



Weekly

July 17, 2009 / 58(27);740-744

# Differences in Prevalence of Obesity Among Black, White, and Hispanic Adults --- United States, 2006--2008

Obesity is associated with increased health-care costs, reduced quality of life, and increased risk for premature death (1,2). Common morbidities associated with obesity include coronary heart disease, hypertension and stroke, type 2 diabetes, and certain types of cancer (1,2). As of 2007, no state had met the *Healthy People 2010* objective to reduce to 15% the prevalence of obesity among U.S. adults (3,4). An overarching goal of *Healthy People 2010* is to eliminate health disparities among racial/ethnic populations. To assess differences in prevalence of obesity among non-Hispanic blacks, non-Hispanic whites, and Hispanics, CDC analyzed data from Behavioral Risk Factor Surveillance System (BRFSS) surveys conducted during 2006--2008. Overall, for the 3-year period, 25.6% of non-Hispanic blacks, non-Hispanic whites, and Hispanics were obese. Non-Hispanic blacks (35.7%) had 51% greater prevalence of obesity, and Hispanics (28.7%) had 21% greater prevalence, when compared with non-Hispanic whites (23.7%). This pattern was consistent across most U.S. states. However, state prevalences varied substantially, ranging from 23.0% (New Hampshire) to 45.1% (Maine) for non-Hispanic blacks, from 21.0% (Maryland) to 36.7% (Tennessee) for Hispanics, and from 9.0% (District of Columbia [DC]) to 30.2% (West Virginia) for non-Hispanic whites. Given the overall high prevalence of obesity and the significant differences among non-Hispanic blacks, non-Hispanic whites, and Hispanics, effective policies and environmental strategies that promote healthy eating and physical activity are needed for all populations and geographic areas, but particularly for those populations and areas disproportionately affected by obesity.

BRFSS is an ongoing, state-based, random-digit--dialed telephone survey of the U.S. civilian, noninstitutionalized population aged  $\geq 18$  years, conducted in 50 states, DC, and three U.S. territories. The median response rate\* among all states and territories, based on Council of American Survey and Research Organizations (CASRO) guidelines, was 51.4% (range: 35.1%--66.0%) in 2006, 50.6% (range: 26.9%--65.4%) in 2007, and 53.3% (range: 35.8%--65.9%) in 2008. The median cooperation rate† was 74.5% (range: 56.9%--83.5%) in 2006, 72.1% (range: 49.6%--84.6%) in 2007, and 75.0% (range: 59.3%--87.8%) in 2008. Obesity was defined as a body mass index (BMI)  $\geq 30$ . BMI was calculated from self-reported weight and height (weight [kg] / height [m<sup>2</sup>]). Pregnant women and respondents reporting a weight  $\geq 500$  pounds or a height  $\geq 7$  feet were excluded. To ensure sufficient sample sizes for valid obesity estimates from most states, 3 years of data were used, and analyses were limited to three racial/ethnic populations: non-Hispanic whites, non-Hispanic blacks, and Hispanics. Estimates were based on populations with at least 50 respondents and a prevalence relative standard error of less than 30%. Data also were analyzed by

sex and U.S. census region. All analyses were conducted using statistical software to account for complex sampling design. Age-adjusted prevalences were estimated using the 2000 U.S. standard population.

During 2006–2008, the age-adjusted estimated prevalence of obesity overall was 25.6% among non-Hispanic blacks, non-Hispanic whites, and Hispanics. Non-Hispanic blacks had the greatest prevalence of obesity (35.7%), followed by Hispanics (28.7%), and non-Hispanic whites (23.7%) ([Table 1](#)). These differences were consistent across all census regions and greater among women than men. Non-Hispanic black women had the greatest prevalence (39.2%), followed by non-Hispanic black men (31.6%), Hispanic women (29.4%), Hispanic men (27.8%), non-Hispanic white men (25.4%), and non-Hispanic white women (21.8%) ([Table 1](#)).

Among the four U.S. census regions, greater prevalences of obesity for non-Hispanic blacks were found in the South (36.9%) and Midwest (36.3%) than in the West (33.1%) and Northeast (31.7%). Greater prevalences of obesity for non-Hispanic whites were found in the Midwest (25.4%) and South (24.4%) than in the Northeast (22.6%) and West (21.0%). Among Hispanics, smaller prevalence was observed in the Northeast (26.6%) than in the Midwest (29.6%), South (29.2%), or West (29.0%) ([Table 1](#)).

In most states, non-Hispanic blacks had the greatest prevalence of obesity, followed by Hispanics, and non-Hispanic whites. In the 45 states and DC where non-Hispanic blacks had sufficient respondents, the state-specific prevalence of obesity ranged from 23.0% (New Hampshire) to 45.1% (Maine); in 40 states, prevalence was  $\geq 30\%$ , and in five states (Alabama, Maine, Mississippi, Ohio, and Oregon) prevalence was  $\geq 40\%$  ([Table 2](#), [Figure](#)). Among Hispanics in 50 states and DC, the prevalence of obesity ranged from 21.0% (Maryland) to 36.7% (Tennessee) and was  $\geq 30\%$  in 11 states ([Table 2](#), [Figure](#)). Among non-Hispanic whites in 50 states and DC, the prevalence of obesity ranged from 9.0% (DC) to 30.2% (West Virginia). In five states (California, Colorado, Connecticut, Hawaii, and New Mexico) and DC, obesity prevalence was  $< 20\%$  ([Table 2](#), [Figure](#)).

**Reported by:** *L Pan, MD, DA Galuska, PhD, B Sherry, PhD, AS Hunter, JD, GE Rutledge, MPH, WH Dietz, MD, PhD, Div of Nutrition, Physical Activity, and Obesity; LS Balluz, ScD, Div of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.*

## Editorial Note:

The prevalence of obesity in the United States has more than doubled in the past three decades, and certain racial/ethnic populations have been affected disproportionately (5,6). Data from the 2003–2004 National Health and Nutrition Examination Survey (NHANES), for which height and weight of adults aged  $\geq 20$  years are measured by survey staff members, indicated the prevalence of obesity was 45.0% among non-Hispanic blacks, 36.8% among Mexican-Americans, and 30.6% among non-Hispanic whites (6). This report found smaller prevalences, using height and weight data that were self-reported to BRFSS and, therefore, likely to produce underestimates. However, differences among non-Hispanic blacks, non-Hispanic whites, and Hispanics in this report were similar to those found in the NHANES study: non-Hispanic blacks had the greatest prevalence of obesity, followed by Hispanics and non-Hispanic whites.

At least three reasons might account for the differences in the prevalence of obesity among the study populations observed in this and other studies. First, racial/ethnic populations differ in behaviors that contribute to weight gain. For example, compared with non-Hispanic whites, non-Hispanic blacks and Hispanics are less likely to engage in regular (nonoccupational) physical activity (7). In addition,

differences exist in attitudes and cultural norms regarding body weight. For example, according to one study, both non-Hispanic black and Hispanic women are more satisfied with their body size than non-Hispanic white women; persons who are satisfied with their body size are less likely to try to lose weight (8). Finally, certain populations have less access to affordable, healthful foods and safe locations for physical activity. Evidence suggests that neighborhoods with large minority populations have fewer chain supermarkets and produce stores and that healthful foods are relatively more expensive than energy-dense foods, especially in minority and low-income communities (9). Evidence also indicates that minority and low-income populations have less access to physical activity facilities and resources and that traffic and neighborhood safety might inhibit walking (9).

The reasons for the substantial differences among states in the prevalence of obesity among non-Hispanic blacks, non-Hispanic whites, and Hispanics are complex and not well understood. CDC currently provides funding and technical assistance to 25 states to develop their own effective obesity prevention and control programs. As part of this funding, states are implementing evidence-based policies, systems, and environmental strategies to address health disparities. For example, the New York State Department of Health uses federal and state funds to increase access to fruits and vegetables for low-income, primarily minority populations. Program strategies include 1) participating in community-supported agriculture and delivering fresh produce to low-income areas, 2) creating mobile farmer's markets to serve low-income neighborhoods, and 3) implementing food stamp nutrition education programs designed to increase access to and consumption of fruits and vegetables. Surveyed at the end of an education series, 76% of program participants said they intended to increase consumption of fruits and vegetables at home.§

Through the Racial and Ethnic Approaches to Community Health (REACH) program, CDC funds communities to eliminate racial and ethnic disparities in health,¶ using community-based policies, systems, and environmental approaches. For example, REACHing African Americans in Los Angeles, California, coordinates a coalition that has created a network of 35 physical activity programs, helps develop wellness programs in local workplaces, and works with city officials to provide policies that support healthy eating in under-resourced communities. As a result, the Community Redevelopment Agency has developed an incentive package to attract grocery stores, and the city council approved a proposal that prohibits new fast-food restaurants in certain under-resourced communities.\*\*

The findings in this report are subject to at least three limitations. First, the respondent heights and weights used to calculate BMI were self-reported. The prevalences of obesity reported in this study likely are underestimated because height commonly is overreported and weight underreported (10). Second, BRFSS excludes persons without landline telephones. Evidence shows that adults living in wireless-only households tend to be younger, to have lower incomes, and to be members of minority populations,†† which might result in either underestimates or overestimates. Third, because of limited numbers of non-Hispanic black respondents in five states, valid estimates for that population could not be calculated for those states.

The high prevalence of obesity overall in the United States underscores the importance of implementing effective intervention strategies in the general population. Effective policy and environmental strategies to promote physical activity include developing communication programs and community- and street-scale urban design and land use policies, and creating or enhancing access to places for physical activity.§§ Given the significant disparities in obesity prevalence, public health officials should ensure that those populations with the greatest need are the ones that benefit the most from these efforts and are involved in developing effective strategies for their communities. To reduce disparities among populations in the prevalence of obesity, an effective public health response is needed that includes surveillance, policies,

programs, and supportive environments achieved through the efforts of government, communities, workplaces, schools, families, and individuals.

## References

1. National Heart, Lung, and Blood Institute. Clinical guideline on the identification, evaluation, and treatment of overweight and obesity in adults: the evidence report. Bethesda, MD: US Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute; 1998. Available at [http://www.nhlbi.nih.gov/guidelines/obesity/ob\\_gdlns.htm](http://www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.htm).
2. US Department of Health and Human Services. The Surgeon General's call to action to prevent and decrease obesity. Rockville, MD: US Department of Health and Human Services, US Public Health Service, Office of the Surgeon General; 2001. Available at <http://www.surgeongeneral.gov/topics/obesity/calltoaction/CalltoAction.pdf>.
3. US Department of Health and Human Services. Objective 19-2: reduce the proportion of adults who are obese. Healthy people 2010 (conference ed, in 2 vols). Washington, DC: US Department of Health and Human Services; 2000. Available at <http://healthypeople.gov/document/html/objectives/19-02.htm>.
4. [CDC. State-specific prevalence of obesity among adults---United States, 2007. MMWR 2008;57:765--8.](#)
5. Wang Y, Beydoun MA. The obesity epidemic in the United States---gender, age, socioeconomic, racial/ethnic, and geographic characteristics: a systematic review and meta-regression analysis. *Epidemiol Rev* 2007;29:6--28.
6. Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999--2004. *JAMA* 2006;295:1549--55.
7. [CDC. Prevalence of fruit and vegetable consumption and physical activity by race/ethnicity---United States, 2005. MMWR 2007;56:301--4.](#)
8. Millstein RA, Carlson SA, Fulton JE, et al. Relationships between body satisfaction and weight control practices among US adults. *Medscape J Med* 2008;10:119.
9. Adler NE, Stewart J. Reducing obesity: motivating action while not blaming the victim. *Milbank Q* 2009;87:49--70.
10. Stewart AW, Jackson RT, Ford MA, Beaglehole R. Underestimation of relative weight by use of self-reported height and weight. *Am J Epidemiol* 1987;125:122--6.

\* The percentage of persons who completed interviews among all eligible persons, including those who were not successfully contacted.

† The percentage of persons who completed interviews among all eligible persons who were contacted.

§ Additional information available at <http://www.health.state.ny.us/prevention/nutrition>.

¶ Additional information available at <http://www.cdc.gov/reach>.

\*\* Additional information available at [http://www.cdc.gov/reach/pdf/voices\\_101007.pdf](http://www.cdc.gov/reach/pdf/voices_101007.pdf).

†† Additional information available at <http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless200805.htm>.

§§ Additional information available at <http://www.thecommunityguide.org/index.html>.

**TABLE 1. Prevalence\* of obesity† among adults, by black/white race or Hispanic ethnicity, census region,§ and sex --- Behavioral Risk Factor Surveillance System surveys, United States, 2006–2008**

Census region	White, non-Hispanic (n = 900,629)		Black, non-Hispanic (n = 84,838)		Hispanic (n = 63,825)	
	%	(95% CI)¶	%	(95% CI)	%	(95% CI)
Overall						
Both sexes	23.7	(23.5--23.9)	35.7	(35.0--36.3)	28.7	(28.0--29.5)
Men	25.4	(25.1--25.7)	31.6	(30.6--32.7)	27.8	(26.7--28.9)
Women	21.8	(21.6--22.1)	39.2	(38.5--40.0)	29.4	(28.5--30.3)
Northeast						
Both sexes	22.6	(22.2--23.0)	31.7	(30.0--33.4)	26.6	(25.0--28.3)
Men	25.0	(24.4--25.6)	26.5	(24.0--29.1)	26.9	(24.3--29.6)
Women	20.0	(19.6--20.5)	36.1	(34.0--38.3)	26.0	(24.1--28.0)
Midwest						
Both sexes	25.4	(25.1--25.8)	36.3	(34.9--37.9)	29.6	(27.4--31.9)
Men	27.0	(26.5--27.6)	32.1	(29.7--34.5)	29.7	(26.4--33.1)
Women	23.8	(23.3--24.2)	40.1	(38.3--42.0)	29.2	(26.6--31.9)

South						
Both sexes	24.4	(24.1--24.7)	36.9	(36.2--37.7)	29.2	(28.1--30.3)
Men	26.3	(25.8--26.8)	32.6	(31.4--33.9)	28.3	(26.6--30.1)
Women	22.5	(22.1--22.9)	40.6	(39.7--41.5)	29.7	(28.3--31.1)
West						
Both sexes	21.0	(20.6--21.5)	33.1	(29.7--36.7)	29.0	(27.7--30.3)
Men	22.1	(21.5--22.8)	34.1	(29.0--39.6)	27.3	(25.5--29.2)
Women	19.8	(19.3--20.4)	32.0	(28.2--36.1)	30.4	(28.7--32.1)

\* Age adjusted to the 2000 U.S. standard population.

† Body mass index (BMI)  $\geq 30.0$ ; BMI was calculated from self-reported weight and height (weight [kg] / height [m<sup>2</sup>]).

§ Additional information available at <http://www.census.gov>.

¶ Confidence interval.

**TABLE 2. State-specific percentage\* of adults categorized as obese,† by black/white race or Hispanic ethnicity --- Behavioral Risk Factor Surveillance System surveys, United States, 2006--2008**

State/Area	White, non-Hispanic		Black, non-Hispanic		Hispanic	
	%	(95% CI)§	%	(95% CI)	%	(95% CI)
Alabama	27.3	(25.9--28.6)	40.4	(38.0--42.8)	29.0	(21.5--38.0)

Alaska	25.0	(23.3--26.8)	30.8	(20.5--43.4)	30.8	(21.7--41.7)
Arizona	21.7	(19.9--23.7)	35.9	(26.0--47.2)	31.4	(27.8--35.1)
Arkansas	27.1	(26.0--28.2)	37.6	(34.4--41.0)	25.5	(21.4--30.2)
California	19.8	(18.9--20.8)	34.3	(29.6--39.3)	29.2	(27.6--30.9)
Colorado	16.2	(15.6--16.8)	26.2	(22.3--30.4)	25.1	(23.3--27.0)
Connecticut	19.9	(18.9--20.9)	31.2	(27.9--34.8)	24.6	(21.8--27.7)
Delaware	24.3	(23.0--25.7)	39.2	(35.7--42.9)	29.0	(22.1--37.0)
District of Columbia	9.0	(8.2--10.0)	32.9	(31.2--34.7)	22.6	(18.4--27.3)
Florida	20.9	(20.0--21.8)	35.1	(32.4--37.9)	26.0	(23.8--28.4)
Georgia	23.5	(22.5--24.5)	36.0	(33.9--38.2)	26.1	(21.4--31.5)
Hawaii	16.4	(15.1--17.9)	26.0	(17.4--36.9)	26.7	(23.5--30.1)
Idaho	23.6	(22.6--24.5)	--- <sup>†</sup>	---	28.7	(25.1--32.7)
Illinois	23.4	(22.4--24.3)	33.3	(30.2--36.5)	30.7	(27.0--34.7)
Indiana	26.1	(25.1--27.1)	35.7	(32.1--39.5)	26.6	(21.9--31.9)
Iowa	25.5	(24.6--26.5)	35.7	(28.7--43.3)	27.5	(22.3--33.5)
Kansas	25.7	(24.9--26.5)	39.8	(35.4--44.3)	31.7	(28.5--35.2)

Kentucky	27.4	(26.4--28.5)	38.5	(33.2--44.1)	27.0	(20.4--34.9)
Louisiana	24.9	(24.0--25.9)	35.9	(34.0--37.8)	24.4	(19.9--29.6)
Maine	23.6	(22.7--24.5)	45.1	(31.4--59.5)	27.8	(20.3--36.8)
Maryland	22.4	(21.6--23.3)	34.0	(32.1--36.0)	21.0	(17.5--25.0)
Massachusetts	20.0	(19.3--20.7)	30.0	(27.2--33.1)	27.1	(24.7--29.5)
Michigan	26.2	(25.3--27.1)	37.4	(34.6--40.2)	31.2	(25.4--37.5)
Minnesota	24.3	(23.3--25.3)	32.5	(26.8--38.7)	27.9	(20.9--36.1)
Mississippi	27.6	(26.5--28.7)	40.4	(38.8--42.1)	26.0	(20.1--33.0)
Missouri	26.5	(25.3--27.8)	36.1	(32.1--40.2)	28.8	(22.2--36.3)
Montana	21.0	(20.0--21.9)	---	---	22.9	(17.5--29.5)
Nebraska	25.7	(24.8--26.6)	35.9	(28.8--43.6)	29.0	(25.0--33.3)
Nevada	22.8	(21.3--24.3)	28.7	(22.8--35.3)	29.1	(26.0--32.5)
New Hampshire	22.9	(22.1--23.8)	23.0	(13.2--36.8)	32.3	(25.4--40.0)
New Jersey	21.9	(20.9--22.9)	33.0	(30.5--35.6)	24.1	(21.8--26.5)
New Mexico	19.5	(18.3--20.8)	31.9	(24.1--41.0)	27.6	(26.1--29.1)
New York	22.8	(21.9--23.8)	29.7	(27.0--32.5)	27.1	(24.5--29.9)

North Carolina	24.9	(24.2--25.7)	38.8	(37.0--40.6)	25.3	(22.5--28.2)
North Dakota	25.1	(24.1--26.1)	---	---	31.9	(23.6--41.5)
Ohio	26.6	(25.5--27.8)	42.5	(38.6--46.5)	25.9	(20.9--31.6)
Oklahoma	27.3	(26.4--28.3)	32.7	(29.6--36.0)	30.7	(27.0--34.7)
Oregon	24.6	(23.6--25.7)	41.6	(30.5--53.7)	23.0	(19.0--27.5)
Pennsylvania	25.0	(24.1--25.9)	36.5	(33.0--40.2)	31.3	(26.2--36.7)
Rhode Island	20.1	(19.1--21.2)	30.1	(25.1--35.5)	26.0	(22.7--29.6)
South Carolina	25.1	(24.1--26.1)	38.8	(36.9--40.6)	27.0	(22.1--32.6)
South Dakota	25.3	(24.4--26.3)	---	---	28.6	(22.0--36.3)
Tennessee	27.0	(25.7--28.2)	38.0	(34.1--42.1)	36.7	(25.6--49.5)
Texas	23.5	(22.4--24.7)	37.8	(34.8--41.0)	32.3	(30.6--34.0)
Utah	22.6	(21.7--23.5)	34.9	(23.6--48.1)	21.6	(18.5--25.0)
Vermont	21.2	(20.5--22.0)	---	---	24.4	(19.2--30.5)
Virginia	23.6	(22.3--25.0)	34.5	(31.5--37.6)	24.7	(19.8--30.3)
Washington	24.0	(23.5--24.6)	29.7	(25.9--33.7)	29.9	(27.8--32.1)
West Virginia	30.2	(29.1--31.3)	36.3	(29.7--43.6)	26.1	(18.2--35.8)

Wisconsin	24.5	(23.5--25.6)	36.4	(32.2--40.8)	27.3	(20.1--36.1)
Wyoming	22.5	(21.7--23.4)	36.9	(25.5--50.1)	28.6	(25.0--32.5)

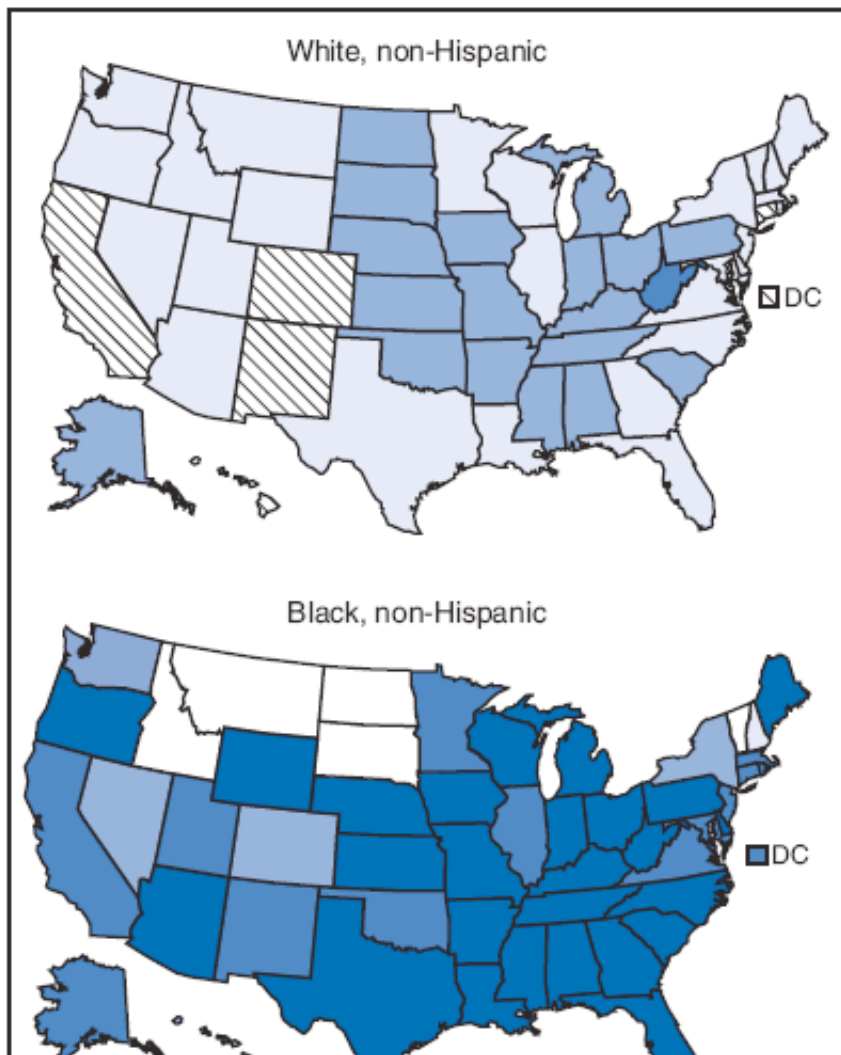
\* Age adjusted to the 2000 U.S. standard population.

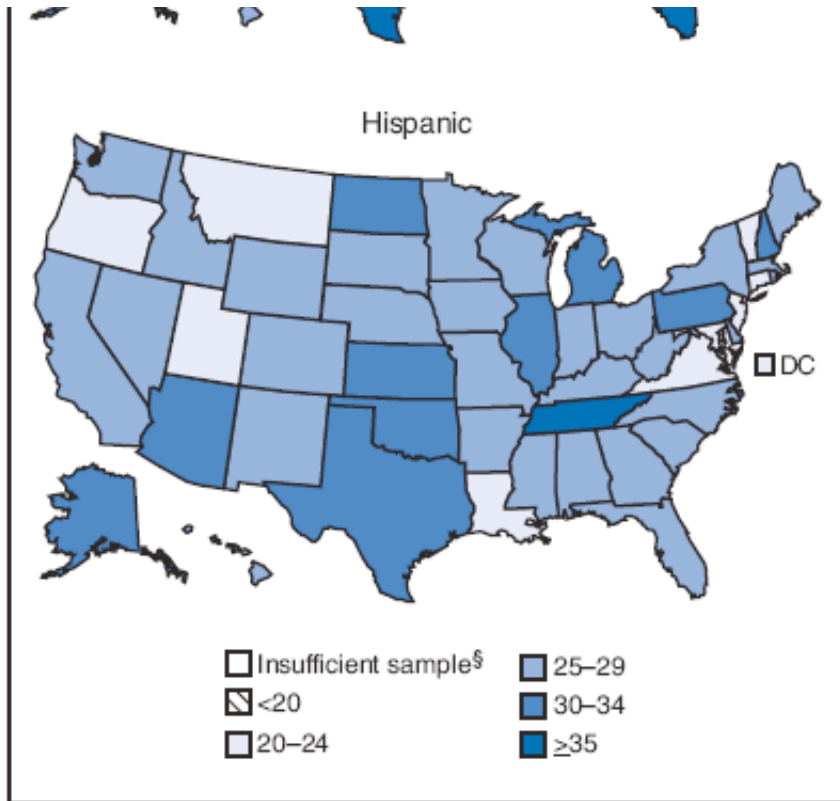
† Body mass index (BMI)  $\geq 30.0$ ; BMI was calculated from self-reported weight and height (weight [kg] / height [m<sup>2</sup>]).

§ Confidence interval.

¶ Number of respondents <50 or relative standard error  $\geq 30\%$ .

**FIGURE. State-specific percentage\* of adults categorized as obese†, by black/white race or Hispanic ethnicity --- Behavioral Risk Factor Surveillance System surveys, United States, 2006--2008**





\* Age adjusted to the 2000 U.S. standard population.

† Body mass index (BMI)  $\geq 30.0$ ; BMI was calculated from self-reported weight and height (weight [kg] / height [m<sup>2</sup>]).

§ Number of respondents <50 or relative standard error  $\geq 30\%$ .

**Alternative Text:** The figure above is a map showing state-specific percentages of U.S. adults categorized as obese, by black/white race or Hispanic ethnicity, based on data from 2006-2008 Behavioral Risk Factor Surveillance System surveys. In most states, non-Hispanic blacks had the greatest prevalence of obesity, followed by Hispanics, and non-Hispanic whites. In the 45 states and DC where non-Hispanic blacks had sufficient respondents, the state-specific prevalence of obesity ranged from 23.0% (New Hampshire) to 45.1% (Maine); in 40 states, prevalence was  $>30\%$ , and in five states (Alabama, Maine, Mississippi, Ohio, and Oregon) prevalence was  $>40\%$ .

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

References to non-CDC sites on the Internet are provided as a service to *MMWR* readers and do not constitute or imply endorsement of these organizations or their programs by CDC or the U.S. Department of Health and Human Services. CDC is not responsible for the content of pages found at these sites. URL addresses listed in *MMWR* were current as of the date of publication.

All *MMWR* HTML versions of articles are electronic conversions from typeset documents. This conversion might result in character translation or format errors in the HTML version. Users are referred to the electronic PDF version (<http://www.cdc.gov/mmwr>)

and/or the original *MMWR* paper copy for printable versions of official text, figures, and tables. An original paper copy of this issue can be obtained from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402-9371; telephone: (202) 512-1800. Contact GPO for current prices.

\*\*Questions or messages regarding errors in formatting should be addressed to [mmwrq@cdc.gov](mailto:mmwrq@cdc.gov).

Date last reviewed: 7/16/2009

[HOME](#) | [ABOUT \*MMWR\*](#) | [MMWR SEARCH](#) | [DOWNLOADS](#) | [RSS](#) | [CONTACT](#)  
[POLICY](#) | [DISCLAIMER](#) | [ACCESSIBILITY](#)

**SAFER • HEALTHIER • PEOPLE™**

**Morbidity and Mortality Weekly Report**  
Centers for Disease Control and Prevention  
1600 Clifton Rd, MailStop E-90, Atlanta, GA 30333,  
U.S.A



[Department of Health  
and Human Services](#)