (1.96)	17.9 (1.57)	31.9 (2.30)	18.2 (1.85)	20.2 (3.01)	17.5 (2.52)
Montana	20.2 (1.98)	20.3 (2.47)	20.3 (2.48)	24.5 (3.16)	25.1 (3.18)	10.5 (3.07)	*9.5 (2.86)
Nebraska	23.9 (1.67)	26.8 (2.22)	21.5 (1.97)	25.3 (2.43)	22.3 (2.19)	33.1 (4.70)	18.0 (3.60)
Nevada	23.6 (1.55)	25.7 (2.02)	21.6 (1.85)	25.4 (2.32)	22.4 (2.26)	22.4 (3.40)	19.7 (2.77)
New Hampshire	30.7 (1.92)	30.3 (2.38)	31.0 (2.43)	30.7 (2.61)	32.1 (2.73)	29.6 (5.01)	28.7 (4.36)
New Jersey	21.0 (1.19)	25.7 (1.62)	16.2 (1.33)	27.0 (1.86)	16.9 (1.59)	17.4 (2.60)	13.9 (2.02)
New Mexico	23.0 (1.71)	27.4 (2.37)	18.6 (1.90)	29.4 (2.86)	21.6 (2.52)	19.4 (3.50)	14.4 (2.51)
New York	18.9 (0.83)	22.8 (1.15)	15.3 (0.93)	25.3 (1.31)	17.6 (1.23)	15.9 (1.78)	11.3 (1.04)
North Carolina	22.4 (0.85)	26.1 (1.44)	19.0 (0.92)	27.8 (1.81)	19.8 (1.28)	19.5 (2.40)	17.4 (1.79)
North Dakota	20.2 (1.87)	21.7 (2.28)	18.2 (2.36)	22.1 (2.44)	20.3 (2.61)	*15.8 (5.05)	*8.8 (3.81)
Ohio	23.9 (1.02)	29.5 (1.34)	18.7 (1.06)	31.0 (1.55)	21.4 (1.29)	24.0 (2.44)	13.2 (1.64)
Oklahoma	19.0 (1.41)	24.0 (1.96)	14.6 (1.55)	24.1 (2.26)	14.8 (1.89)	21.4 (3.34)	14.0 (2.36)
Oregon	25.8 (1.58)	28.6 (2.02)	22.7 (1.92)	30.9 (2.42)	26.6 (2.41)	21.6 (3.13)	15.9 (2.66)
Pennsylvania	25.6 (1.25)	29.3 (1.81)	21.8 (1.17)	31.6 (2.13)	23.4 (1.37)	19.3 (2.40)	18.3 (2.09)
Rhode Island	25.4 (1.99)	30.1 (2.75)	21.6 (2.27)	32.0 (3.28)	26.4 (2.87)	22.9 (4.29)	12.9 (2.97)
South Carolina	14.8 (1.26)	20.1 (1.83)	10.0 (1.29)	21.9 (2.18)	12.0 (1.76)	12.4 (2.65)	6.9 (1.60)
South Dakota	17.2 (1.69)	17.7 (2.09)	15.9 (2.09)	17.5 (2.26)	16.9 (2.37)	28.9 (5.52)	*9.8 (3.21)
Tennessee	17.1 (1.30)	20.1 (1.79)	14.1 (1.45)	22.8 (2.14)	15.0 (1.80)	10.7 (2.53)	12.8 (2.16)
Texas	23.5 (0.70)	28.1 (0.74)	19.0 (1.02)	28.7 (0.83)	21.4 (1.38)	25.0 (1.63)	14.6 (1.13)
Utah	28.2 (1.60)	29.2 (2.01)	27.1 (2.00)	30.7 (2.23)	26.5 (2.30)	22.6 (3.97)	27.4 (3.37)
Vermont	29.5 (2.49)	35.9 (3.30)	23.4 (2.87)	40.2 (3.69)	26.8 (3.35)	21.4 (5.95)	15.2 (4.48)
Virginia	24.2 (1.28)	29.3 (1.75)	19.5 (1.44)	32.8 (2.02)	20.5 (1.67)	16.6 (2.76)	16.8 (2.37)
Washington	28.9 (1.34)	31.2 (1.70)	26.2 (1.64)	33.0 (1.96)	29.7 (2.04)	25.9 (2.99)	20.2 (2.35)
West Virginia	16.8 (1.43)	19.8 (1.93)	14.0 (1.65)	21.5 (2.54)	18.7 (2.40)	14.4 (2.45)	8.4 (1.85)
Wisconsin	23.6 (1.44)	26.3 (1.89)	21.0 (1.71)	27.6 (2.11)	23.3 (1.97)	21.6 (3.68)	14.4 (2.77)
Wyoming	27.5 (1.99)	29.6 (2.43)	24.8 (2.53)	31.2 (2.66)	29.9 (3.05)	17.1 (4.58)	13.8 (3.51)

*Estimates are considered unreliable. Data preceded by an asterisk have a relative standard error (RSE) greater than 30% and less than or equal to 50% and should be used with caution.

¹Sample adults were asked whether they were working during the week before the interview. Response categories included, "working for pay at a job or business," "with a job or business but not at work," "looking for work," "working, but not for pay, at a family-owned job or business," and "not working at a job or business and not looking for work." Respondents "working for pay at a job or business," "with a job or business but not at work," or "working, but not for pay, at a family-owned job or business" are considered to be working. Those "looking for work" or "not working at a job or business and not looking for work" are considered to be nonworking.

NOTES: Estimates are based on household interviews of a sample of the civilian noninstitutionalized population. Unknown responses for the columns were not included in the denominators when calculating percentages. Estimates are age-adjusted using the projected 2000 U.S. population as the standard population and using three age groups: 18–24, 25–44, and 45–64.

SOURCE: NCHS, National Health Interview Survey, 2010–2015.

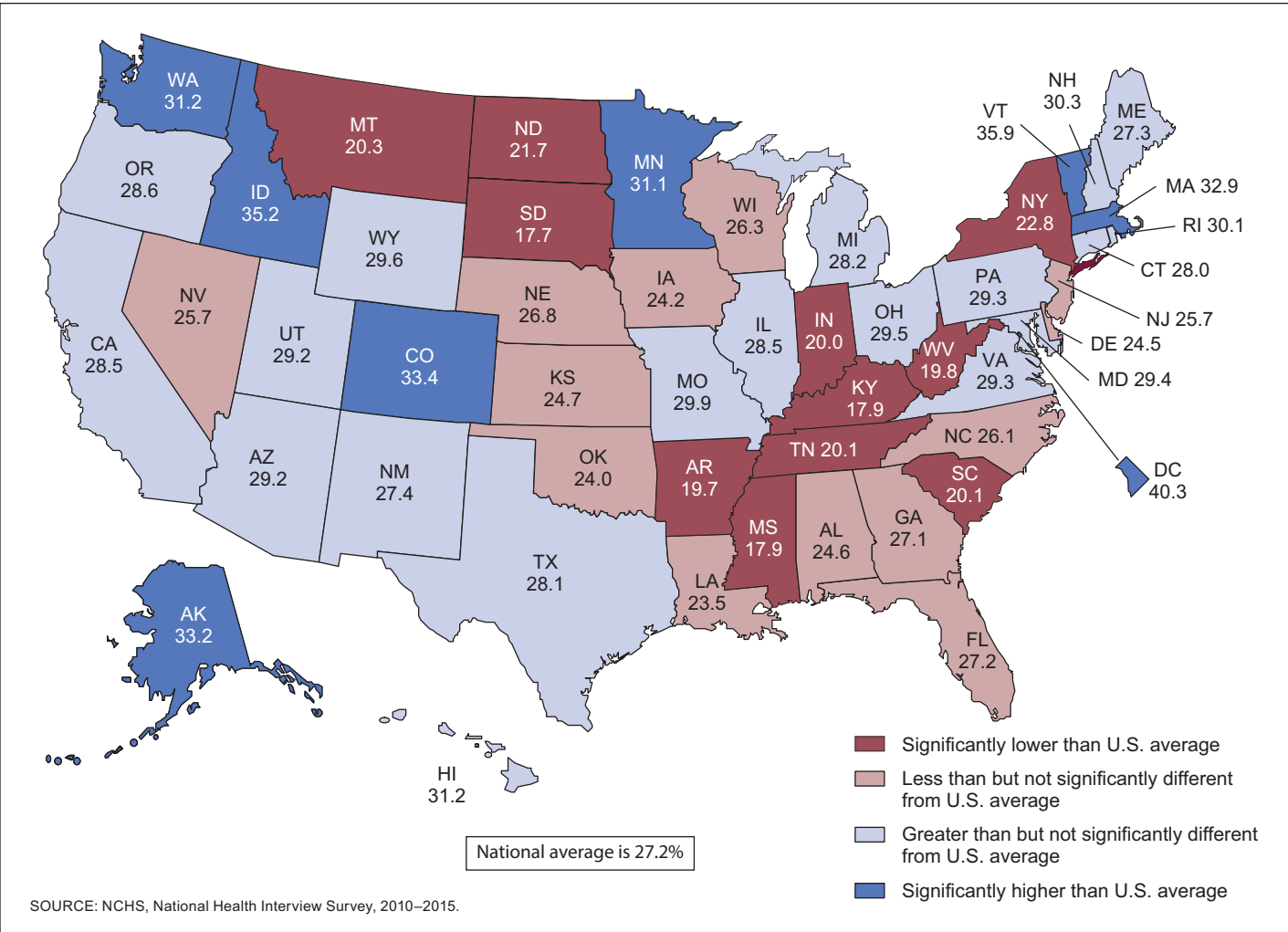


Figure 2. Age-adjusted percentages of men aged 18–64 who met both aerobic and muscle-strengthening federal guidelines through leisure-time physical activity, by state: United States, 2010–2015

Utah, Washington, and Wyoming) and the District of Columbia had significantly higher percentages of adults who met the guidelines through LTPA compared with the national average. Many of these states are located in the Far West and Rocky Mountain regions, but states in other regions—the Northeast, Central Plains, and Great Lakes—are also included. Estimates were not statistically different from the national average in the remaining states.

State differences by sex

Figures 2 and 3 show age-adjusted percentages of men and women, respectively, who met guidelines for both aerobic and muscle-strengthening activities through participation in LTPA, by state, in 2010–2015. In Figure 2, percentages among men aged 18–64

who met the guidelines through LTPA varied from 17.7% in South Dakota to 40.3% in the District of Columbia, with the national average being 27.2%. Percentages meeting the guidelines among men in 11 states (Arkansas, Indiana, Kentucky, Mississippi, Montana, New York, North Dakota, South Carolina, South Dakota, Tennessee, and West Virginia) were significantly lower than the national average for men, while percentages meeting the guidelines among men in 7 states (Alaska, Colorado, Idaho, Massachusetts, Minnesota, Vermont, and Washington) and the District of Columbia were significantly higher than the national average for men. While there is less regional concentration in this map compared with the previous map (Figure 1), states with statistically lower percentages are generally located in the Southeast (although states in

the Central Plains, Great Lakes, and Northeast are also included), while states with statistically higher percentages are located primarily in the Far West and Rocky Mountain regions (and, to a lesser extent, in the Central Plains and the Northeast). Estimates were not statistically different from the national average in the remaining states.

Percentages among women aged 18–64 who met the guidelines for both aerobic and muscle-strengthening activities through participation in LTPA in 2010–2015 varied from 9.7% of women in Mississippi to 31.5% of women in Colorado, with the national average for women being 18.7% (Figure 3). Percentages meeting the guidelines among women in 12 states located primarily in the Southeast (Alabama, Arkansas, Florida, Georgia, Kentucky, Mississippi, South Carolina,

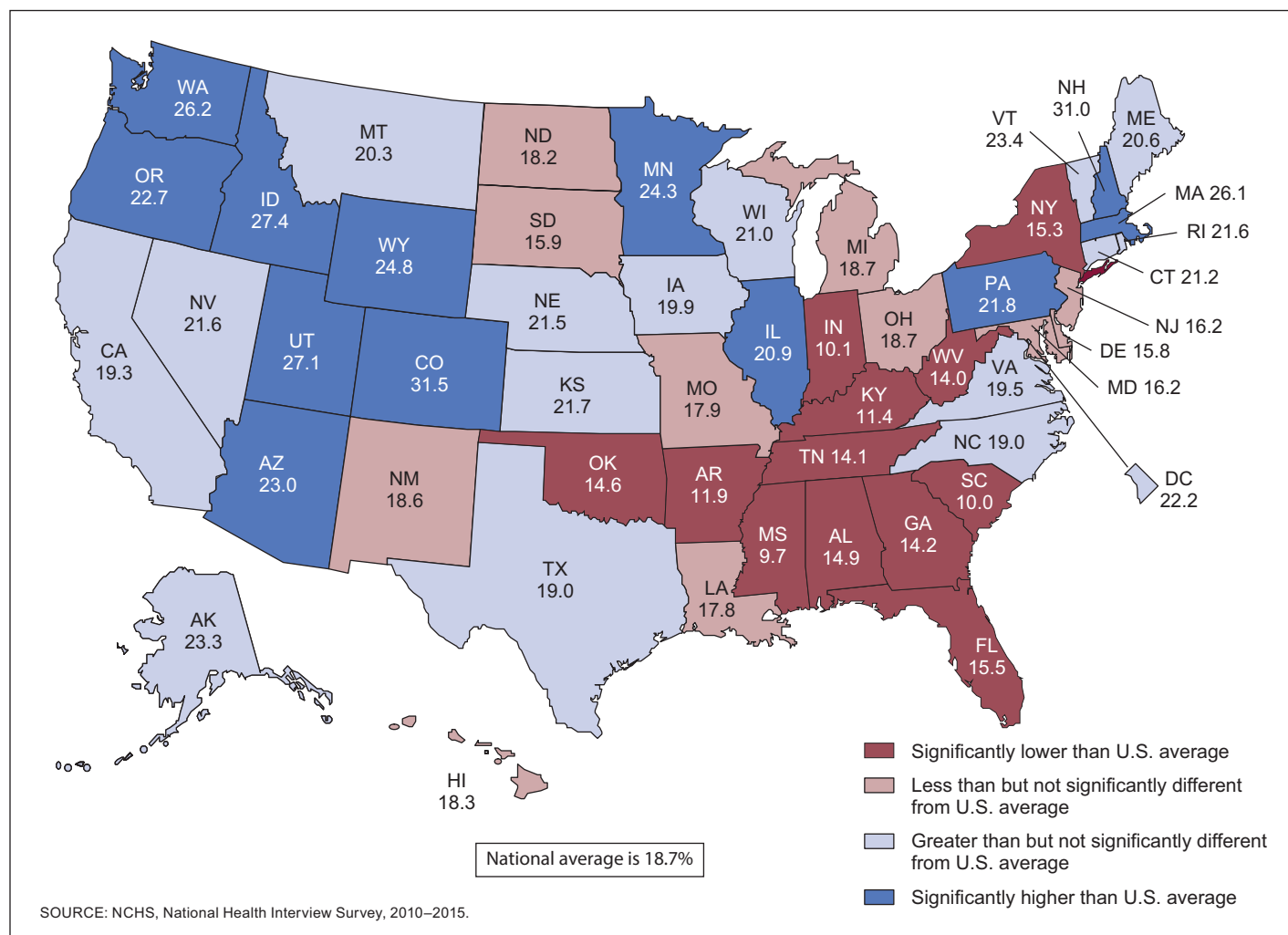


Figure 3. Age-adjusted percentages of women aged 18–64 who met both aerobic and muscle-strengthening federal guidelines through leisure-time physical activity, by state: United States, 2010–2015

Tennessee, and West Virginia), but also in the Great Lakes region (Indiana), the Northeast (New York), and the Southwest (Oklahoma), were significantly lower than the national average for women. Percentages meeting the guidelines among women in 12 states (Arizona, Colorado, Idaho, Illinois, Massachusetts, Minnesota, New Hampshire, Oregon, Pennsylvania, Utah, Washington, and Wyoming) were significantly higher than the national average for women. Roughly one-half of these states are located in the West and Rocky Mountains, while the remainder are scattered across the Plains, Great Lakes, and Northeast regions of the United States. Estimates were not statistically different from the national average in the remaining states.

State differences by sex and work status

Figures 4 and 5 show age-adjusted percentages of working men and women, respectively, who met guidelines for both aerobic and muscle-strengthening activities through participation in LTPA, by state, in 2010–2015. In Figure 4, percentages of working men aged 18–64 who met the guidelines varied from 17.5% in South Dakota to 40.5% in the District of Columbia, with the average among all working men being 28.8%. Percentages meeting the guidelines among working men in 12 states (Arkansas, Indiana, Iowa, Kentucky, Mississippi, New York, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, and West Virginia) were significantly lower than the average for all working men. While a number

of these states are again located in the Southeast, states in other regions (the Plains, Great Lakes, and Northeast) are also represented. Percentages meeting the guidelines among working men in five states—Colorado and Idaho (in the Rocky Mountain region), Massachusetts and Vermont (in the Northeast), and Washington (in the Far West)—and the District of Columbia were significantly higher than the average for all working men. Given the small number of states in this category, less regional concentration is apparent in this map. Estimates were not statistically different from the national average in the remaining states.

Percentages among working women aged 18–64 who met the guidelines for both aerobic and muscle-strengthening activities through participation in LTPA in 2010–2015 varied from 10.5% in Mississippi to 33.6% in Colorado,

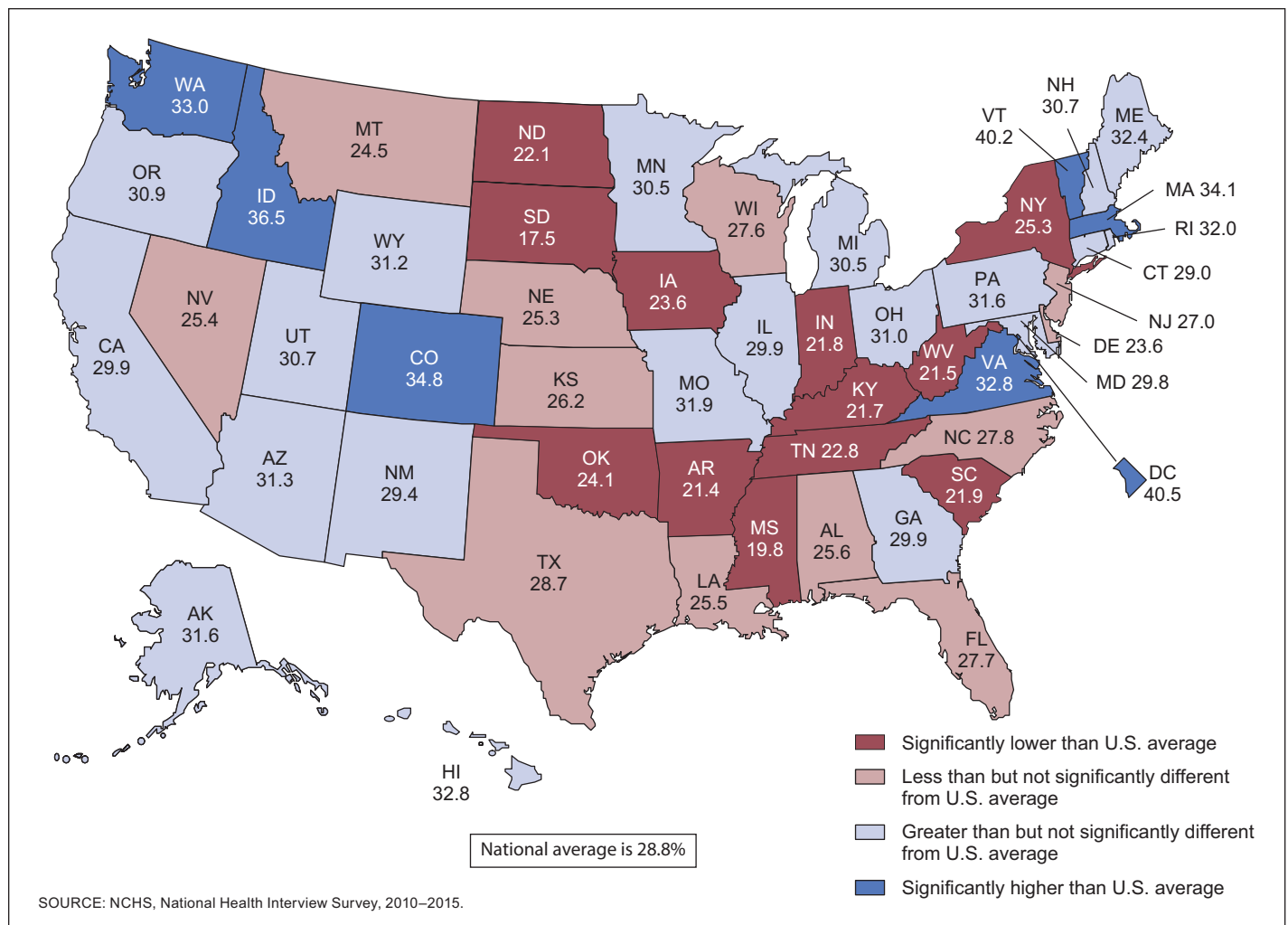


Figure 4. Age-adjusted percentages of working men aged 18–64 who met both aerobic and muscle-strengthening federal guidelines through leisure-time physical activity, by state: United States, 2010–2015

with the average among all working women being 20.9% (Figure 5). Percentages meeting the guidelines among working women in 12 states (Alabama, Arkansas, Florida, Georgia, Indiana, Kentucky, Mississippi, New Jersey, New York, Oklahoma, South Carolina, and Tennessee) were significantly lower than the average for all working women. With the exception of Indiana (in the Great Lakes region), Delaware, New Jersey, New York (in the Northeast), and Oklahoma (in the Southwest), the remaining states are concentrated in the Southeast region of the United States. Percentages meeting the guidelines among working women in 12 states (Arizona, Colorado, Idaho, Illinois, Massachusetts, Minnesota, New Hampshire, Oregon, Utah, Vermont, Washington, and Wyoming) were significantly higher than the

average for all working women. Again, many of these states are in the West and Rocky Mountain regions, but states in the Plains, Great Lakes, and Northeast regions are also represented. Estimates were not statistically different from the national average in the remaining states.

Figure 6 shows age-adjusted percentages of nonworking men aged 18–64 who met the guidelines for both aerobic and muscle-strengthening activities through participation in LTPA, by state, in 2010–2015. Percentages meeting the guidelines among nonworking men varied from 7.0% in Maine to 43.0% in the District of Columbia, with the average among all nonworking men being 21.3%. Percentages meeting the guidelines among nonworking men in 11 states (Arkansas, Indiana, Kentucky, Louisiana, Maine, Mississippi,

Montana, New York, South Carolina, Tennessee, and West Virginia) were significantly lower than the average for all nonworking men. Again, many of these states are located in the Southeast, but states in the Rocky Mountains (Montana), the Great Lakes (Indiana), and the Northeast (Maine and New York) are also included. Percentages meeting the guidelines among nonworking men in six states (Alaska, California, Idaho, Minnesota, Nebraska, and Texas) and the District of Columbia were significantly higher than the average for all nonworking men. These states are scattered throughout regions in the Far West, Rocky Mountains, the Plains, and the Southwest. The District of Columbia is the only area east of the Mississippi River where the percentage of nonworking men meeting the guidelines through participation in LTPA

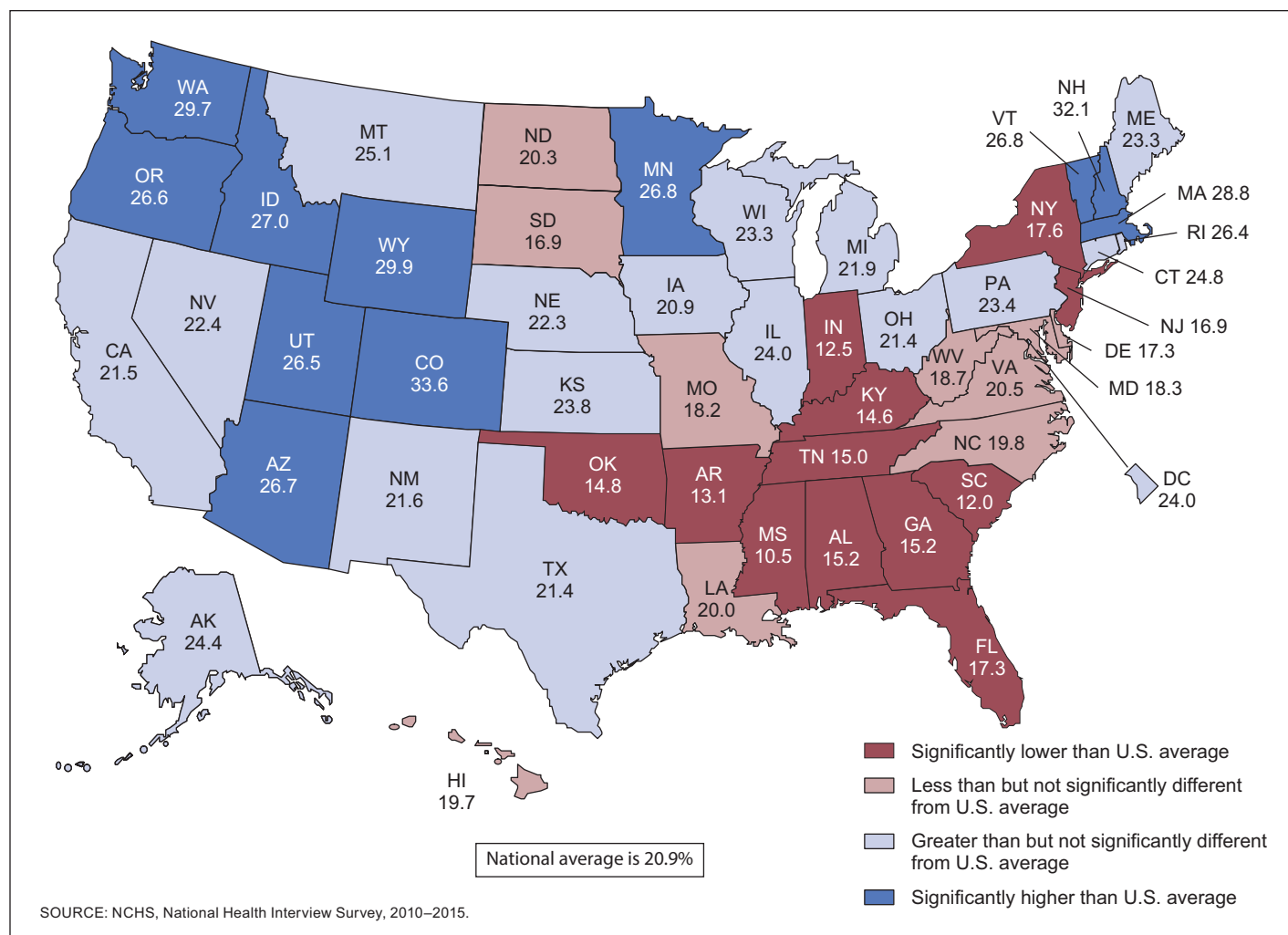


Figure 5. Age-adjusted percentages of working women aged 18–64 who met both aerobic and muscle-strengthening federal guidelines through leisure-time physical activity, by state: United States, 2010–2015

was statistically higher than the national average. Estimates were not statistically different from the national average in the remaining states.

Figure 6 shows age-adjusted percentages among nonworking women aged 18–64 who met the guidelines for both aerobic and muscle-strengthening activities through participation in LTPA in 2010–2015. Percentages meeting the guidelines among nonworking women varied from 5.1% in Indiana to 28.7% in New Hampshire, with the average for all nonworking women being 14.6%. Percentages meeting the guidelines among nonworking women in seven states (Arkansas, Indiana, Kentucky, Mississippi, New York, South Carolina, and West Virginia) were significantly lower than the average for all nonworking women. With the exception of Indiana (in the Great Lakes

region) and New York (in the Northeast), these states are again concentrated in the Southeast. Percentages meeting the guidelines among nonworking women in five states (Colorado, Idaho, New Hampshire, Utah, and Washington) were significantly higher than the average for all nonworking women. These states are concentrated in the Far West and Rocky Mountain regions—New Hampshire, in the Northeast, is the lone exception. Estimates were not statistically different from the national average in the remaining states.

Comparisons by sex and work status within states

Men were more likely than women to meet the 2008 guidelines for both aerobic and muscle-strengthening activities through LTPA in 40 states and

the District of Columbia, regardless of whether the percentages for men and women in these states were statistically significantly higher than, not different than, or below the national averages for the sexes.

This was also true when work status was taken into account; within states, working men were generally more likely than working women to meet the guidelines, as were nonworking men when compared with nonworking women (Table B). Lastly, working men and women were generally more likely than their nonworking counterparts to meet the 2008 guidelines for aerobic and muscle-strengthening activities through LTPA, although there was some variation across states.

In Colorado, however, both men and women were statistically higher than the national averages for meeting the

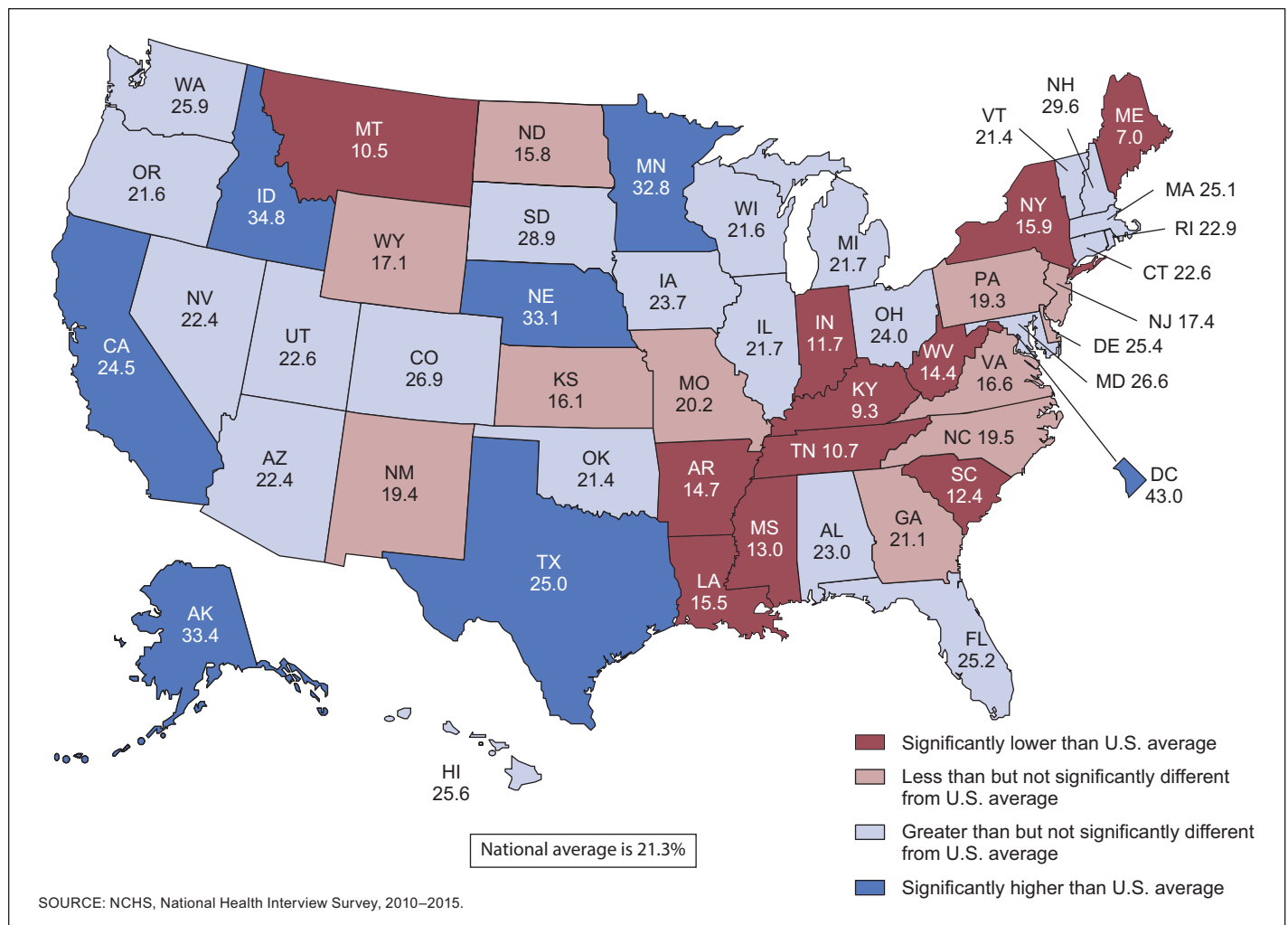


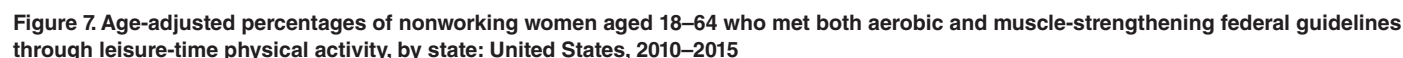
Figure 6. Age-adjusted percentages of nonworking men aged 18–64 who met both aerobic and muscle-strengthening federal guidelines through leisure-time physical activity, by state: United States, 2010–2015

guidelines, and there was no statistical difference between the sexes. This was also true among Colorado's working men and women; both were statistically higher the national averages for meeting the guidelines but were not statistically different from one another. Note that this was also true among working men and women in Massachusetts and Washington. Among nonworking adults in Colorado, again, there was no difference in the extent to which men and women met the guidelines, but only nonworking women were statistically higher than the national average for that group. In addition, men and women in New Hampshire, Utah, and Wyoming were equally likely to meet the 2008 guidelines for both aerobic and muscle-strengthening activities through LTPA, but only women were statistically higher than the national average.

Multivariate analyses of state-level variation in sex, work status, health and disability, and occupational distributions

The sequence of maps shows interesting and distinctive patterns in the outcome of interest—age-adjusted percentages of adults aged 18–64 who met the 2008 guidelines for both aerobic and muscle-strengthening activities through LTPA—for different subgroups of adults by state. Generally, states that were statistically below the national average were consistently concentrated in the Southeastern United States, thus magnifying the overall effect. Adults living in Arkansas, Kentucky, Mississippi, and South Carolina had percentages that were statistically lower than the averages shown in all seven

figures, while adults in Tennessee and West Virginia had percentages that were statistically lower than the averages shown in six of the seven figures. Indiana (in the Great Lakes region but contiguous with Kentucky) and New York (in the Northeast region) also had percentages that were statistically lower than the averages shown in every figures. In contrast, adults living in the Far West and Rocky Mountain regions were somewhat more likely than adults in other regions to meet the guidelines through LTPA: Idaho had percentages that were statistically higher than the averages shown in all seven figures, and Colorado and Washington had percentages that were statistically higher than the averages in six of the seven figures. Generally speaking, however,



Variable	Model 1		Model 2		Model 3 (full)		Full model (parsimonious)		
	Parameter (SE)	P value	Parameter (SE)	P value	Parameter (SE)	P value	Parameter (SE)	P value	Partial R square
Intercept	*44.97 (16.51)	0.009	7.44 (12.86)	0.566	12.83 (19.96)	0.524	39.06 (2.63)	less than 0.000	---
Percentage of adults who are working	-0.15 (0.16)	0.359			0.02 (0.17)	0.932	...	...	...
Percentage of adults in fair or poor health	*-1.11 (0.26)	less than 0.000			-0.53 (0.32)	0.101	-0.71 (0.17)	0.000	0.384
Percentage of men	0.01 (0.30)	0.968			0.18 (0.33)	0.596	...	...	...
Percentage of adults in managerial occupations			0.70 (0.51)	0.175	0.45 (0.49)	0.361	...	...	...
Percentage of adults in professional occupations			*0.49 (0.24)	0.048	0.24 (0.24)	0.339	...	...	...
Percentage of adults in community or social service occupations			0.34 (0.42)	0.425	0.20 (0.40)	0.614	...	...	...
Percentage of adults in sales occupations			0.28 (0.35)	0.435	0.15 (0.34)	0.654	...	...	...
Percentage of adults in production occupations			-0.23 (0.19)	0.214	-0.26 (0.23)	0.262	-0.38 (0.12)	0.003	0.104
Model statistics	Model R square = 0.40 F value (model) = 10.27		Model R square = 0.40 F value (model) = 6.05		Model R square = 0.53 F value (model) = 5.84		Model R square = 0.49 F value (model) = 22.84		

SOURCE: NCHS, National Health Interview Survey, 2010–2015.

Table D. Parameter estimates and standard errors from state-level models predicting percentage of adults aged 18–64 meeting 2008 physical activity guidelines through leisure-time physical activity, by disability, work status, health status, and occupation: United States, 2010–2015

Variable	Model 1		Model 2		Model 3 (full)		Full model (parsimonious)		
	Parameter (SE)	P value	Parameter (SE)	P value	Parameter (SE)	P value	Parameter (SE)	P value	Partial R square
Intercept	22.29 (15.98)	0.170	7.44 (12.86)	0.566	−3.59 (17.07)	0.834	11.69 (7.28)	0.115	---
Percentage of adults who are working	0.03 (0.17)	0.858			0.14 (0.17)	0.406	0.34 (0.09)	0.001	0.152
Percentage of adults limited in physical functioning	*−0.73 (0.25)	0.006			−0.22 (0.28)	0.438	...	...	...
Percentage of men	0.13 (0.33)	0.696			0.29 (0.33)	0.394	...	...	...
Percentage of adults in managerial occupations			0.70 (0.51)	0.175	0.43 (0.50)	0.401	...	...	...
Percentage of adults in professional occupations			*0.49 (0.24)	0.048	0.25 (0.25)	0.336	...	...	...
Percentage of adults in community or social service occupations			0.34 (0.42)	0.425	0.30 (0.40)	0.467	...	...	...
Percentage of adults in sales occupations			0.28 (0.35)	0.435	0.17 (0.35)	0.635	...	...	...
Percentage of adults in production occupations			−0.23 (0.19)	0.214	−0.35 (0.23)	0.130	−0.59 (0.12)	Less than 0.000	0.301
Model statistics	Model R square = 0.28 F value (model) = 6.15		Model R square = 0.40 F value (model) = 6.05		Model R square = 0.50 F value (model) = 5.30		Model R square = 0.45 F value (model) = 19.91		

--- Data not available.

*Indicates statistical significance in models 1–3 at 0.05 level.

... Category not applicable.

NOTES: Based on age-adjusted and weighted percentages; the percentages of women, of adults not working, of adults not limited in physical functioning, and of adults in service occupations serve as reference categories for the variables included in the models. The parsimonious model utilizes a stepwise selection option with slentry = 0.05 and slstay = 0.05. SE is standard error.

SOURCE: NCHS, National Health Interview Survey, 2010–2015.

states that were statistically higher than the average also tended to be dispersed across more regions: Massachusetts (in the Northeast) and Minnesota (in the Plains) had percentages that were statistically higher in five of the seven figures. Lastly, percentages meeting the guidelines among men were less regionally concentrated than among women, especially with respect to exceeding the guidelines.

In an effort to understand the patterns apparent in [Figure 1](#), a multivariate analysis examined whether state variation in the percentages of adults working (as opposed to the percentage not working), in fair or poor health (as opposed to those in excellent, very good, or good health), experiencing any difficulty in physical functioning (as opposed to no difficulty), and by occupational distributions for working adults accounted for some or all of the state variation in meeting the guidelines via LTPA. These explanatory variables are shown in Technical Notes [Tables I–V](#). Each of these variables has been shown in previous research to be associated with LTPA rates when examined at the person level (8,9,18,29–33).

Accordingly, several OLS regression models were used to predict state

percentages of adults meeting the guidelines for both aerobic and muscle-strengthening activities via LTPA. Results of these analyses are shown in [Tables C](#) and [D](#). Because initial analyses showed that percentages of adults in fair or poor health were highly correlated with the percentages of adults with difficulty in physical functioning (i.e., a disability), the first series of models ([Table C](#)) includes the percentages of adults in fair or poor health while the second series of models ([Table D](#)) includes the percentages of adults with a disability. Regarding the occupational distributions, the percentage of adults working in service occupations is the reference group for the five occupational categories included in the models.

Model 1 in [Table C](#) contains three explanatory variables: the percentage of working adults in each state, the percentage of men in each state, and the percentage of adults in fair or poor health in each state. Results indicated that only one explanatory variable—the percentage of adults in fair or poor health—was negatively associated (at the 0.05 level) with state percentages of adults meeting the guidelines via LTPA. In other words, as the percentage of adults in fair or poor health increases from one state

to the next, there is a corresponding decrease in the state-level percentage of adults meeting the guidelines. Model 2 included the five variables indicating the percentages of adults working in managerial, professional, community or social services, sales, and production occupations (relative to the referent, the percentage of adults in service occupations). Note that the percentage of adults in professional occupations was positively associated (at the 0.05 level) with the percentage of adults meeting the guidelines, meaning that as the percentage of adults working as professionals increases across states, the percentage meeting the guidelines via LTPA also increases.

Model 3, which combines the explanatory variables from the first two models, did not contain any statistically significant parameter estimates (at 0.05), although the percent age of adults in fair or poor health was marginally informative (the *p* value is 0.10) and the explanatory variables explained 53% of the variance in state-level percentages of adults meeting the guidelines via LTPA. The final model in [Table C](#) is a parsimonious version of Model 3, with stepwise selection applied at the 0.05 level, and indicated that two variables—

the percentages of adults in fair or poor health and those working in production occupations—were both negatively associated with state-level percentages of adults meeting the guidelines via LTPA. Together, these two terms explained 48% of the variance in state-level percentages of adults meeting the guidelines: the percentage of adults in fair or poor health explained 38%, while the percentage of adults in production occupations explained an additional 10%.

Comparable results were obtained from the series of models in [Table D](#), which included the percentage of adults with a disability as an explanatory variable. In Model 1, the percentage of adults with a disability was negatively associated (at the 0.05 level) with state percentages of adults meeting the guidelines via LTPA. Model 2 includes the percentages of adults in managerial, professional, community or social services, sales, and production occupations, so the results are identical to those in [Table C](#), where the percentage of adults in professional occupations was positively associated (at the 0.05 level) with the state-level percentages of adults meeting the guidelines via LTPA. Model

3 combines the explanatory variables from the first two models, but did not contain any statistically significant estimates (at 0.05), even though the explanatory variables explained 50% of the variances in state-level percentages of adults meeting the guidelines via LTPA. The final model in [Table D](#) is a parsimonious version of Model 3 and indicated that two variables—state-level percentages of working adults and adults in production occupations—were associated with state percentages of adults meeting the guidelines via LTPA. The percentage of adults working in production occupations was negatively associated with meeting the guidelines at the state level, and explained 30% of the variance in the state percentages. On the other hand, the percentage of adults who were working per state was positively associated with percentages of adults meeting the guidelines at the state level and explained an additional 15% of the variance. Perhaps most notably, the percentage of adults with a disability was not significantly associated with meeting the guidelines at the state level, unlike the fair or poor health indicator in the parsimonious model in [Table C](#).

Similar substantive results are obtained if these models are run separately for men and women ([Table E](#)). For example, state-level percentages of working men, men in fair or poor health, and men working in managerial, professional, community or social service, sales, and production occupations can be used to predict state percentages of men aged 18–64 meeting the guidelines for both aerobic and muscle-strengthening activities via LTPA ([Figure 2](#)). The parsimonious version of this model indicated that the percentage of men working in professional occupations was positively associated with meeting the guidelines (explaining 45% of the variance in this outcome), while the percentage of men in production occupations was negatively associated with meeting the guidelines (explaining an additional 8%). A comparable model (with female percentages) can also be used to predict the state percentages of women aged 18–64 meeting the guidelines via LTPA ([Figure 3](#)). The parsimonious model indicated that the percentage of women in fair or poor health was negatively associated with the outcome (explaining

Table E. Parameter estimates and standard errors from separate state-level models predicting percentages of men and women aged 18–64 meeting 2008 physical activity guidelines through leisure-time physical activity (with fair or poor health as an explanatory variable): United States, 2010–2015

Variable	Male models						Female models				
	Full model		Full model (parsimonious)			Full model		Full model (parsimonious)			
	Parameter (SE)	P value	Parameter (SE)	P value	Partial R square	Parameter (SE)	P value	Parameter (SE)	P value	Partial R square	
Intercept	*35.26 (14.40)	0.019	27.64 (6.43)	Less than 0.000	---	9.75 (19.17)	0.614	24.37 (3.40)	Less than 0.000	---	
Percentage working	0.12 (0.18)	0.503	...	...	...	0.00 (0.00)	0.429	...	...	...	
Percentage in fair or poor health	−0.22 (0.26)	0.408	...	...	...	*−0.71 (0.26)	0.008	−0.87 (0.18)	Less than 0.000	0.346	
Percentage in managerial professions	−0.58 (0.31)	0.071	...	...	...	0.61 (0.43)	0.168	0.59 (0.30)	0.061	0.047	
Percentage in professional occupations	0.32 (0.25)	0.208	0.61 (0.20)	0.003	0.451	0.09 (0.20)	0.639	...	...	...	
Percentage in community or social service occupations	0.58 (0.40)	0.156	...	...	...	−0.01 (0.30)	0.962	...	...	...	
Percentage in sales occupations	−0.25 (0.26)	0.336	...	...	...	0.20 (0.35)	0.561	...	...	...	
Percentage in production occupations	*−0.39 (0.15)	0.010	−0.29 (0.10)	0.008	0.076	−0.12 (0.30)	0.692	...	...	...	
Model statistics	Model R square = 0.61 F value (model) = 9.56		Model R square = 0.53 F value (model) = 26.69			Model R square = 0.41 F value (model) = 4.25		Model R square = 0.39 F value (model) = 15.55			

*Indicates statistical significance in full models at 0.05 level.

--- Data not available.

... Category not applicable.

NOTES: Based on age-adjusted and weighted percentages, the percentages not working, in excellent, very good, or good health, and in service occupations serve as reference categories for the variables included in the models. The parsimonious model for men utilizes a stepwise selection option with slentry = 0.05 and slstay = 0.05; the parsimonious model for women utilizes a stepwise selection option with slentry = 0.10 and slstay = 0.10. SE is standard error.

SOURCE: NCHS, National Health Interview Survey, 2010–2015.

35% of the variance in this model), while the percentage of women working as managers was positively associated with the outcome (explaining an additional 5%).

Discussion

A previously published NCHS report showed that professionals and managers were more likely than adults in production and related occupations to meet the 2008 guidelines during their leisure time, and that men were more likely than women to meet these guidelines through LTPA (18), despite the fact that men are more likely than women to be working in production and related occupations (34). The current report examines state-level variation in meeting the guidelines for both working and nonworking adults aged 18–64. The figures in this report show distinctive patterns by state in the extent to which U.S. adults met the 2008 federal guidelines for both aerobic and muscle-strengthening activities through LTPA. In general, Southeastern states were consistently overrepresented in all “below average” categories shown in the seven figures: Percentages for Arkansas, Kentucky, Mississippi, and South Carolina were statistically significantly lower than average percentages in every figure, while Tennessee and West Virginia had lower-than-average percentages in six of the seven figures. A few states in other parts of the United States were also in this category, including Indiana and New York, which were statistically below average in every figure. For the most part, however, adults aged 18–64 residing in the Southeastern United States were much less likely than adults residing in other areas of the United States to have met the guidelines through LTPA.

On the other hand, states in the Western and Rocky Mountain regions were consistently more likely to be in the significantly higher category. Percentages for Idaho show it was above average in every figure, as were Colorado and Washington in six out of seven figures. In general, states that were statistically significantly higher with respect to meeting the guidelines were more dispersed across multiple regions

in the United States than states where residents were statistically below average with respect to meeting the guidelines. Moreover, figures showing percentages of women meeting the guidelines by state retained somewhat more regional concentration, even when work status was taken into account. However, in figures showing the percentages of men meeting the guidelines by state, there was less regional concentration, especially in the western part of the United States, and particularly when working men were distinguished from nonworking men.

Additional tables in the Technical Notes show considerable state-level variation among working adults compared with nonworking adults as a whole (as well as among men and women), health and physical functioning among adults (and among working and nonworking men and women), and in occupational distributions among working adults (as well as among working men and women). Several of these factors were also associated, at the state level, with meeting the guidelines through LTPA, as OLS regression analyses indicated. States with higher percentages of professionals and managers relative to production workers (e.g., Colorado) generally had higher percentages of working adults meeting the federal guidelines for physical activity during their leisure time than did states with more production workers and fewer professionals and managers (e.g., Mississippi). On the other hand, West Virginia and Kentucky were disadvantaged twice with respect to meeting the guidelines. Roughly one-third of men aged 18–64 in these states were not working, and roughly 40% of these men were in fair or poor health or disabled. Taken together, such findings are consistent with previous research showing state variation in both morbidity and mortality (19–24).

The HP 2020 objective regarding physical activity specifies that 20.1% of all adults meet both aerobic and muscle-strengthening federal guidelines by 2020. Among all women aged 18–64, 18.7% met the guidelines, but this is nearly two percentage points lower than the objective. While the average for working women (20.9%) was above the target,

the average among nonworking women was 14.6%, almost six percentage points lower than the HP 2020 target. Only nonworking women in five states—Colorado, Idaho, New Hampshire, Utah, and Washington—were statistically above this average.

It is important to note that adults working in physically demanding jobs or engaging in physical activity as they commute to and from work may be less likely to engage in LTPA, which represents only a part of total physical activity. Because respondents’ physical activity performed in the workplace or while commuting cannot be directly assessed using NHIS, these forms of physical activity remain unmeasured variables. This may explain, at least in part, why New York had such relatively low percentages of adults meeting the 2008 guidelines through LTPA. More than 6% of commuters in New York State walk to work, placing the state second, behind only Alaska, among all states in the percentage of commuters walking to work (35). Nevertheless, if LTPA has more health benefits than occupational physical activity—as several previous studies have concluded (11–17)—then the choices that Americans make regarding both their occupation and state of residence can have very real consequences for their morbidity, disability, and mortality.

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Technical Notes

Table I. Age-adjusted percentages with standard errors of working adults and working men and women aged 18–64, by sex and state: United States, 2010–2015

State	Men	Women	All working adults ¹	Working men ¹	Working women ¹
Percent (standard error)					
All states	49.2 (0.17)	50.8 (0.17)	71.1 (0.21)	76.8 (0.26)	65.6 (0.27)
Alabama	46.2 (1.34)	53.8 (1.34)	65.2 (1.59)	73.6 (2.12)	57.9 (1.97)
Alaska	46.3 (1.69)	53.7 (1.69)	76.1 (1.80)	77.4 (2.39)	75.0 (2.29)
Arizona	50.6 (1.26)	49.4 (1.26)	68.4 (1.46)	74.7 (1.85)	61.7 (1.90)
Arkansas	48.7 (1.37)	51.3 (1.37)	68.2 (1.59)	73.7 (2.08)	63.0 (2.03)
California	50.0 (0.48)	50.0 (0.48)	68.8 (0.53)	75.6 (0.65)	62.0 (0.73)
Colorado	50.2 (1.20)	49.8 (1.20)	75.7 (1.28)	82.9 (1.52)	68.3 (1.74)
Connecticut	48.5 (1.41)	51.5 (1.41)	72.0 (1.58)	76.2 (2.12)	67.8 (1.98)
Delaware	50.1 (1.69)	49.9 (1.69)	75.3 (1.83)	80.1 (2.30)	70.4 (2.40)
District of Columbia	47.7 (1.42)	52.3 (1.42)	70.4 (1.62)	74.8 (2.20)	66.6 (2.01)
Florida	48.2 (0.65)	51.8 (0.65)	68.6 (0.82)	73.5 (1.13)	64.0 (1.02)
Georgia	47.1 (1.00)	52.9 (1.00)	69.0 (1.16)	75.4 (1.35)	63.3 (1.26)
Hawaii	46.0 (1.68)	54.0 (1.68)	73.4 (1.86)	79.8 (2.33)	67.9 (2.42)
Idaho	50.8 (1.55)	49.2 (1.55)	72.9 (1.72)	78.9 (2.14)	67.0 (2.28)
Illinois	51.2 (0.86)	48.8 (0.86)	71.7 (0.87)	76.9 (1.28)	66.3 (1.29)
Indiana	50.4 (1.22)	49.6 (1.22)	71.5 (1.37)	75.3 (1.79)	67.5 (1.77)
Iowa	52.5 (1.28)	47.5 (1.28)	80.9 (1.26)	84.8 (1.50)	76.6 (1.75)
Kansas	51.2 (1.31)	48.8 (1.31)	78.6 (1.35)	86.1 (1.55)	70.7 (1.85)
Kentucky	49.0 (1.26)	51.0 (1.26)	64.6 (1.51)	67.6 (2.05)	61.7 (1.86)
Louisiana	45.1 (1.30)	54.9 (1.30)	67.1 (1.54)	71.7 (2.09)	63.4 (1.89)
Maine	50.0 (1.52)	50.0 (1.52)	77.3 (1.59)	79.1 (2.14)	75.3 (1.99)
Maryland	50.1 (1.28)	49.9 (1.28)	75.2 (1.38)	80.3 (1.76)	70.2 (1.79)
Massachusetts	48.0 (1.29)	52.0 (1.29)	75.8 (1.38)	80.8 (1.76)	71.3 (1.78)
Michigan	51.0 (0.96)	49.0 (0.96)	69.0 (0.97)	74.1 (1.39)	63.7 (1.21)
Minnesota	49.8 (1.18)	50.2 (1.18)	81.9 (1.13)	84.7 (1.43)	79.0 (1.49)
Mississippi	46.7 (1.38)	53.3 (1.38)	67.8 (1.61)	75.7 (2.11)	60.9 (2.01)
Missouri	47.4 (1.25)	52.6 (1.25)	70.9 (1.42)	74.5 (1.89)	67.8 (1.79)
Montana	49.1 (1.85)	50.9 (1.85)	67.4 (2.16)	70.7 (2.83)	64.2 (2.77)
Nebraska	47.2 (1.47)	52.8 (1.47)	79.1 (1.49)	81.0 (1.99)	77.4 (1.88)
Nevada	49.2 (1.36)	50.8 (1.36)	69.0 (1.58)	73.3 (2.08)	64.6 (2.00)
New Hampshire	52.7 (1.56)	47.3 (1.56)	78.7 (1.59)	82.2 (2.00)	74.9 (2.12)
New Jersey	49.6 (1.09)	50.4 (1.09)	71.5 (1.23)	75.5 (1.61)	68.1 (1.57)
New Mexico	48.5 (1.51)	51.5 (1.51)	65.6 (1.79)	72.4 (2.37)	59.0 (2.24)
New York	47.9 (0.73)	52.1 (0.73)	69.1 (0.81)	74.4 (1.18)	64.1 (1.13)
North Carolina	46.9 (0.96)	53.1 (0.96)	67.6 (1.28)	73.0 (1.65)	62.8 (1.39)
North Dakota	54.6 (1.74)	45.4 (1.74)	87.1 (1.46)	90.6 (1.64)	82.3 (2.18)
Ohio	48.4 (1.00)	51.6 (1.00)	71.6 (1.22)	75.9 (1.49)	67.6 (1.50)
Oklahoma	47.6 (1.34)	52.4 (1.34)	67.8 (1.57)	75.2 (2.01)	61.2 (2.00)
Oregon	51.8 (1.36)	48.2 (1.36)	66.8 (1.60)	69.5 (2.09)	64.0 (2.06)
Pennsylvania	50.1 (0.91)	49.9 (0.91)	73.5 (0.93)	78.9 (1.10)	68.1 (1.28)
Rhode Island	44.5 (1.71)	55.5 (1.71)	70.4 (1.96)	76.2 (2.59)	65.7 (2.45)
South Carolina	48.2 (1.33)	51.8 (1.33)	66.8 (1.56)	74.0 (2.02)	59.7 (1.98)
South Dakota	51.7 (1.69)	48.3 (1.69)	82.1 (1.62)	86.9 (1.89)	77.0 (2.26)
Tennessee	48.4 (1.28)	51.6 (1.28)	69.8 (1.47)	77.0 (1.90)	63.2 (1.87)
Texas	49.7 (0.61)	50.3 (0.61)	73.2 (0.73)	81.6 (0.86)	64.8 (0.98)
Utah	51.1 (1.34)	48.9 (1.34)	75.3 (1.44)	82.6 (1.71)	67.7 (1.97)
Vermont	48.2 (2.04)	51.8 (2.04)	77.6 (2.13)	83.0 (2.62)	71.6 (2.85)
Virginia	47.7 (1.12)	52.3 (1.12)	74.2 (1.22)	78.2 (1.61)	70.5 (1.55)
Washington	50.5 (1.11)	49.5 (1.11)	71.5 (1.26)	78.6 (1.53)	64.4 (1.67)
West Virginia	48.9 (1.44)	51.1 (1.44)	60.0 (1.76)	66.2 (2.32)	54.2 (2.21)
Wisconsin	49.5 (1.28)	50.5 (1.28)	78.1 (1.32)	81.0 (1.71)	75.2 (1.71)
Wyoming	52.3 (1.67)	47.7 (1.67)	78.7 (1.71)	89.4 (1.66)	67.3 (2.56)

¹Sample adults were asked whether they were working during the week before the interview. Response categories included, “working for pay at a job or business,” “with a job or business but not at work,” “looking for work,” “working, but not for pay, at a family-owned job or business,” and “not working at a job or business and not looking for work.” Respondents “working for pay at a job or business,” “with a job or business but not at work,” or “working, but not for pay, at a family-owned job or business” are considered to be working and shown in this table. Respondents who were “looking for work” or “not working at a job or business and not looking for work” are considered to be not working and are not shown in the table.

NOTES: Estimates are based on household interviews of a sample of the U.S. civilian noninstitutionalized population. Unknown data for the columns were not included in the denominators when calculating percentages. Estimates are age adjusted using the projected 2000 U.S. population as the standard population and using three age groups: 18–24, 25–44, 45–64. The estimates in this table were not calculated in a manner consistent with the methods used by the U.S. Bureau of Labor Statistics and should not be compared with the federal government’s official employment (or unemployment) rates.

SOURCE: NCHS, National Health Interview Survey, 2010–2015.

Table II. Age-adjusted percentages and standard errors of all adults and nonworking and working adults aged 18–64, who are in fair or poor health or have difficulty in physical functioning, by state and sex: United States, 2010–2015

State	All adults		Nonworking men		Nonworking women		Working men		Working women	
	Fair or poor health ¹	Difficulty in physical functioning ²	Fair or poor health ¹	Difficulty in physical functioning ²	Fair or poor health ¹	Difficulty in physical functioning ²	Fair or poor health ¹	Difficulty in physical functioning ²	Fair or poor health ¹	Difficulty in physical functioning ²
Percent (standard error)										
All states	10.2 (0.12)	10.4 (0.12)	26.0 (0.48)	24.9 (0.47)	21.0 (0.31)	22.4 (0.32)	5.1 (0.12)	3.4 (0.10)	5.7 (0.13)	6.7 (0.14)
Alabama	14.3 (1.01)	15.0 (1.04)	30.5 (3.69)	27.8 (3.61)	29.4 (2.43)	29.3 (2.30)	5.7 (1.06)	3.4 (0.90)	7.6 (1.20)	8.7 (1.33)
Alaska	9.6 (1.07)	10.5 (1.13)	18.3 (4.51)	16.2 (4.32)	29.5 (4.29)	21.5 (3.66)	4.1 (1.01)	4.7 (1.17)	9.1 (1.49)	7.9 (1.45)
Arizona	11.6 (0.87)	11.5 (0.87)	25.8 (3.33)	22.7 (3.21)	19.6 (2.21)	22.6 (2.21)	6.4 (0.96)	3.1 (0.75)	6.6 (1.06)	10.3 (1.35)
Arkansas	15.3 (1.06)	15.3 (1.07)	33.2 (3.73)	35.1 (3.80)	32.1 (2.87)	34.9 (2.78)	5.8 (1.04)	4.2 (0.97)	9.2 (1.30)	8.9 (1.33)
California	8.3 (0.29)	10.0 (0.33)	22.9 (1.20)	17.9 (1.08)	18.6 (0.75)	17.5 (0.73)	5.4 (0.32)	2.7 (0.28)	6.1 (0.33)	6.0 (0.41)
Colorado	7.4 (0.67)	7.4 (0.68)	16.5 (3.13)	19.7 (3.37)	16.6 (2.17)	18.1 (2.14)	3.7 (0.68)	2.9 (0.65)	5.2 (0.86)	4.8 (0.86)
Connecticut	9.1 (0.87)	8.9 (0.88)	20.7 (3.69)	23.3 (3.87)	19.4 (2.56)	20.6 (2.48)	4.0 (0.90)	3.3 (0.89)	5.9 (1.05)	6.3 (1.13)
Delaware	6.1 (0.87)	7.4 (0.96)	24.5 (5.14)	17.3 (4.54)	16.7 (3.34)	17.8 (3.25)	6.1 (1.22)	*1.8 (0.73)	*1.8 (0.71)	3.5 (1.01)
District of Columbia	8.9 (0.87)	9.1 (0.89)	20.8 (4.08)	15.7 (3.66)	21.0 (2.84)	23.2 (2.79)	4.7 (0.97)	2.7 (0.80)	2.9 (0.72)	3.8 (0.86)
Florida	10.2 (0.50)	10.4 (0.47)	22.9 (1.89)	23.2 (1.88)	21.8 (1.25)	23.3 (1.15)	4.6 (0.43)	2.9 (0.38)	5.5 (0.46)	5.7 (0.53)
Georgia	11.1 (0.55)	11.3 (0.52)	26.3 (2.36)	25.4 (2.81)	22.0 (1.47)	24.2 (1.62)	5.3 (0.75)	3.6 (0.79)	6.1 (0.63)	6.4 (0.73)
Hawaii	5.1 (0.80)	8.3 (1.01)	29.1 (4.99)	12.5 (3.65)	11.7 (2.71)	9.9 (2.40)	5.4 (1.19)	*1.5 (0.69)	5.0 (1.14)	4.5 (1.13)
Idaho	9.8 (0.99)	8.7 (0.95)	17.7 (3.93)	23.0 (4.36)	16.9 (2.77)	19.1 (2.76)	5.3 (1.06)	4.0 (1.00)	5.7 (1.18)	7.4 (1.38)
Illinois	8.5 (0.38)	8.8 (0.46)	20.4 (2.12)	20.9 (2.27)	17.2 (1.50)	19.7 (1.17)	4.5 (0.51)	2.8 (0.35)	5.2 (0.53)	5.2 (0.58)
Indiana	11.8 (0.84)	11.6 (0.85)	26.8 (3.36)	30.1 (3.49)	23.9 (2.52)	25.8 (2.45)	5.0 (0.83)	2.8 (0.68)	7.7 (1.04)	8.6 (1.14)
Iowa	8.7 (0.78)	6.8 (0.71)	17.3 (3.40)	18.8 (3.53)	20.6 (3.01)	24.4 (3.03)	3.8 (0.70)	4.9 (0.87)	4.2 (0.81)	6.3 (1.02)
Kansas	10.0 (0.85)	9.1 (0.82)	27.9 (4.43)	28.5 (4.48)	24.4 (2.76)	27.4 (2.72)	4.0 (0.76)	3.7 (0.80)	5.3 (0.94)	6.7 (1.09)
Kentucky	20.7 (1.10)	20.1 (1.10)	38.5 (3.19)	44.3 (3.27)	39.2 (2.59)	40.4 (2.47)	7.6 (1.17)	6.2 (1.15)	9.1 (1.22)	9.8 (1.31)
Louisiana	12.2 (0.92)	13.2 (0.96)	32.4 (3.56)	29.8 (3.49)	23.7 (2.40)	24.3 (2.30)	6.7 (1.12)	3.7 (0.92)	7.2 (1.10)	7.0 (1.13)
Maine	10.4 (1.00)	9.1 (0.95)	30.5 (4.78)	50.5 (5.22)	22.3 (3.18)	26.5 (3.20)	3.5 (0.87)	3.0 (0.88)	4.8 (1.00)	3.5 (0.89)
Maryland	8.7 (0.78)	7.7 (0.74)	21.3 (3.66)	19.7 (3.58)	17.0 (2.42)	16.5 (2.27)	4.0 (0.78)	3.7 (0.81)	4.7 (0.83)	8.4 (1.14)
Massachusetts	7.5 (0.73)	7.4 (0.73)	19.6 (3.20)	20.3 (3.25)	18.4 (2.42)	17.9 (2.26)	4.0 (0.81)	*2.1 (0.64)	4.6 (0.85)	6.8 (1.06)
Michigan	13.5 (0.87)	11.5 (0.68)	30.1 (2.87)	33.0 (2.45)	21.4 (2.28)	29.1 (2.47)	4.5 (0.62)	3.9 (0.77)	5.9 (0.83)	7.2 (0.90)
Minnesota	8.5 (0.71)	7.1 (0.66)	20.3 (3.57)	23.3 (3.76)	15.4 (2.47)	23.1 (2.74)	4.3 (0.70)	3.7 (0.71)	5.2 (0.79)	7.1 (0.95)
Mississippi	16.4 (1.10)	17.9 (1.15)	42.0 (4.12)	35.1 (4.00)	32.1 (2.67)	31.8 (2.53)	8.6 (1.30)	7.9 (1.37)	9.0 (1.31)	7.8 (1.27)
Missouri	12.6 (0.89)	12.4 (0.90)	32.7 (3.54)	29.3 (3.44)	22.9 (2.45)	26.6 (2.44)	4.8 (0.86)	4.4 (0.90)	8.0 (1.09)	8.1 (1.13)
Montana	10.0 (1.19)	11.2 (1.27)	33.5 (4.75)	27.7 (4.52)	16.0 (3.17)	22.2 (3.42)	5.9 (1.41)	*	*3.7 (1.15)	*3.7 (1.19)
Nebraska	8.6 (0.88)	7.6 (0.85)	14.4 (3.53)	17.9 (3.87)	22.5 (3.48)	23.7 (3.36)	3.8 (0.87)	*2.3 (0.73)	6.0 (1.03)	9.3 (1.32)
Nevada	10.2 (0.89)	10.4 (0.91)	22.6 (3.44)	26.6 (3.66)	19.7 (2.43)	19.6 (2.30)	6.4 (1.07)	3.5 (0.88)	6.0 (1.07)	6.8 (1.17)
New Hampshire	10.5 (1.03)	9.0 (0.97)	24.4 (4.70)	25.4 (4.78)	19.2 (3.35)	27.7 (3.61)	4.6 (0.96)	5.4 (1.13)	6.3 (1.18)	7.2 (1.31)
New Jersey	7.4 (0.62)	7.8 (0.64)	22.2 (2.87)	17.6 (2.64)	13.3 (1.75)	14.2 (1.71)	3.8 (0.66)	3.2 (0.65)	4.7 (0.74)	5.9 (0.86)
New Mexico	13.7 (1.11)	15.8 (1.20)	36.2 (4.26)	29.5 (4.06)	25.5 (2.75)	26.0 (2.62)	8.3 (1.39)	4.9 (1.19)	8.1 (1.38)	7.9 (1.41)
New York	8.9 (0.48)	8.6 (0.48)	21.7 (2.13)	20.4 (2.01)	17.9 (1.25)	20.7 (1.38)	4.5 (0.47)	3.7 (0.49)	3.8 (0.44)	4.9 (0.55)
North Carolina	11.7 (0.74)	11.5 (0.70)	26.5 (2.37)	28.5 (3.34)	22.7 (1.74)	21.9 (1.71)	5.1 (0.82)	2.9 (0.59)	5.6 (1.08)	8.3 (1.01)
North Dakota	7.5 (0.99)	8.4 (1.06)	21.8 (5.75)	23.1 (5.90)	16.9 (4.51)	21.8 (4.70)	4.9 (1.04)	*2.3 (0.78)	7.7 (1.44)	6.9 (1.42)
Ohio	11.7 (0.71)	11.1 (0.73)	25.8 (2.64)	26.9 (2.57)	24.6 (1.79)	27.0 (1.54)	5.2 (0.67)	4.1 (0.61)	5.5 (0.77)	6.8 (0.77)
Oklahoma	12.4 (0.95)	11.9 (0.95)	27.5 (3.66)	32.0 (3.84)	19.5 (2.37)	23.6 (2.41)	6.7 (1.08)	4.2 (0.94)	6.3 (1.07)	7.1 (1.18)
Oregon	11.9 (0.95)	10.2 (0.90)	22.8 (3.20)	26.2 (3.38)	16.8 (2.40)	22.3 (2.54)	5.2 (0.95)	4.5 (0.97)	6.2 (1.09)	7.7 (1.25)
Pennsylvania	9.8 (0.55)	10.5 (0.70)	31.1 (2.69)	24.6 (2.15)	23.2 (2.05)	24.0 (1.92)	5.6 (0.66)	3.2 (0.51)	4.6 (0.60)	6.0 (0.71)
Rhode Island	11.4 (1.17)	9.5 (1.10)	26.1 (4.42)	31.0 (4.67)	21.6 (3.20)	26.0 (3.24)	5.5 (1.31)	*2.8 (1.04)	*2.3 (0.81)	6.4 (1.38)
South Carolina	11.1 (0.90)	12.5 (0.96)	33.4 (3.77)	27.8 (3.59)	22.4 (2.32)	22.3 (2.21)	4.1 (0.85)	2.4 (0.72)	7.4 (1.18)	5.8 (1.10)
South Dakota	8.0 (0.99)	6.9 (0.93)	14.7 (4.36)	22.7 (5.18)	21.6 (3.95)	22.2 (3.79)	*2.2 (0.72)	3.8 (1.02)	6.1 (1.27)	4.9 (1.19)
Tennessee	13.2 (0.93)	13.3 (0.95)	36.4 (3.92)	29.4 (3.73)	25.8 (2.48)	27.9 (2.41)	6.4 (1.02)	5.0 (0.99)	5.4 (0.93)	7.3 (1.12)
Texas	9.6 (0.35)	11.1 (0.39)	28.1 (1.79)	23.4 (1.52)	20.9 (1.10)	19.8 (1.09)	6.7 (0.52)	3.9 (0.43)	6.9 (0.47)	7.6 (0.57)
Utah	7.7 (0.77)	7.1 (0.75)	20.9 (3.88)	21.4 (3.93)	16.6 (2.48)	19.1 (2.49)	4.1 (0.78)	3.6 (0.80)	3.6 (0.81)	4.8 (0.96)
Vermont	7.6 (1.16)	5.9 (1.05)	*12.9 (4.89)	30.5 (6.76)	24.6 (4.73)	25.5 (4.54)	*	*	*	*2.4 (0.99)
Virginia	9.2 (0.70)	9.1 (0.70)	28.7 (3.36)	29.3 (3.40)	20.1 (2.24)	19.4 (2.10)	4.5 (0.73)	3.1 (0.67)	4.9 (0.75)	6.7 (0.90)
Washington	9.7 (0.71)	8.7 (0.68)	20.7 (2.77)	27.8 (3.08)	17.3 (1.96)	18.7 (1.91)	4.7 (0.73)	3.5 (0.68)	4.5 (0.77)	6.3 (0.94)
West Virginia	21.0 (1.26)	18.4 (1.21)	42.6 (3.48)	45.4 (3.51)	30.7 (2.72)	36.0 (2.69)	7.2 (1.31)	5.1 (1.21)	6.2 (1.22)	11.0 (1.65)
Wisconsin	8.1 (0.75)	8.4 (0.77)	20.4 (3.61)	16.9 (3.37)	22.9 (2.94)	27.9 (2.97)	4.4 (0.80)	2.1 (0.60)	4.7 (0.82)	5.2 (0.90)
Wyoming	10.1 (1.08)	7.1 (0.94)	23.0 (5.10)	29.9 (5.57)	18.2 (3.46)	30.6 (3.92)	3.3 (0.84)	3.6 (0.95)	*3.0 (0.95)	6.2 (1.39)

* Estimates are considered unreliable. Data preceded by an asterisk have a relative standard error (RSE) greater than 30% and less than or equal to 50% and should be used with caution. Data not shown have an RSE greater than 50%.

¹Based on a survey question that asked respondents, "Would you say [subject name's] health in general was excellent, very good, good, fair, or poor?" This information was obtained during a part of the interview that allowed proxy responses, such that a knowledgeable adult family member could respond on behalf of adults not taking part in the interview. The estimates in this table are based on the reported health status (possibly by proxy) for the Sample Adult only. "Fair" and "poor" are combined in this table.

²In a series of separate questions, respondents were asked the degree of difficulty they experienced performing nine physical activities by themselves and without using any special equipment. The activities included walking a quarter of a mile (or three city blocks); standing for 2 hours; stooping, bending, or kneeling; climbing 10 steps without resting; sitting for 2 hours; reaching over one's head; using one's fingers to grasp or handle small objects; lifting or carrying a 10-pound object (such as a full bag of groceries); and pushing or pulling a large object (such as a living room chair). The response categories consisted of "not at all difficult," "only a little difficult," "somewhat difficult," "very difficult," "can't do at all," or "do not do this activity." "Difficulty in physical functioning" consists of a "very difficult" or "can't do at all" response to at least one of the nine physical activities. Respondents who said that they do not do an activity were treated as missing, along with "refused," "don't know," and "not ascertained" responses.

NOTES: Estimates are based on household interviews of a sample of the U.S. civilian noninstitutionalized population. Unknowns for the columns were not included in the denominators when calculating percentages. Estimates are age adjusted using the projected 2000 U.S. population as the standard population and using three age groups: 18–24, 25–44, and 45–64.

SOURCE: NCHS, National Health Interview Survey, 2010–2015.

Table III. Age-adjusted occupational distributions with standard errors of working adults aged 18–64, by state: United States, 2010–2015

State	Total	Managers ¹	Professionals ¹	Community or social services ¹	Services ¹	Sales ¹	Production and related ¹
Percent (standard error)							
All states	100.0	9.4 (0.13)	17.6 (0.19)	8.2 (0.12)	32.2 (0.21)	10.3 (0.13)	22.3 (0.26)
Alabama	100.0	7.6 (1.03)	17.3 (1.59)	7.7 (1.00)	31.8 (1.71)	9.9 (1.08)	25.7 (2.14)
Alaska	100.0	9.0 (1.25)	15.5 (1.71)	9.1 (1.21)	40.1 (2.02)	6.7 (1.02)	19.7 (2.18)
Arizona	100.0	9.0 (1.00)	15.7 (1.38)	8.5 (0.94)	35.0 (1.57)	11.7 (1.05)	20.1 (1.76)
Arkansas	100.0	8.0 (1.04)	17.3 (1.56)	8.2 (1.01)	32.2 (1.68)	9.2 (1.03)	25.0 (2.08)
California	100.0	9.6 (0.35)	17.4 (0.53)	7.2 (0.30)	32.9 (0.61)	10.7 (0.34)	22.1 (0.70)
Colorado	100.0	13.5 (1.08)	20.4 (1.38)	7.9 (0.82)	28.7 (1.35)	11.5 (0.94)	18.1 (1.53)
Connecticut	100.0	9.4 (1.13)	19.2 (1.64)	8.7 (1.05)	32.4 (1.70)	12.0 (1.17)	18.4 (1.88)
Delaware	100.0	11.3 (1.42)	21.7 (2.00)	12.1 (1.41)	29.6 (1.93)	7.6 (1.11)	17.6 (2.15)
District of Columbia	100.0	14.0 (1.31)	28.8 (1.85)	9.0 (1.05)	32.9 (1.67)	4.3 (0.71)	10.9 (1.48)
Florida	100.0	8.9 (0.47)	15.4 (0.81)	6.7 (0.58)	36.8 (0.82)	12.4 (0.58)	19.8 (0.89)
Georgia	100.0	11.8 (0.95)	16.2 (1.14)	9.3 (0.67)	30.3 (1.11)	10.1 (0.64)	22.3 (1.74)
Hawaii	100.0	11.1 (1.41)	12.6 (1.61)	7.3 (1.13)	40.7 (2.08)	9.8 (1.24)	18.4 (2.18)
Idaho	100.0	8.8 (1.17)	15.3 (1.62)	12.8 (1.34)	29.2 (1.78)	9.9 (1.16)	24.0 (2.23)
Illinois	100.0	8.9 (0.71)	19.4 (0.96)	9.0 (0.69)	30.8 (1.11)	10.2 (0.74)	21.7 (1.02)
Indiana	100.0	8.7 (0.92)	13.9 (1.22)	8.4 (0.88)	30.0 (1.41)	9.6 (0.90)	29.4 (1.88)
Iowa	100.0	10.9 (1.02)	15.9 (1.29)	8.9 (0.90)	29.4 (1.40)	9.3 (0.89)	25.6 (1.79)
Kansas	100.0	9.6 (1.01)	15.8 (1.35)	7.7 (0.89)	29.0 (1.47)	9.6 (0.94)	28.2 (1.94)
Kentucky	100.0	9.0 (1.05)	15.6 (1.44)	8.5 (0.99)	29.6 (1.58)	9.3 (0.99)	28.0 (2.07)
Louisiana	100.0	7.7 (0.99)	16.5 (1.49)	8.7 (1.01)	33.2 (1.64)	11.9 (1.12)	22.1 (1.93)
Maine	100.0	9.3 (1.16)	16.3 (1.59)	11.4 (1.23)	31.5 (1.75)	9.6 (1.10)	21.9 (2.07)
Maryland	100.0	9.2 (0.98)	21.6 (1.51)	9.3 (0.95)	33.5 (1.51)	7.2 (0.82)	19.2 (1.68)
Massachusetts	100.0	9.4 (1.01)	22.1 (1.56)	9.6 (0.99)	30.3 (1.51)	11.2 (1.02)	17.5 (1.66)
Michigan	100.0	9.6 (1.09)	16.8 (1.02)	7.4 (0.71)	30.0 (1.17)	9.5 (0.73)	26.6 (1.42)
Minnesota	100.0	9.4 (0.87)	21.5 (1.32)	7.6 (0.77)	31.4 (1.31)	10.3 (0.84)	19.8 (1.49)
Mississippi	100.0	7.7 (1.04)	13.7 (1.45)	8.7 (1.07)	26.0 (1.62)	9.5 (1.07)	34.4 (2.34)
Missouri	100.0	9.3 (0.99)	16.2 (1.36)	9.5 (0.97)	33.0 (1.52)	11.0 (1.00)	20.9 (1.75)
Montana	100.0	8.7 (1.45)	13.2 (1.88)	8.2 (1.36)	36.3 (2.32)	8.2 (1.31)	25.2 (2.80)
Nebraska	100.0	10.7 (1.17)	17.4 (1.55)	8.8 (1.04)	34.7 (1.70)	7.3 (0.92)	21.1 (1.95)
Nevada	100.0	11.0 (1.18)	14.0 (1.42)	5.9 (0.86)	39.4 (1.74)	11.6 (1.13)	18.1 (1.83)
New Hampshire	100.0	10.6 (1.24)	20.9 (1.77)	7.1 (1.00)	26.3 (1.67)	13.1 (1.26)	22.0 (2.09)
New Jersey	100.0	9.2 (0.86)	18.6 (1.25)	9.9 (0.86)	31.2 (1.30)	9.9 (0.83)	21.3 (1.53)
New Mexico	100.0	10.4 (1.32)	14.8 (1.66)	7.9 (1.13)	35.8 (1.95)	10.8 (1.25)	20.4 (2.19)
New York	100.0	9.2 (0.54)	17.9 (0.83)	8.8 (0.56)	36.4 (1.00)	10.8 (0.66)	16.9 (0.89)
North Carolina	100.0	8.5 (0.73)	15.3 (1.29)	7.7 (0.75)	31.6 (0.89)	9.7 (0.81)	27.3 (1.63)
North Dakota	100.0	7.8 (1.16)	16.1 (1.72)	7.0 (1.06)	30.5 (1.87)	7.7 (1.08)	30.9 (2.51)
Ohio	100.0	8.5 (0.67)	18.2 (1.01)	7.9 (0.58)	33.5 (1.46)	9.2 (0.65)	22.7 (1.32)
Oklahoma	100.0	8.1 (1.01)	13.0 (1.35)	9.8 (1.07)	31.3 (1.63)	10.3 (1.05)	27.6 (2.09)
Oregon	100.0	9.9 (1.12)	18.5 (1.57)	6.9 (0.92)	33.7 (1.67)	10.4 (1.07)	20.6 (1.90)
Pennsylvania	100.0	8.6 (0.70)	18.0 (0.95)	9.0 (0.66)	31.0 (1.03)	10.1 (0.70)	23.4 (1.28)
Rhode Island	100.0	8.2 (1.31)	17.0 (1.94)	12.2 (1.51)	35.4 (2.15)	6.8 (1.12)	20.3 (2.41)
South Carolina	100.0	7.7 (1.00)	14.6 (1.43)	7.3 (0.94)	33.4 (1.67)	13.0 (1.17)	24.0 (2.01)
South Dakota	100.0	9.0 (1.23)	17.5 (1.77)	7.1 (1.07)	29.4 (1.85)	12.1 (1.31)	24.9 (2.34)
Tennessee	100.0	8.1 (0.97)	15.3 (1.38)	7.4 (0.90)	32.6 (1.57)	10.7 (1.02)	25.9 (1.95)
Texas	100.0	9.8 (0.46)	17.1 (0.66)	8.1 (0.45)	30.4 (0.66)	11.5 (0.53)	23.0 (0.97)
Utah	100.0	9.1 (1.01)	18.6 (1.48)	10.2 (1.03)	31.2 (1.54)	10.0 (0.98)	20.9 (1.80)
Vermont	100.0	13.2 (1.78)	21.6 (2.34)	11.6 (1.63)	34.1 (2.35)	3.8 (0.94)	15.6 (2.41)
Virginia	100.0	12.1 (0.97)	22.2 (1.33)	9.0 (0.82)	31.1 (1.29)	8.9 (0.79)	16.7 (1.39)
Washington	100.0	10.0 (0.91)	20.2 (1.32)	6.4 (0.72)	30.6 (1.32)	10.2 (0.86)	22.6 (1.59)
West Virginia	100.0	10.0 (1.29)	16.1 (1.71)	8.7 (1.17)	34.4 (1.93)	8.8 (1.14)	21.9 (2.24)
Wisconsin	100.0	8.6 (0.92)	18.1 (1.37)	7.7 (0.85)	30.2 (1.43)	8.8 (0.87)	26.7 (1.84)
Wyoming	100.0	9.8 (1.28)	19.4 (1.84)	8.3 (1.15)	26.0 (1.78)	9.1 (1.15)	27.3 (2.41)

* Estimates are considered unreliable. Data preceded by an asterisk have a relative standard error (RSE) greater than 30% and less than or equal to 50% and should be used with caution.

¹Sample adults were asked whether they were working during the week before the interview; if so, they were asked their current industry and occupation. These verbatim responses were subsequently assigned to four-digit industry and occupation codes by U.S. Census Bureau coding specialists. The two-digit detailed occupation recode available in the 2010–2015 public-use National Health Interview Survey Sample Adult files was used to assign respondents to one of the six occupation categories shown in this table. For more information on these occupation categories, see <https://www.cdc.gov/nchs/data/nhsr/nhsr094.pdf>.

NOTES: Estimates are based on household interviews of a sample of the U.S. civilian noninstitutionalized population. Unknowns for the columns were not included in the denominators when calculating percentages. Estimates are age adjusted using the projected 2000 U.S. population as the standard population and using three age groups: 18–24, 25–44, and 45–64.

SOURCE: NCHS, National Health Interview Survey, 2010–2015.

Table IV. Age-adjusted occupational distributions with standard errors of working men aged 18–64, by state: United States, 2010–2015

State	Total	Managers ¹	Professionals ¹	Community or social services ¹	Services ¹	Sales ¹	Production and related ¹
Percent (standard error)							
All states	100.0	10.8 (0.19)	16.3 (0.25)	4.5 (0.12)	22.5 (0.27)	9.8 (0.18)	36.1 (0.39)
Alabama	100.0	10.3 (1.54)	16.0 (2.06)	3.9 (0.95)	20.1 (2.10)	9.3 (1.42)	40.3 (3.25)
Alaska	100.0	10.1 (1.70)	19.3 (2.45)	5.0 (1.18)	21.5 (2.38)	6.0 (1.28)	38.1 (3.56)
Arizona	100.0	9.4 (1.28)	14.9 (1.72)	4.4 (0.87)	27.2 (2.01)	12.6 (1.40)	31.4 (2.65)
Arkansas	100.0	8.9 (1.41)	13.8 (1.89)	4.6 (1.00)	23.2 (2.16)	8.8 (1.35)	40.7 (3.17)
California	100.0	10.4 (0.51)	17.3 (0.66)	3.7 (0.30)	24.5 (0.72)	9.5 (0.46)	34.6 (1.02)
Colorado	100.0	14.9 (1.41)	19.3 (1.73)	5.2 (0.84)	19.5 (1.62)	12.2 (1.25)	28.9 (2.34)
Connecticut	100.0	10.9 (1.60)	18.1 (2.18)	4.6 (1.04)	24.5 (2.28)	10.9 (1.54)	31.0 (3.09)
Delaware	100.0	15.7 (2.11)	18.4 (2.48)	8.6 (1.56)	23.2 (2.52)	5.6 (1.28)	28.5 (3.41)
District of Columbia	100.0	12.9 (1.70)	27.5 (2.50)	5.9 (1.15)	30.4 (2.40)	4.0 (0.95)	19.3 (2.61)
Florida	100.0	9.8 (0.70)	14.1 (0.96)	3.1 (0.36)	28.0 (1.22)	11.3 (0.76)	33.5 (1.42)
Georgia	100.0	14.5 (1.62)	15.0 (1.45)	5.0 (0.80)	20.4 (1.13)	8.9 (0.90)	36.2 (2.63)
Hawaii	100.0	12.2 (1.91)	11.9 (2.08)	5.2 (1.25)	29.7 (2.75)	8.8 (1.59)	32.2 (3.55)
Idaho	100.0	9.8 (1.55)	16.2 (2.13)	9.0 (1.44)	18.8 (2.10)	8.3 (1.39)	37.9 (3.30)
Illinois	100.0	10.4 (0.85)	18.0 (1.36)	5.5 (0.62)	22.9 (1.35)	9.0 (0.91)	34.3 (1.71)
Indiana	100.0	10.2 (1.27)	11.0 (1.45)	5.0 (0.88)	21.1 (1.77)	7.1 (1.04)	45.7 (2.74)
Iowa	100.0	13.5 (1.39)	14.8 (1.59)	5.2 (0.87)	17.2 (1.58)	7.4 (1.02)	41.9 (2.61)
Kansas	100.0	12.6 (1.43)	13.9 (1.65)	2.6 (0.66)	17.7 (1.70)	9.2 (1.20)	44.0 (2.80)
Kentucky	100.0	11.4 (1.55)	11.4 (1.72)	4.5 (0.97)	19.8 (2.00)	8.4 (1.30)	44.4 (3.16)
Louisiana	100.0	10.2 (1.49)	13.5 (1.86)	3.0 (0.81)	21.1 (2.07)	10.4 (1.44)	41.9 (3.17)
Maine	100.0	12.5 (1.73)	15.1 (2.07)	6.2 (1.22)	21.6 (2.22)	8.7 (1.42)	35.8 (3.27)
Maryland	100.0	8.7 (1.25)	21.7 (2.02)	5.3 (0.95)	23.8 (1.95)	6.4 (1.05)	34.0 (2.74)
Massachusetts	100.0	10.6 (1.41)	18.6 (1.97)	6.6 (1.09)	22.0 (1.96)	12.0 (1.43)	30.1 (2.74)
Michigan	100.0	10.9 (1.35)	15.0 (1.23)	4.1 (0.71)	21.4 (1.53)	8.5 (0.82)	40.1 (2.09)
Minnesota	100.0	10.2 (1.16)	20.8 (1.72)	5.0 (0.80)	19.0 (1.56)	12.3 (1.22)	32.7 (2.35)
Mississippi	100.0	9.1 (1.48)	10.1 (1.72)	2.8 (0.82)	16.3 (1.96)	7.7 (1.32)	53.9 (3.34)
Missouri	100.0	11.3 (1.42)	15.2 (1.78)	5.2 (0.95)	19.9 (1.85)	12.3 (1.41)	36.1 (2.81)
Montana	100.0	9.5 (1.93)	11.0 (2.29)	*4.1 (1.27)	21.1 (2.78)	7.4 (1.66)	46.9 (4.30)
Nebraska	100.0	14.8 (1.79)	13.9 (1.93)	4.2 (0.97)	22.0 (2.15)	7.9 (1.31)	37.2 (3.18)
Nevada	100.0	11.1 (1.52)	12.9 (1.81)	2.9 (0.79)	30.3 (2.31)	13.1 (1.58)	29.6 (2.90)
New Hampshire	100.0	12.3 (1.68)	19.8 (2.26)	2.8 (0.81)	17.8 (2.02)	10.9 (1.53)	36.4 (3.21)
New Jersey	100.0	10.9 (1.19)	18.6 (1.64)	4.2 (0.74)	20.9 (1.60)	8.9 (1.05)	36.5 (2.40)
New Mexico	100.0	10.9 (1.77)	13.8 (2.16)	6.4 (1.34)	24.4 (2.51)	11.0 (1.70)	33.5 (3.49)
New York	100.0	10.5 (0.77)	16.9 (1.18)	4.5 (0.53)	28.5 (1.26)	10.5 (0.88)	29.0 (1.35)
North Carolina	100.0	10.0 (0.93)	13.1 (1.46)	4.0 (0.74)	21.4 (1.42)	9.1 (1.19)	42.4 (2.52)
North Dakota	100.0	10.8 (1.66)	16.2 (2.17)	*2.8 (0.85)	15.8 (2.01)	7.3 (1.33)	47.1 (3.47)
Ohio	100.0	8.5 (0.79)	16.8 (1.34)	4.6 (0.52)	22.2 (1.41)	10.2 (0.91)	37.7 (1.96)
Oklahoma	100.0	8.5 (1.34)	11.5 (1.69)	5.6 (1.06)	19.2 (1.95)	8.8 (1.31)	46.3 (3.12)
Oregon	100.0	11.6 (1.52)	16.3 (1.94)	4.3 (0.93)	25.0 (2.13)	9.6 (1.35)	33.2 (2.92)
Pennsylvania	100.0	9.5 (0.96)	14.9 (1.17)	5.6 (0.73)	22.7 (1.51)	9.8 (0.86)	37.5 (1.97)
Rhode Island	100.0	7.4 (1.69)	13.7 (2.45)	4.4 (1.27)	29.6 (3.04)	8.0 (1.68)	37.0 (4.06)
South Carolina	100.0	9.5 (1.40)	13.8 (1.82)	4.0 (0.90)	23.3 (2.09)	13.3 (1.56)	36.2 (3.00)
South Dakota	100.0	13.1 (1.83)	18.0 (2.30)	3.6 (0.97)	13.3 (1.89)	10.1 (1.57)	42.0 (3.48)
Tennessee	100.0	10.3 (1.40)	12.5 (1.69)	2.7 (0.72)	23.2 (2.01)	10.5 (1.36)	40.8 (2.96)
Texas	100.0	11.1 (0.61)	16.8 (0.89)	4.9 (0.51)	19.6 (0.97)	10.3 (0.60)	37.2 (1.60)
Utah	100.0	12.4 (1.44)	19.5 (1.92)	5.2 (0.94)	22.6 (1.89)	9.6 (1.24)	30.5 (2.63)
Vermont	100.0	16.5 (2.53)	21.4 (3.10)	*4.4 (1.35)	29.7 (3.22)	*1.7 (0.85)	26.2 (3.92)
Virginia	100.0	14.9 (1.39)	21.8 (1.78)	5.0 (0.81)	21.6 (1.66)	9.2 (1.08)	27.5 (2.27)
Washington	100.0	11.2 (1.20)	18.8 (1.64)	3.3 (0.65)	22.6 (1.64)	10.0 (1.10)	34.2 (2.35)
West Virginia	100.0	11.1 (1.76)	14.0 (2.16)	4.6 (1.13)	24.8 (2.50)	9.1 (1.55)	36.5 (3.53)
Wisconsin	100.0	9.6 (1.27)	15.9 (1.74)	4.4 (0.85)	18.0 (1.70)	8.8 (1.17)	43.2 (2.78)
Wyoming	100.0	12.1 (1.69)	17.5 (2.18)	5.1 (1.09)	12.0 (1.73)	8.7 (1.40)	44.7 (3.36)

* Estimates are considered unreliable. Data preceded by an asterisk have a relative standard error (RSE) greater than 30% and less than or equal to 50% and should be used with caution.

¹Sample adults were asked whether they were working during the week before the interview; if so, they were asked their current industry and occupation. These verbatim responses were subsequently assigned to four-digit industry and occupation codes by U.S. Census Bureau coding specialists. The two-digit detailed occupation recode available in the 2010–2015 public-use National Health Interview Survey Sample Adult files was used to assign respondents to one of the six occupation categories shown in this table. For more information on these occupation categories, see <https://www.cdc.gov/nchs/data/nhsr/nhsr094.pdf>.

NOTES: Estimates are based on household interviews of a sample of the U.S. civilian noninstitutionalized population. Unknowns for the columns were not included in the denominators when calculating percentages. Estimates are age adjusted using the projected 2000 U.S. population as the standard population and using three age groups: 18–24, 25–44, and 45–64.

SOURCE: NCHS, National Health Interview Survey, 2010–2015.

Table V. Age-adjusted occupational distributions with standard errors of working women aged 18–64, by state: United States, 2010–2015

State	Total	Managers ¹	Professionals ¹	Community or social services ¹	Services ¹	Sales ¹	Production and related ¹
Percent (standard error)							
All states	100.0	7.9 (0.15)	19.0 (0.24)	12.4 (0.21)	43.0 (0.31)	10.9 (0.20)	6.8 (0.17)
Alabama	100.0	4.8 (1.04)	18.7 (1.97)	11.8 (1.65)	44.9 (2.54)	10.6 (1.59)	9.2 (1.49)
Alaska	100.0	7.7 (1.48)	11.6 (1.84)	12.7 (1.94)	57.0 (2.88)	7.1 (1.51)	3.9 (1.13)
Arizona	100.0	8.5 (1.28)	16.9 (1.79)	13.6 (1.65)	44.3 (2.39)	10.6 (1.50)	6.1 (1.15)
Arkansas	100.0	7.1 (1.23)	21.2 (2.04)	12.2 (1.66)	42.1 (2.49)	9.8 (1.52)	7.6 (1.35)
California	100.0	8.8 (0.45)	17.6 (0.69)	11.4 (0.53)	43.1 (0.89)	12.1 (0.57)	7.1 (0.46)
Colorado	100.0	11.8 (1.33)	21.8 (1.77)	11.2 (1.37)	39.7 (2.12)	10.5 (1.35)	4.9 (0.94)
Connecticut	100.0	7.8 (1.28)	20.1 (1.98)	13.1 (1.69)	40.6 (2.45)	12.7 (1.68)	5.7 (1.17)
Delaware	100.0	6.3 (1.38)	25.8 (2.58)	16.3 (2.21)	36.8 (2.87)	9.3 (1.75)	5.5 (1.37)
District of Columbia	100.0	15.2 (1.66)	30.1 (2.20)	12.4 (1.61)	35.5 (2.32)	4.5 (1.02)	*2.3 (0.73)
Florida	100.0	7.8 (0.57)	16.9 (0.96)	10.6 (0.99)	46.1 (1.43)	13.4 (0.92)	5.2 (0.49)
Georgia	100.0	8.9 (0.94)	17.4 (1.19)	13.8 (1.23)	40.9 (1.56)	11.1 (0.80)	7.9 (0.84)
Hawaii	100.0	9.5 (1.66)	13.3 (1.99)	9.6 (1.75)	51.8 (2.96)	11.2 (1.89)	4.7 (1.26)
Idaho	100.0	7.8 (1.45)	14.5 (1.98)	17.5 (2.16)	41.5 (2.79)	11.6 (1.84)	7.0 (1.46)
Illinois	100.0	7.2 (0.86)	21.1 (1.26)	13.3 (1.13)	40.2 (1.78)	11.7 (1.17)	6.5 (0.63)
Indiana	100.0	7.0 (1.07)	17.5 (1.65)	12.3 (1.44)	39.5 (2.14)	12.1 (1.44)	11.5 (1.40)
Iowa	100.0	7.8 (1.15)	17.3 (1.69)	13.5 (1.55)	44.2 (2.24)	11.4 (1.45)	5.9 (1.06)
Kansas	100.0	5.9 (1.05)	18.4 (1.79)	14.2 (1.64)	43.2 (2.32)	10.2 (1.43)	8.0 (1.28)
Kentucky	100.0	6.7 (1.13)	19.9 (1.88)	12.7 (1.59)	39.8 (2.32)	10.2 (1.46)	10.7 (1.48)
Louisiana	100.0	5.3 (1.02)	19.3 (1.88)	14.3 (1.69)	44.2 (2.38)	13.0 (1.63)	3.9 (0.94)
Maine	100.0	5.9 (1.17)	17.5 (1.97)	16.9 (1.97)	42.1 (2.58)	10.5 (1.62)	7.1 (1.35)
Maryland	100.0	9.6 (1.25)	21.8 (1.82)	13.8 (1.54)	44.3 (2.21)	7.9 (1.22)	2.6 (0.71)
Massachusetts	100.0	8.1 (1.18)	25.8 (1.97)	12.5 (1.51)	38.9 (2.21)	10.4 (1.40)	4.3 (0.93)
Michigan	100.0	8.0 (1.08)	18.9 (1.53)	11.4 (1.18)	40.5 (1.40)	10.7 (1.10)	10.4 (1.44)
Minnesota	100.0	8.6 (1.06)	22.4 (1.64)	10.5 (1.23)	44.4 (1.97)	7.9 (1.09)	6.2 (0.96)
Mississippi	100.0	6.1 (1.17)	17.7 (1.93)	15.2 (1.84)	36.6 (2.46)	11.4 (1.64)	13.1 (1.73)
Missouri	100.0	7.2 (1.11)	17.2 (1.68)	14.1 (1.57)	45.4 (2.23)	9.8 (1.35)	6.3 (1.09)
Montana	100.0	8.0 (1.76)	15.8 (2.46)	12.8 (2.29)	51.5 (3.40)	9.0 (1.97)	*2.9 (1.16)
Nebraska	100.0	6.5 (1.15)	20.6 (1.97)	13.1 (1.66)	46.8 (2.45)	6.3 (1.21)	6.7 (1.23)
Nevada	100.0	10.6 (1.48)	15.4 (1.80)	9.0 (1.45)	49.9 (2.52)	10.2 (1.54)	5.0 (1.10)
New Hampshire	100.0	8.7 (1.46)	22.2 (2.23)	12.3 (1.79)	36.7 (2.61)	15.9 (2.01)	4.1 (1.08)
New Jersey	100.0	7.3 (0.99)	18.6 (1.53)	16.0 (1.46)	42.6 (1.96)	10.9 (1.25)	4.6 (0.84)
New Mexico	100.0	9.9 (1.62)	16.2 (2.07)	9.4 (1.66)	47.9 (2.83)	10.6 (1.77)	6.0 (1.35)
New York	100.0	7.8 (0.67)	18.9 (0.95)	13.5 (0.90)	44.7 (1.34)	10.7 (0.96)	4.3 (0.71)
North Carolina	100.0	6.9 (0.83)	17.5 (1.60)	11.5 (1.03)	41.9 (1.60)	10.2 (1.18)	11.9 (1.15)
North Dakota	100.0	4.4 (1.17)	15.3 (2.14)	12.9 (2.03)	49.1 (3.01)	8.2 (1.67)	10.1 (1.82)
Ohio	100.0	8.4 (0.99)	19.7 (1.25)	11.4 (1.00)	45.5 (2.06)	8.1 (0.75)	6.9 (1.07)
Oklahoma	100.0	7.5 (1.25)	14.7 (1.74)	14.4 (1.74)	44.7 (2.46)	11.8 (1.62)	7.0 (1.27)
Oregon	100.0	8.0 (1.31)	21.0 (2.04)	9.8 (1.51)	43.6 (2.51)	11.4 (1.63)	6.1 (1.22)
Pennsylvania	100.0	7.5 (0.78)	21.5 (1.25)	12.9 (1.13)	40.7 (1.60)	10.2 (1.15)	7.2 (0.74)
Rhode Island	100.0	8.6 (1.63)	20.2 (2.43)	19.2 (2.41)	40.3 (2.99)	6.4 (1.51)	5.4 (1.38)
South Carolina	100.0	5.6 (1.11)	15.6 (1.81)	11.4 (1.61)	45.1 (2.51)	12.6 (1.69)	9.6 (1.50)
South Dakota	100.0	4.4 (1.15)	16.3 (2.15)	11.2 (1.87)	48.9 (2.94)	14.7 (2.11)	4.5 (1.22)
Tennessee	100.0	5.7 (1.03)	18.2 (1.78)	12.6 (1.56)	43.5 (2.31)	11.2 (1.49)	8.9 (1.34)
Texas	100.0	8.1 (0.59)	17.6 (0.88)	12.1 (0.70)	43.8 (1.03)	12.9 (0.79)	5.5 (0.42)
Utah	100.0	4.8 (0.99)	17.5 (1.83)	16.8 (1.82)	42.4 (2.40)	10.2 (1.48)	8.5 (1.36)
Vermont	100.0	8.6 (1.87)	24.1 (2.96)	18.5 (2.72)	37.9 (3.38)	6.5 (1.75)	*4.4 (1.43)
Virginia	100.0	9.4 (1.08)	22.5 (1.60)	13.3 (1.32)	40.5 (1.90)	8.8 (1.11)	5.6 (0.90)
Washington	100.0	8.6 (1.12)	21.9 (1.71)	10.3 (1.27)	40.5 (2.04)	10.4 (1.28)	8.2 (1.15)
West Virginia	100.0	8.9 (1.54)	18.6 (2.18)	13.5 (1.95)	45.5 (2.82)	8.5 (1.60)	4.9 (1.24)
Wisconsin	100.0	7.3 (1.08)	20.4 (1.74)	11.3 (1.39)	43.1 (2.16)	8.8 (1.25)	9.1 (1.26)
Wyoming	100.0	6.5 (1.45)	22.0 (2.53)	13.2 (2.10)	46.8 (3.08)	9.9 (1.86)	*1.7 (0.80)

* Estimates are considered unreliable. Data preceded by an asterisk have a relative standard error (RSE) greater than 30% and less than or equal to 50% and should be used with caution.

¹Sample adults were asked whether they were working during the week before the interview; if so, they were asked their current industry and occupation. These verbatim responses were subsequently assigned to four-digit industry and occupation codes by U.S. Census Bureau coding specialists. The two-digit detailed occupation recode available in the 2010–2015 public-use National Health Interview Survey Sample Adult files was used to assign respondents to one of the six occupation categories shown in this table. For more information on these occupation categories, see <https://www.cdc.gov/nchs/data/nhsr/nhsr094.pdf>.

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SOURCE: NCHS, National Health Interview Survey, 2010–2015.

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