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Trends in state/territorial obesity prevalence by race/ethnicity among U.S. low-income, preschool-aged children

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Summary

Background: Understanding state/territorial trends in obesity by race/ethnicity helps focus resources on populations at risk.

Objective: This study aimed to examine trends in obesity prevalence among low-income, preschool-aged children from 2008 through 2011 in U.S. states and territories by race/ethnicity.

Methods: We used measured weight and height records of 11.1 million children aged 2–4 years who participated in federally funded health and nutrition programmes in 40 states, the District of Columbia and two U.S. territories. We used logistic regression to examine obesity prevalence trends, controlling for age and sex.

Results: From 2008 through 2011, the aggregated obesity prevalence declined among all racial/ethnic groups (decreased by 0.4–0.9%) except American Indians/ Alaska Natives (AI/ANs); the largest decrease was among Asians/Pacific Islanders (A/PIs). Declines were significant among non-Hispanic whites in 14 states, non-Hispanic blacks in seven states/territories, Hispanics in 13 states, A/PIs in five states and AI/ANs in one state. Increases were significant among non-Hispanic whites in four states, non-Hispanic blacks in three states, Hispanics in two states and A/PIs in one state. The majority of the states/territories had no change in obesity prevalence.

Conclusions: Our findings indicate slight reductions in obesity prevalence and variations in obesity trends, but disparities exist for some states and racial/ethnic groups.

Keywords

Childhood obesity; trends; low-income; state; race/ethnicity

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Author contributions

LP conceptualized and designed the study, carried out the data analyses, interpreted the data and drafted and revised the manuscript. LMG-S, LCM, SP and HMB conceptualized the study and revised the manuscript. All the authors provided substantive intellectual contributions to this study and approved the final submitted version.

Conflict of Interest Statement

No conflict of interest was declared.

Introduction

Obesity in early childhood is likely to continue into middle or late childhood and adulthood (1,2) and has been associated with other cardiovascular risk factors, social and psychological problems and premature death (3-5). The prevalence of childhood obesity has been disproportionately high among low-income children (6-8). Understanding trends in obesity prevalence among low-income children of different racial/ethnic groups in U.S. states and territories can help identify health disparities, allocate resources and evaluate the effectiveness of obesity prevention efforts. Previous studies used data from the Centers for Disease Control and Prevention's (CDC's) Pediatric Nutrition Surveillance System (PedNSS) to examine aggregated and state/territorial trends in obesity prevalence among low-income, preschool-aged children (9-13). However, no studies have used the most recent PedNSS data to assess trends by state and race/ethnicity to determine whether recent modest declines existed in all population subgroups. In this study, we looked at obesity prevalence trends by state or territory for 2008 and 2011 among non-Hispanic white, non-Hispanic black, Hispanic, American Indian/Alaska Native (AI/AN) and Asian/Pacific Islander (A/PI) low-income children aged 2–4 years.

Methods

PedNSS monitored the nutritional status of U.S. children from birth through age 4 who were enrolled in federally funded health and nutrition programmes (14). More than 80% of PedNSS data are collected through the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). WIC included about 50% of eligible low-income children. The remaining PedNSS data were obtained from the Early and Periodic Screening, Diagnosis, and Treatment Program and the Title V Maternal and Child Health Program (14). Children's weight and height were measured about twice a year by trained staff during routine clinic visits required by the health and nutrition programmes. Weight was measured to the nearest quarter pound and height to the nearest eighth inch. One randomly selected visit record per child per year was included in the PedNSS database (10). Data from selected records were then used to calculate children's body mass index (BMI; weight [kg]/height [m^2]). Obesity was defined as sex-specific BMI-for-age ≥95th percentile on the 2000 CDC growth charts (15).

Our initial study population consisted of approximately 12.1 million children from 40 states, the District of Columbia and two U.S. territories (Puerto Rico and the U.S. Virgin Islands) whose data were consistently reported to PedNSS each year during 2008–2011. We excluded 262 213 children (2.2%) whose race/ethnicity was unknown, 322 050 (2.7%) who were defined as multiple racial/ethnicity; 222 835 (1.8%) whose height or weight were missing; 7516 (0.1%) whose height or weight was miscoded; and 260 325 (2.1%) whose height, weight or BMI was biologically implausible. After these exclusions, a sample of 11 067 154 children were retained for the current analysis On the basis of the World Health Organization recommendation, biological implausible *z*-scores were defined as height-for-age < −5.0 or >3.0, weight-for-age < −5.0 or >5.0 and BMI-for-age < −4.0 or >5.0 (16). By race/ethnicity, the sample size ranged from 100 051 for AI/AN children to 4 345 574 for Hispanic children.

We used SAS version 9.3 (SAS Institute, Cary, NC, USA) to analyse the data. To account for annual differences in population distribution, we performed multivariable logistic regression that adjusted for age and sex to examine trends in obesity prevalence by state and territory for each racial/ethnic group. Adjusted odds ratios were calculated to estimate annual changes in odds of obesity from 2008 through 2011. We tested for interactions between state/ territory and year for each racial/ethnic group to look for variations in the trends across states. We also examined interactions between race/ethnicity and year in each state/territory to identify any differences in racial/ethnic trends. $P < 0.05$ was used as the cut-off point for determining statistical significance for all statistical tests.

Results

We identified slight differences between the 2008 and 2011 study populations (Table 1). The 2011 population was older, had a slightly higher proportion of boys and non-Hispanic blacks and had a lower proportion of non-Hispanic whites than the 2008 population.

From 2008 through 2011, the aggregated prevalence of obesity declined by 0.4 percentage points among non-Hispanic white (from 12.5 to 12.1%), non-Hispanic black (from 11.9 to 11.5%) and Hispanic (from 18.2 to 17.8%) children ($P < 0.05$ for trend tests) (Table 2). Within these three groups, prevalence trends varied by state/territory ($P < 0.0001$ for the interactions between state/territory and year). Among non-Hispanic whites, the obesity prevalence significantly decreased in 14 states, increased in four states and showed no statistically significant change in 22 states. Among the 14 states with a significant downward trend, the largest decline in obesity prevalence was in New Jersey, which had an absolute decrease of 2.6 percentage points. Among non-Hispanic blacks, the prevalence declined in seven states/territories, increased in three states and had no change in 31 states. The largest significant decrease was in the U.S. Virgin Islands, which had an absolute decrease of 2.7 percentage points. Among Hispanics, the prevalence declined in 13 states, increased in two states and remained no change in 27 states. Among the 13 states with a downward trend, the largest decline was in Minnesota, which had an absolute decrease of 2.0 percentage points.

Based on aggregated data, A/PI children had the largest decrease in obesity prevalence, from 12.2% in 2008 to 11.3% in 2011 (Table 2). However, trends were different across states/ territories ($P = 0.0002$ for the interactions between state/territory and year). The prevalence of obesity decreased significantly in five states, increased in one state and had no change in 27 states for this population. The largest decrease was in Kentucky, which had an absolute decrease of 5.7 percentage points.

AI/AN children were the only racial/ethnic group to have no significant change (19.9% in 2008 vs. 20.3% in 2011) in obesity prevalence over the study period (Table 2). By state/ territory, the prevalence of obesity decreased significantly in Connecticut and showed no statistically significant change in the remaining 30 states/territories with reliable data due in part to the relatively small sample size of this population in many states.

When examining intrastate racial/ethnic variations, significant differences in obesity trends were observed in 13 states (Table 2, $P < 0.05$ for the interactions between race/ethnicity

and year). For example, in Pennsylvania, obesity prevalence increased among non-Hispanic black and Hispanic children, but remained relatively stable in other racial/ethnic groups. In Georgia, the prevalence declined in all racial/ethnic groups (although the decline was not statistically significant for AI/AN children, potentially because of the small sample size). In Minnesota, the prevalence of obesity decreased among non-Hispanic black, Hispanic and A/PI children, but remained stable among non-Hispanic white children. In North Carolina, an upward trend was found among non-Hispanic black children, but a downward trend was found among Hispanic children. In Washington, the prevalence decreased among non-Hispanic black children but increased among A/PI children. In Wisconsin, a downward trend was found among Hispanic children, but an upward trend was seen among non-Hispanic white and non-Hispanic black children.

Discussion

We found that the prevalence of obesity decreased slightly among low-income, preschool-aged children in all U.S. racial/ethnic groups (decreases ranged 0.4–0.9%) except AI/ANs, for whom the obesity prevalence has levelled off from 2008 to 2011. However, within each state or territory, the trends in obesity prevalence were different by race/ethnicity. Similarly, within each racial/ethnic group, the trends varied across states and territories. Fewer states reported a recent decline in obesity prevalence for AI/ANs than for other racial/ethnic groups. Within each racial/ethnic group, there was no significant change in obesity prevalence in the majority of states/territories.

Previous studies have reported aggregated and state/territorial trends in the prevalence of obesity among similar low-income populations (9-13). Our previous research that examined trends in the aggregated prevalence of obesity in 30 states and the District of Columbia found an upward trend in the overall obesity prevalence during 1998–2003, but a slightly downward trend during 2003–2011 (11,13). The upward trends among non-Hispanic white, non-Hispanic black and Hispanic children also turned downward in 2003. A/PI was the only racial/ ethnic group with a consistent decrease and AI/AN was the only group with a continual increase in obesity prevalence from 1998 to 2011 (13). Another study that focused on state/territorial trends found that 38 out of the 41 PedNSS programmes that provided data during 1998–2003 had an increase in obesity prevalence during that period, and 18 of the 44 programmes that provided data had a decrease during 2003–2008 (9). Results of a recent study suggested that the obesity prevalence declined significantly in 18 states and the U.S. Virgin Islands and remained stable in 24 states or territories during 2008–2011 (10). The present study adds to the literature by reporting obesity prevalence trends by state and territory for low-income, preschool-aged children in five U.S. racial/ethnic groups.

We found declining trends in the prevalence of obesity among non-Hispanic white, non-Hispanic black, Hispanic and A/PI children in many states. Although we do not know the specific reasons for these reductions, the recent addition of obesity prevention initiatives to national and state WIC programmes (17-19) and obesity prevention and control strategies in state and local programmes may have been contributing factors (20). The national WIC programme implemented essential strategies to prevent and control obesity among low-income populations, such as promotion of the American Academy of Pediatrics infant

feeding practice guidelines and distribution of a new WIC food package in 2009 that met criteria in the *Dietary Guidelines for Americans, 2005* (19,21). Initiatives in state WIC programmes that included education about the benefits of family meals and efforts to reduce television viewing and other screen time and promote physical activity (17,18,22) may have also contributed to the reduction in obesity prevalence in certain states. Many state and local health departments and community programmes have also implemented childhood obesity prevention strategies designed to promote healthy diets and improve children's access to healthful foods and opportunities for physical activity (20).

The aggregated prevalence of obesity declined slightly among low-income, preschool-aged children in all racial/ethnic groups except for AI/ANs, where the aggregated prevalence was relatively stable and significant declines were reported in only one state. Although the majority of states had a decline in obesity prevalence for A/PI children, most of the changes were not statistically significant, partially because of the smaller sample size of this subgroup compared with non-Hispanic whites, non-Hispanic blacks and Hispanics. The variations in obesity trends across racial/ethnic groups suggest that health disparities in trends of the prevalence of obesity exist. As we mentioned in our previous study (13), these racial/ethnic disparities may be attributed to differences in behavioural and environmental factors related to food choice and physical activity, as well as social norms towards body weight (23-25). Given the racial/ethnic disparities in obesity prevalence trends in the United States, public health officials at tribal, federal, state and local levels should work with community members to develop obesity prevention and control strategies that are culturally appropriate for low-income AI/AN children and families living on or off tribal lands (26).

In Georgia, a declining trend in obesity prevalence was seen in all the racial/ethnic groups. Although the reasons for such decreases are likely to be complex, the state obesity prevention initiatives may have played a role. The Georgia Community in Motion initiative encouraged residents to exercise (http://www.chronicdisease.org/?DatabasePublic). The Take Charge of Your Health Georgia Task Force developed a tool kit that described the relationships between faith, health and well-being and provided obesity prevention strategies to help large and small faith communities make healthy food choices and increase physical activity (http://www.chronicdisease.org/?DatabasePublic).

On the other hand, in certain states, the decreases or increases in prevalence were observed in some racial/ethnic groups but not all. For example, in Minnesota, the obesity prevalence remained stable among non-Hispanic white children while there was a decrease in all the other racial/ethnic groups. The underlying reasons for the discrepancies are unknown, but may be due to differences in behavioural and environmental factors and in state and local initiatives designed to promote nutrition and physical activity in early childhood care and education and community settings (27,28). For example, the Minnesota Department of Health developed a social media campaign that targeted African–American, American Indian, Latino, Asian and Somali communities. The media campaigns, including radio, public service announcements, posters and other social/electronic media, were linked to other state evidence-based lifestyle change programmes. The state public health officials worked with health clinics to share the successful experience of minority participants in the social media (http://www.chronicdisease.org/?DatabasePublic). Many obesity prevention

interventions have been implemented at state and local levels in recent years, and broader evaluations are needed to determine the effectiveness of these efforts.

Limitations and strengths

Our study had two major strengths. Children's BMI values used to define obesity were calculated on the basis of measured weight and height. In addition, our sample size was sufficient for stratifying obesity prevalence by state or territory and by race/ethnicity. However, our study is subject to at least four limitations. First, the study sample consisted of children from 43 states and territories that provided PedNSS data each year from 2008 through 2011. It included only children who participated in state WIC programmes and not those enrolled in tribal WIC programmes. Therefore, our findings may not be representative of the trends in AI/AN tribes, the remaining states or territories, or all low-income, preschool-aged children in the United States. Second, more children are represented in PedNSS in recent years than were represented in 2008. This change might be partially attributed to the economic downturn, which may have led to previously ineligible families becoming eligible for federally funded nutrition programmes. It is unclear how the changes in the country's low-income population affected the trends in obesity prevalence. Third, we excluded almost 5% of children with missing or multiple racial/ethnicity. The obesity prevalence among these children were 0.6–0.8% lower each year than that among children included in the present study. Therefore, we may have overestimated the prevalence of obesity However, similar to the study findings among most racial/ethnic groups, the obesity prevalence decreased by 0.4% from 2008 to 2011 among children with missing or multiple racial/ethnicity. Fourth, BMI is not a perfect measure of adiposity or percentage of body fat in children. Our study did not account for differences in distribution of body fat across racial/ethnic groups.

Conclusions

The results of this study indicate that health disparities exist in the trends of the prevalence of childhood obesity in the United States, despite recent modest improvements among low-income, preschool-aged children in most racial/ethnic groups and some states. Obesity prevalence was levelling off among AI/AN low-income, preschool-aged children from 2008 through 2011, while small decreases were identified among other racial/ethnic groups. Ongoing surveillance of state and territorial data is needed to determine if these trends are going to continue.

Disclaimer:

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

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Table 1

Sample distribution of the study population by age, sex and race/ethnicity

Characteristic	2008		2011		
	n	%*	*n*	%*	*P*-value†
Age (years)					
2	1 004 486	38.1	992 435	36.2	
3	853 728	32.4	901 631	32.9	<0.0001
4	779 941	29.6	847 686	30.9	
Sex					
Boy	1 331 333	50.5	1 387 670	50.6	0.0006
Girl	1 306 822	49.5	1 354 082	49.4	
Race/ethnicity					
Non-Hispanic white	972 628	36.9	989 639	36.1	
Non-Hispanic black	532 968	20.2	572 159	20.9	
Hispanic	1 030 325	39.1	1 069 255	39.0	<0.0001
American Indian/Alaska Native	24 362	0.9	25 224	0.9	
Asian/Pacific Islander	77 872	3.0	85 475	3.1	

*Percentages may not add up to 100% because of rounding.

†*P*-value for χ^2 test compares the difference in the distribution of the study populations in 2008 and 2011.

Table 2

Trends in the state/territory-specific prevalence of obesity* among children aged 2 through 4 years in low-income families, by race/ethnicity, 2008–2011

State	Non-Hispanic White†					Non-Hispanic Black†					Hispanic†					Asian/Pacific Islander†					American Indian/Alaska Native				
	2008		2011		Change between 2008 and 2011 (%)	2008		2011		Change between 2008 and 2011 (%)	2008		2011		Change between 2008 and 2011 (%)	2008		2011		Change between 2008 and 2011 (%)	2008		2011		Change between 2008 and 2011 (%)
	n	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%	
Total	972 628	12.5	989 639	12.1	−0.4‡	532 968	11.9	572 159	11.5	−0.4‡	1 030 325	18.2	1 069 255	17.8	−0.4‡	77 872	12.2	85 475	11.3	−0.9‡	24 362	19.9	25 224	20.3	0.4
Alabama	23 691	12.8	27 010	13.3	0.5	23 898	11.7	26 810	11.7	0.0	7497	23.4	10 803	23.0	−0.4	39	_¶	35	_¶	_¶	176	17.0	158	15.2	−1.8
Arkansas	21 032	12.8	22 280	13.0	0.2	9071	12.4	9553	12.1	−0.3	7194	19.3	8523	20.1	0.8	395	13.7	615	13.0	−0.7	270	12.2	128	11.7	−0.5
Arizona	13 977	9.5	17 625	9.4	−0.1	3476	10.3	4245	10.1	−0.2	55 031	16.2	60 621	16.2	0.0	659	14.4	998	11.7	−2.7	1219	20.1	1216	21.4	1.3
California§	24 990	13.6	28 221	13.8	0.2	14 005	13.2	13 546	12.4	−0.8	203 364	18.5	165 611	18.3	−0.2	12 749	13.8	9886	12.5	−1.3‡	1012	20.6	1154	23.1	2.5
Colorado	11 529	6.9	7706	7.1	0.2	2491	6.5	1676	7.9	1.4	26 866	10.8	16 556	11.7	0.9‡	571	7.5	472	6.1	−1.4	501	12.2	259	12.4	0.2
Connecticut	6388	13.9	6382	13.5	−0.4	5933	13.3	5929	14.0	0.7	12 441	17.7	13 998	18.0	0.3	507	11.6	676	12.6	1.0	114	18.4	178	9.0	−9.4‡
District of Columbia	100	_¶	157	8.3	_¶	4323	9.8	4449	9.8	0.0	1617	23.2	2195	20.7	−2.5	134	14.9	105	_¶	_¶	10	_¶	17	_¶	_¶
Florida	56 527	11.4	61 804	10.4	−1.0‡	59 609	11.3	67 495	10.6	−0.7‡	86 774	18.1	101 293	16.7	−1.4‡	1654	9.2	2054	8.6	−0.6	357	11.2	370	9.5	−1.7
Georgia§	35 867	12.9	36 526	11.8	−1.1‡	50 591	11.9	59 576	10.4	−1.5‡	32 102	21.5	35 088	19.8	−1.7‡	5148	13.1	3689	9.8	−3.3‡	825	17.1	779	14.9	−2.2
Hawaii	1565	6.0	1724	4.9	−1.1	250	6.4	272	5.1	−1.3	3680	9.0	3875	9.3	0.3	5055	11.0	5738	11.0	0.0	11	_¶	14	_¶	_¶
Idaho	11 951	8.9	13 241	8.0	−0.9‡	215	10.2	244	9.0	−1.2	7017	16.6	7692	16.5	−0.1	190	11.6	304	8.9	−2.7	400	37.5	388	29.4	−8.1
Illinois	34 854	11.9	37 300	12.0	0.1	25 145	11.9	26 520	11.8	−0.1	55 495	18.1	61 287	18.1	0.0	2560	8.8	2945	8.7	−0.1	52	21.2	49	_¶	_¶
Indiana§	37 292	13.5	40 541	13.9	0.4	11 366	10.6	12 223	10.2	−0.4	14 019	20.7	15 482	19.1	−1.6‡	778	8.2	1424	9.8	1.6	80	18.8	63	_¶	_¶
Iowa§	20 412	13.4	20 636	13.0	−0.4	2840	11.4	2890	11.9	0.5	8121	20.7	8173	18.8	−1.9‡	454	11.7	630	11.0	−0.7	126	15.9	153	23.5	7.6

State	Non-Hispanic White†					Non-Hispanic Black†					Hispanic†					Asian/Pacific Islander†					American Indian/Alaska Native				
	2008		2011		Change between 2008 and 2011 (%)	2008		2011		Change between 2008 and 2011 (%)	2008		2011		Change between 2008 and 2011 (%)	2008		2011		Change between 2008 and 2011 (%)	2008		2011		Change between 2008 and 2011 (%)
	n	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%	
Kansas	17 284	11.8	16 940	10.6	−1.2‡	4171	11.3	3740	10.7	−0.6	11 690	16.2	13 842	16.0	−0.2	503	10.7	631	8.7	−2.0	395	19.5	360	17.2	−2.3
Kentucky§	49 026	15.4	22 536	15.6	0.2	6760	13.4	4963	12.1	−1.3	5330	21.0	3912	19.8	−1.2‡	557	14.4	334	8.7	−5.7‡	58	19.0	23	_¶	_¶
Maryland§	11 592	13.6	12 630	12.9	−0.7	24 567	12.2	27 316	12.1	−0.1	14 533	23.9	19 513	22.2	−1.7‡	1474	10.7	1962	9.3	−1.4	167	11.4	182	11.5	0.1
Massachusetts	24 116	14.9	22 790	14.3	−0.6‡	11 479	14.9	11 278	14.7	−0.2	20 321	20.9	22 869	20.4	−0.5	3313	11.1	3488	9.2	−1.9‡	68	17.6	140	14.3	−3.3
Michigan§	54 822	13.2	59 298	12.7	−0.5‡	25 987	11.6	27 646	10.7	−0.9‡	15 554	20.1	17 807	18.4	−1.7‡	1665	13.1	1756	11.7	−1.4	330	16.7	341	21.1	4.4
Minnesota§	30 076	9.9	31 193	9.7	−0.2	11 027	13.0	12 490	11.4	−1.6‡	13 187	18.3	13 870	16.3	−2.0‡	4815	16.8	5386	14.7	−2.1‡	2323	26.5	2280	28.9	2.4
Mississippi	14 184	14.1	14 617	13.4	−0.7‡	28 228	14.3	29 562	13.5	−0.8‡	1951	22.4	2853	20.8	−1.6	204	10.8	290	13.8	3.0	75	24.0	55	21.8	−2.2
Missouri	40 839	13.5	42 671	12.5	−1.0‡	11 579	11.8	14 236	11.4	−0.4	6975	19.2	7802	17.6	−1.6‡	676	13.8	915	14.4	0.6	88	19.3	40	_¶	_¶
Montana	6419	9.8	6655	8.4	−1.4‡	32	_¶	40	_¶	_¶	696	12.2	767	11.3	−0.9	35	_¶	32	_¶	_¶	1835	19.9	2079	20.8	0.9
Nebraska	9384	10.8	9493	11.8	1.0‡	2225	11.0	2332	10.5	−0.5	7747	18.6	8586	18.3	−0.3	278	8.6	496	8.3	−0.3	308	18.5	278	19.1	0.6
Nevada	4103	10.4	6369	9.3	−1.1‡	1714	6.8	3090	7.9	1.1	16 073	14.3	21 687	14.6	0.3	487	9.7	952	8.6	−1.1	160	20.0	211	15.2	−4.8
New Hampshire	7001	15.5	6392	14.2	−1.3‡	385	15.3	353	13.9	−1.4	443	18.5	1034	17.6	−0.9	139	_¶	181	11.6	_¶	41	_¶	74	16.2	_¶
New Jersey§	12 057	14.1	15 231	11.5	−2.6‡	15 832	12.9	16 267	12.7	−0.2	36 844	21.6	41 926	20.1	−1.5‡	2234	14.7	2558	14.6	−0.1	388	13.1	429	14.7	1.6
New Mexico	2896	8.3	3678	7.8	−0.5	305	7.9	414	8.5	0.6	17 926	12.3	24 238	11.4	−0.9‡	96	_¶	140	9.3	_¶	685	21.5	1143	21.5	0
New York	61 449	12.3	64 094	11.9	−0.4‡	47 300	12.9	49 342	12.5	−0.4	80 365	18.1	89 320	18.0	−0.1	15 838	10.8	19 836	10.3	−0.5	1467	14.8	2278	15.1	0.3
North Carolina§	32 592	13.1	34 565	13.0	−0.1	29 486	12.9	31 736	13.3	0.4‡	31 419	21.2	34 064	19.8	−1.4‡	1065	12.1	1408	10.2	−1.9	1161	15.6	1344	17.0	1.4
North Dakota	3762	11.1	3623	10.2	−0.9	302	8.9	377	10.3	1.4	547	13.9	667	13.6	−0.3	45	_¶	73	_¶	_¶	1617	21.8	1400	20.2	−1.6

State	Non-Hispanic White†					Non-Hispanic Black†					Hispanic†					Asian/Pacific Islander†					American Indian/Alaska Native				
	2008		2011		Change between 2008 and 2011 (%)	2008		2011		Change between 2008 and 2011 (%)	2008		2011		Change between 2008 and 2011 (%)	2008		2011		Change between 2008 and 2011 (%)	2008		2011		Change between 2008 and 2011 (%)
	n	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%		*n*	%	*n*	%	
Ohio	73 054	12.1	69 432	12.3	0.2	36 693	10.7	31 766	10.5	−0.2	11 101	17.6	11 571	17.2	−0.4	1592	11.7	1102	10.3	−1.4	623	12.7	128	12.5	−0.2
Oregon	23 152	11.6	26 818	11.9	0.3	1211	12.1	1331	12.2	0.1	21 699	18.1	22 142	18.4	0.3	1172	13.5	1301	14.8	1.3	722	21.9	730	23.7	1.8
Pennsylvania	57 701	11.3	57 586	11.6	0.3	23 679	9.3	27 123	10.3	1.0‡	24 143	14.4	27 423	15.9	1.5‡	2822	9.1	3474	9.1	0.0	407	9.3	450	10.4	1.1
Puerto Rico	36	_¶	18	_¶	_¶	6	_¶	11	_¶	_¶	99 610	17.9	89 278	17.9	0.0	14	_¶	8	_¶	_¶	142	15.5	133	8.3	−7.2
Rhode Island	4349	14.0	4524	14.2	0.2	1685	14.4	1844	13.9	−0.5	4763	19.6	5196	20.0	0.4	254	10.6	404	11.4	0.8	53	_¶	41	_¶	_¶
South Dakota§	5124	13.1	5432	11.3	−1.8‡	248	14.1	374	12.6	−1.5	661	18.5	906	18.7	0.2	77	16.9	143	12.6	−4.3	2645	21.6	2794	22.1	0.5
Tennessee	41 339	13.5	39 989	14.1	0.6‡	16 364	9.5	16 488	10.1	0.6	10 523	20.1	11 941	20.4	0.3	346	10.4	428	9.8	−0.6	53	_¶	46	_¶	_¶
U.S. Virgin Islands	42	_¶	57	_¶	_¶	1753	12.3	1928	9.6	−2.7‡	496	17.5	528	15.7	−1.8	9	_¶	21	_¶	_¶	1	_¶	0	_¶	_¶
Vermont	6514	13.1	5709	13.0	−0.1	198	18.2	194	13.4	−4.8	18	_¶	12	_¶	_¶	81	_¶	92	_¶	_¶	31	_¶	18	_¶	_¶
Washington§	35 312	10.8	39 682	10.5	−0.3	5641	12.7	6636	11.5	−1.2‡	39 203	17.8	44 828	17.4	−0.4	4543	12.3	5328	13.5	1.2‡	2254	21.3	2365	21.9	0.6
West Virginia	19 828	13.4	19 492	14.0	0.6‡	820	13.4	917	13.0	−0.4	598	17.4	732	13.7	−3.7	50	_¶	61	_¶	_¶	9	_¶	15	_¶	_¶
Wisconsin§	24 400	11.3	24 953	11.8	0.5‡	10 078	10.2	10 606	11.2	1.0‡	14 691	18.5	16 078	17.7	0.8‡	2595	16.2	2995	16.6	0.4	1103	24.1	907	25.5	1.4

*Defined as sex-specific body mass index-for-age ≥the 95th percentile on the CDC growth chart.

†Obesity trends varied by states among non-Hispanic white, non-Hispanic black, Hispanic and Asian/Pacific Islander children; $P < 0.05$ for the interaction between state/territory and year.

‡Significant trend from 2008 to 2011 based on logistic regression controlling for age and sex, the 95% confidence intervals for adjusted odds ratios do not include 1.

§Obesity trends varied by race/ethnicity in the state; $P < 0.05$ for the interaction between race/ethnicity and year.

¶Data not reliable, $n < 50$ or relative standard error ≥30%.