HHS Public Access

Author manuscript

Am J Health Promot. Author manuscript; available in PMC 2024 February 14.

Published in final edited form as:

Am J Health Promot. 2021 March ; 35(3): 334–343. doi:10.1177/0890117120958546.

Prevalence of Overweight and Obesity Among Children Enrolled in Head Start, 2012–2018

Omoye Imoisili, MD, MPH[1,2,3], **Carrie Dooyema, MPH, MSN, RN**[1], **Lyudmyla Kompaniyets, PhD**[1], **Elizabeth A. Lundeen, PhD, MPH**[1], **Sohyun Park, PhD**[1], **Alyson B. Goodman, MD, MPH**[1,3], **Heidi M. Blanck, PhD**[1,3]

[1]Division of Nutrition, Physical Activity, and Obesity, Obesity Prevention and Control Branch, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, GA, USA

[2]Center for Surveillance, Epidemiology, and Laboratory Services, Centers for Disease Control and Prevention, Epidemic Intelligence Service, Atlanta, GA, USA

[3]United States Public Health Service, Rockville, MD, USA

Abstract

Purpose: Determine prevalence of overweight and obesity as reported in Head Start Program Information Reports.

Design: Serial cross-sectional census reports from 2012–2018.

Setting: Head Start programs countrywide, aggregated from program level to state and national level.

Subjects: Population of children enrolled in Head Start with reported weight status data.

Measures: Prevalence of overweight (body mass index [BMI] ≥85th percentile to <95th percentile) and obesity (BMI ≥95th percentile).

Analysis: Used descriptive statistics to present the prevalence of overweight and obesity by state. Performed unadjusted regression analysis to examine annual trends or average annual changes in prevalence.

Results: In 2018, the prevalence of overweight was 13.7% (range: 8.9% in Alabama to 20.4% in Alaska). The prevalence of obesity was 16.6% (range: 12.5% in South Carolina to 27.1% in

Corresponding Author: Carrie Dooyema, MPH, MSN, RN, 4770 Buford Highway, Mailstop S107-5, Atlanta, GA 30341, USA. igb7@cdc.gov.

Author Contributions

Omoye E. Imoisili: Conceptualization, Data Curation and Investigation, Writing – Original Draft, Writing – Review & Editing. Carrie Dooyema: Conceptualization, Investigation, Writing – Review & Editing, Supervision. Lyudmyla Kompaniyets: Methodology and Data Analysis, Writing – Review & Editing. Elizabeth A. Lundeen: Conceptualization, Data Curation and Investigation, Writing – Review & Editing. Sohyun Park: Writing – Review & Editing, Supervision. Alyson B. Goodman: Writing – Review & Editing, Supervision. Heidi M. Blanck: Conceptualization, Writing – Review & Editing, Supervision.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: 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.

Alaska). In the unadjusted regression model, 34 states and the District of Columbia did not have a linear trend significantly different from zero. There was a statistically significant positive trend in obesity prevalence for 13 states and a negative trend for 3 states.

Conclusion: The prevalence of obesity and overweight in Head Start children remained stable but continues to be high. Head Start reports may be an additional source of surveillance data to understand obesity prevalence in low-income young children.

Keywords

pediatric obesity; pediatric overweight; Head Start; early childhood education; low-income households; young children; underserved populations; population health

Purpose

Children living in low-income households are at higher risk for obesity (BMI at or above the 95th percentile) and overweight (BMI at the 85th percentile to less than the 95th percentile) than children living in higher-income households.[1,2] Establishing healthy growth patterns in early childhood is particularly important, as obesity tracks from childhood to adulthood. In one study, obesity at age 5 had a positive predictive value of 67% for the presence of obesity at age 50.[3] Head Start is a federally funded program that promotes school readiness, early childhood development, and well-being for more than 750,000 U.S. children aged 3–5 years annually, most of whom are from families with incomes below the federal poverty level.[4,5] Head Start programs are required to submit a Program Information Report (PIR) with information on the socioeconomic status and health of program enrollees each year.[6] In 2012, programs were required to add the weight status of participating children. According to the 2016 Head Start Health Manager Descriptive Study, about 86% of program managers reported that obesity and overweight among enrolled children is a major concern.[7] The publicly available PIR could possibly be considered as a tool for surveillance of obesity and overweight among low-income young children. Our study examined PIR data to describe the prevalence of obesity and overweight among Head Start enrollees by state.

Methods

Design

Head Start PIR data are used to meet congressional reporting requirements per Section 650 of the Head Start Act.[8] The PIR is an annual census report consisting of information about the children, family, staff, and services of the Head Start program. It presents aggregate demographic, socioeconomic, and health data.[6] This analysis abstracted data from serial cross-sectional census reports of the Head Start population, as PIR reports, from 2012–2018.

Sample

All Head Start enrollees with available data are included in PIR census reports. We did not include PIR data for children enrolled in Early Head Start, and the PIR excludes children in Head Start with missing BMI data (range: 0.0% in the District of Columbia to 6.9% in Illinois in 2018). The number of children missing BMI data was calculated by subtracting

the total number of children with BMI data from the total number of enrollees. Overall, the total number of children ranged from a high of 906,194 in 2012 to a low of 759,791 in 2018.

Measures

All children enrolled in Head Start are required to have a clinical physical exam during which the height, weight, age, and sex of the child are recorded.[9] Alternatively, height and weight are measured by Head Start program staff, for which there is no standard measurement protocol. This information is added to Head Start program records and used to calculate BMI percentile, which is then used to determine mutually exclusive weight status categories (underweight, healthy weight, overweight, and obesity). These categories are defined for children as follows: underweight = BMI less than the 5th percentile for age and sex, healthy weight = BMI at the 5th percentile to less than the 85th percentile for age and sex, overweight = BMI at the 85th percentile to less than the 95th percentile for age and sex, and obesity = BMI at or above the 95th percentile for age and sex.[10] This information is uploaded to the electronic Head Start Enterprise System and subsequently reflected in the annual PIR as an aggregate prevalence of each weight status category for all children in each participating Head Start program. Data for the program, state, and national level are publicly available. The PIR form, detailed reports, and full data sets are accessible on the Office of Head Start Program Information Reports website.[6]

For the present study, state-level aggregate data on children's weight status were abstracted from the Health Services Report, which also contains information on health insurance, medical homes, immunization services, dental services, and mental health services. Data from the BMI section of the report included the percentage of children in each of the 4 weight status categories, by enrollment year, as well as the total number of children with BMI data.

Analysis

The reported number and percentage of children in the weight status categories of overweight and obesity were abstracted for each state from 2012 through 2018; these figures were abstracted for all 4 weight status categories, including healthy weight and underweight, for 2018. We present prevalence figures for overweight and obesity during 2012–2018 by state, using descriptive statistics calculated with Microsoft Excel. In addition, we examined the trend of overweight and obesity prevalence nationally and within each state by performing a simple linear regression analysis with overweight or obesity prevalence as the dependent variable and year as the continuous independent variable. The coefficient from the regression analysis represents the annual trend or average annual change in overweight or obesity prevalence during 2012–2018. Regression analysis was performed using Stata/MP 15.1 statistical software (StataCorp LLC, College Station, TX).

Results

In 2018, overall prevalence for each weight status category for children enrolled in Head Start in all 50 states and the District of Columbia was as follows: underweight, 5.3% (range = 2.3% in Alaska to 10.6% in the District of Columbia); healthy weight, 64.4% (range =

50.3% in Alaska to 73.1% in Alabama); overweight, 13.7% (range = 8.9% in Alabama to 20.4% in Alaska); and obesity, 16.6% (range = 12.5% in South Carolina to 27.1% in Alaska) (Table 1).

Table 2 shows the prevalence of obesity among Head Start participants by state from 2012–2018. Overall, we found a 0.20 percentage point (95% confidence interval 0.09–0.31) annual increase in unadjusted obesity prevalence among Head Start participants, which is a small but significant positive linear trend ($p < 0.01$). Out of 50 states and the District of Columbia, we found a positive significant trend in 13 states and a negative significant trend in 3 states. In 34 states and the District of Columbia, the trend was not significantly different from zero, meaning there was no positive or negative trend that was statistically significant.

Table 3 shows the prevalence of overweight among Head Start participants by state from 2012–2018. We did not find an overall significant linear trend in overweight prevalence among Head Start participants, unadjusted for covariates. Out of all 50 states and the District of Columbia, we found a positive significant trend in 4 states and a negative significant trend in 5 states. In 41 states and the District of Columbia, the trend was not significantly different from zero, meaning there was no positive or negative trend that was statistically significant.

Discussion

This article is the first to combine all available BMI data from the Head Start PIR from 2012, when BMI measurements were added to the annual PIR, with data through 2018 and to examine trends in overweight and obesity among Head Start participants in all 50 states and the District of Columbia. The overall prevalence of obesity among young children enrolled in Head Start was 16.6% in 2018. This percentage is higher than the estimated obesity prevalence of 13.9% among U.S. children aged 2–5 years at all household income levels, according to the 2015–2016 National Health and Nutrition Examination Survey (NHANES).[11] In our analysis, 43 states had an obesity prevalence higher than 13.9%. This difference could be in part because NHANES data include children aged 2–5 years from all income levels, whereas most Head Start participants are from families with low incomes.

Our study also found different percentages than another federal program for low-income children, the Supplemental Nutrition Assistance Program for Women, Infants, and Children (WIC). The WIC program has a Participants and Program Characteristics (WIC PC) census survey that collects participant data in even-numbered years. The Centers for Disease Control and Prevention collaborates with the U.S. Department of Agriculture to use the WIC PC as a source of obesity data for low-income children aged 2–4 years.[12] In 2016, the national prevalence of obesity in the WIC PC for children aged 2–4 years was 13.9% overall (range: 7.9% in Utah to 19.8% in Alaska). Our findings for the same year were about 3 percentage points higher; however, our study includes slightly older children (aged 3–5 years). The overall overweight prevalence among children aged 2–4 years who were enrolled in the WIC program in 2016 was about 15.2% (range: 12.1% in Utah to 19.7% in South Dakota).[13]

Our analysis, which focused on the trend in unadjusted obesity prevalence among Head Start participants, found that the trend was not significantly different from zero in 34 states and the District of Columbia. However, 13 states had a positive trend and 3 states had a negative trend, and these trends were statistically significant. We also found an overall small but significant positive linear trend in obesity prevalence among Head Start participants. These findings can be considered with other findings on the prevalence of obesity in young low-income populations. For example, national PIR data show that, in 2016, approximately 400,000 families enrolled in Head Start also received WIC benefits. Although the two populations are not identical, overlap exists. In contrast to our study, Pan et al. found that the obesity prevalence among WIC participants aged 2–4 years declined in 41 states and U.S. territories during 2010–2016.[12] Differences in findings between this study and the WIC PC survey could be due to differing time periods and data analysis techniques.

Limitations exist in this study. First, the BMI data in the PIR come from either healthcare professionals or Head Start personnel, and it is undetermined what proportion of the data originate from each source. In addition, there are currently no standard anthropometric protocols or training required for Head Start personnel who collect BMI data; thus there might be measurement error. In contrast, the WIC PC survey has highly standardized protocols and published data that show reliability and validity.[13,14] Second, although BMI data are reported at the individual Head Start program level, these values are subsequently classified into weight categories and reported in aggregate to the state level. Because individual-level data are not available, we cannot verify whether weight status was appropriately documented for individual children. In addition, data cleaning is not performed after entry into the Head Start Enterprise System. Further, we did not adjust for covariates when calculating the annual increase in the prevalence of obesity and overweight because of the lack of individual-level data and certain demographic variables (e.g., sex). Thus, trends could be explained by demographic changes in the Head Start population over time. Finally, Head Start participation declined for most states over the 7-year period that we studied, and we are unsure if these declines are affected by a factor, such as age of enrollees, that could also affect the prevalence estimates. Nevertheless, these estimates are still valuable.

The early development of healthy habits is crucial to help children grow optimally and maintain good health. Stakeholders could use publicly available Head Start data to understand the prevalence of obesity among young children from low-income households who are enrolled in early education programs. There are approximately 1,700 Head Start programs across the country, located in every state and U.S. territory.[15] Performance measures were updated in 2016, and programs are now required to promote good nutrition and physical activity to help prevent obesity, through various ways including standards related to nutrition service requirements and through the teaching and learning environment to promote learning about nutrition and physical activity throughout their daily activities.[9,16] These efforts may help improve developmental and physical outcomes for low-income children enrolled in Head Start. According to one study including data between 2005–2013,[17] preschool-aged children who entered Head Start with overweight or obesity had a significantly improved and healthier BMI by kindergarten age than comparison groups. The comparison groups included children who received Medicaid, and those not on Medicaid;

the children enrolled in Medicaid were more similar demographically and by weight status to children in Head Start than the children who were not enrolled in Medicaid. Those who entered Head Start underweight also had a higher BMI increase than comparison groups. The study's authors concluded that, at the end of the observation period, children with overweight or obesity who were enrolled in Head Start were significantly less overweight than children in the comparison groups. In another study, Head Start programs implemented the Coordinated Approach to Child Health Early Childhood (CATCH EC) program, which focuses on healthy nutrition and physical activity. Data obtained from 2012–2014 show that children in this program demonstrated significantly lower BMI z-scores and BMI percentiles than children in comparison Head Start programs in the same target population with a similar weight status after the 1-year intervention period.[18] The environment provided in early care and education (ECE) settings such as Head Start may contribute to the development of healthy eating and physical activity habits, as well as improved social and academic outcomes. Approximately 73% of U.S. children aged 3–5 years are in nonparental care on a weekly basis,[19] which highlights the importance of the ECE setting and programs such as Head Start in helping children develop healthy habits and establish a healthy weight.

Childhood obesity is a pressing public health problem, and it is projected that almost 60% of children today will have obesity at age 35 years.[20] In this analysis we found the prevalence of obesity and overweight in Head Start children to be stable, but continues to be high. This projection underscores the importance of using available state data to develop plans for action. CDC continues to work with other federal agencies, states, and researchers to provide data on risk factors and to support ECE efforts to improve health among children.[13,21] Our assessment and future PIR analyses could potentially help all 50 states and the District of Columbia plan and highlight the need for healthy growth and obesity interventions for low-income families. Finally, the data may be useful for a state and national stakeholders to monitor obesity and overweight prevalence over time in this unique population.

Acknowledgments

We would like to thank Marco Beltran, Jesse Escobar, Linda Green-berg, and Theresa Rowley of the Administration for Children and Families, U.S. Department of Health and Human Services, for their contributions to this manuscript.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

1. Centers for Disease Control and Prevention. CDC Health Disparities and Inequalities Report — United States, 2011. MMWR Morb Mortal Wkly Rep. 2011;60(suppl):73–77.
2. Weaver RG, Brazendale K, Hunt E, et al. Disparities in childhood overweight and obesity by income in the United States: an epidemiological examination using three nationally representative datasets. Int J Obes (Lond) 2019;43(6):1210–1222. [PubMed: 30718822]
3. Rundle AG, Factor-Litvak P, Suglia SF, et al. Tracking of obesity in childhood into adulthood: effects on body mass index and fat mass index at age 50. Child Obes. 2020;16(3):226–233. [PubMed: 32191541]

4. Office of Head Start, Early Childhood Learning & Knowledge Center. Head Start Program Facts, Fiscal Year 2016. Updated December 2018. Accessed February 20, 2020. https://eclkc.ohs.acf.hhs.gov/about-us/article/head-start-program-facts-fiscal-year-2016.
5. Office of Head Start, Early Childhood Learning & Knowledge Center. Poverty Guidelines and Determining Eligibility for Participation in Head Start Programs. Updated October 2019. Accessed February 20, 2020. https://eclkc.ohs.acf.hhs.gov/eligibility-ersea/article/poverty-guidelines-determining-eligibility-participation-head-start
6. Office of Head Start, Early Childhood Learning & Knowledge Center. Data & Ongoing Monitoring: Program Information Report. Updated January 2020. Accessed February 20, 2020. https://eclkc.ohs.acf.hhs.gov/data-ongoing-monitoring/article/program-information-report-pir
7. Martin LT, Karoly LA. Addressing Overweight and Obesity in Head Start: Insights from the Head Start Health Manager Descriptive Study. Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. OPRE Report. 2016: 2016–2085.
8. Office of Head Start, Early Childhood Learning & Knowledge Center. Head Start Policy & Regulations website. Sec. 650 Reports. Published 2007. Accessed September 23, 2019. https://eclkc.ohs.acf.hhs.gov/policy/head-start-act/sec-650-reports#
9. "Office of Head Start (OHS), Administration for Children and Families (ACF), Department of Health and Human Services (HHS)". Head start performance standards. Fed Regist. 2016; 81(61293):61293–61453.
10. Barlow SE. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. Pediatrics. 2007; 120(suppl 4):S164–S192. [PubMed: 18055651]
11. Hales CM, Fryar CD, Carroll MD, Freedman DS, Ogden CL. Trends in obesity and severe obesity prevalence in US youth and adults by sex and age, 2007–2008 to 2015–2016. JAMA. 2018; 319(16):1723–1725. [PubMed: 29570750]
12. Pan L, Freedman DS, Park S, Galuska DA, Potter A, Blanck HM. Changes in obesity among US children aged 2 through 4 years enrolled in WIC during 2010–2016. JAMA. 2019;321(23):2364–2366. [PubMed: 31211336]
13. Centers for Disease Control and Prevention. Nutrition, physical activity, and obesity: data, trends and maps. Updated November 2019. Accessed May 20, 2019. https://www.cdc.gov/nccdphp/dnpao/data-trends-maps/index.html
14. Crespi CM, Alfonso VH, Whaley SE, Wang MC. Validity of child anthropometric measurements in the Special Supplemental Nutrition Program for Women, Infants, and Children. Pediatr Res. 2012;71(3):286–292. [PubMed: 22337260]
15. Office of Head Start. Head start programs. Updated February 2019. Accessed May 20, 2019. https://www.acf.hhs.gov/ohs/about/head-start
16. Kunkel KK, Ghaffar AH, Conrad S, Routh B, Joeng JR, Harrison M. Lessons in a box make a difference for Head Start youth. J Extension. 2013;51(3):3.
17. Lumeng JC, Kaciroti N, Sturza J, et al. Changes in body mass index associated with head start participation. Pediatrics 2015; 135(2):e449–e456. [PubMed: 25583912]
18. Sharma SV, Vandewater E, Chuan RJ, et al. Impact of the coordinated approach to child health early childhood program for obesity prevention among preschool children: the Texas childhood obesity research demonstration study. Child Obes. 2019; 15(1):1–13. [PubMed: 30226991]
19. National Center for Education Statistics. Table 202.10. Enrollment of 3-, 4-, and 5-year-old children in preprimary programs, by age of child, level of program, control of program, and attendance status: selected years, 1970 through 2015. Updated October 2016. Accessed April 2, 2019. https://nces.ed.gov/programs/digest/d16/tables/dt16_202.10.asp
20. Ward ZJ, Long MW, Resch SC, Giles CM, Cradock AL, Gort-maker SL. Simulation of growth trajectories of childhood obesity into adulthood. N Engl J Med. 2017;377(22):2145–2153. [PubMed: 29171811]
21. Centers for Disease Control and Prevention. Early Care and Education State Indicator Report, 2016. Centers for Disease Control and Prevention, U.S. Department of Health and Human Services; 2016.

So What? Implications for Health Promotion Practitioners and Researchers

What is already known on this topic?

Head Start enrollees are often children living in low-income households, who are at higher risk for obesity and overweight than children living in higher-income households.

What does this article add?

This article is the first to combine all available BMI data from the annual Head Start Program Information Report (PIR) from 2012, when body mass index measurements were added to the PIR, with data through 2018 and to examine trends in overweight and obesity among Head Start participants in all 50 states and the District of Columbia.

What are the implications for health promotion practice or research?

Available state data may be used to develop plans for action to support efforts to improve health among young children; plan and highlight the need for healthy growth and obesity interventions for low-income families; and may be useful for state and national stakeholders to monitor obesity and overweight prevalence over time in this unique population.

Table 1.

Prevalence of Weight Status Categories[a] Among U.S. Children Enrolled in Head Start, by State, Head Start Program Information Report, 2018[b].

State/District	No. of Children	% Underweight	% Healthy Weight	% Overweight	% Obesity
Overall	759,791	5.3	64.4	13.7	16.6
Alabama	14,170	4.5	73.1	8.9	13.5
Alaska	2,793	2.3	50.3	20.4	27.1
Arizona	15,928	5.1	63.9	14.3	16.7
Arkansas	8,157	5.6	62.3	14.4	17.7
California	84,878	5.0	64.4	13.5	17.1
Colorado	9,478	6.2	66.5	12.4	14.9
Connecticut	5,875	4.4	61.5	15.2	18.8
Delaware	1,888	4.5	61.6	12.7	21.2
District of Columbia	5,486	10.6	65.6	11.1	12.7
Florida	36,894	5.8	65.1	11.9	17.2
Georgia	22,005	6.2	68.0	11.2	14.6
Hawaii	2,652	5.5	66.7	13.0	14.8
Idaho	3,317	4.1	65.4	16.3	14.1
Illinois	30,303	5.2	63.0	13.9	17.9
Indiana	14,125	5.0	62.7	15.3	17.0
Iowa	6,358	3.7	60.5	17.3	18.5
Kansas	6,529	6.0	63.1	14.6	16.2
Kentucky	13,992	5.4	63.5	13.7	17.4
Louisiana	19,355	6.1	65.6	13.4	14.9
Maine	2,638	4.1	59.8	17.6	18.5
Maryland	8,544	5.5	67.7	12.1	14.8
Massachusetts	11,646	3.5	60.6	16.2	19.7
Michigan	27,069	6.1	62.7	14.6	16.6
Minnesota	12,170	5.0	61.3	15.9	17.8
Mississippi	22,023	7.2	60.0	12.3	20.5
Missouri	13,153	6.3	62.0	14.7	16.9
Montana	4,296	4.7	62.7	18.9	13.7

State/District	No. of Children	% Underweight	% Healthy Weight	% Overweight	% Obesity
Nebraska	4,043	4.0	62.5	15.4	18.0
Nevada	3,182	5.3	68.0	13.4	13.3
New Hampshire	1,395	2.4	60.0	18.2	19.4
New Jersey	12,857	5.9	61.0	14.1	18.9
New Mexico	7,846	6.1	66.2	13.2	14.6
New York	48,287	4.8	68.9	12.7	13.6
North Carolina	19,549	5.7	64.4	13.4	16.6
North Dakota	2,629	3.9	65.3	16.1	14.7
Ohio	33,560	5.8	63.0	14.2	17.0
Oklahoma	15,612	4.6	66.8	13.6	14.9
Oregon	13,929	3.4	64.5	16.1	16.0
Pennsylvania	33,789	5.3	64.2	14.1	16.3
Rhode Island	2,363	3.2	61.0	11.9	23.8
South Carolina	11,594	7.2	69.8	10.4	12.5
South Dakota	4,092	4.6	61.3	17.1	17.0
Tennessee	17,502	4.9	65.6	13.2	16.3
Texas	66,819	4.7	65.2	13.4	16.6
Utah	5,623	7.7	65.1	13.6	13.5
Vermont	1,110	4.1	58.7	17.5	19.6
Virginia	14,017	5.7	62.7	14.5	17.0
Washington	12,185	3.4	61.3	16.5	18.8
West Virginia	7,663	6.2	63.3	14.8	15.8
Wisconsin	12,833	4.5	61.0	16.1	18.4
Wyoming	1,590	4.3	68.3	14.3	13.1

[a] Weight status based on BMI-for-age percentile (kg/m^2) defined as follows: underweight ≤5th percentile, healthy weight = 5th to <85th percentile, overweight = 85th to <95th percentile, and obesity: ≥95th percentile.

[b] Percentages may not sum to 100% due to rounding.

Table 2.

Prevalence of Obesity[a] Among U.S. Children Enrolled in Head Start, by State and Year, Head Start Program Information Reports, 2012–2018.

	2012		2013		2014		2015		2016		2017		2018		2012–2018	
State/District	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	Average Annual Change[b]	95% Confidence Interval
Overall	906,194	15.5	895,743	15.6	850,645	16.2	858,627	16.5	819,997	16.3	787,402	16.7	759,791	16.6	+0.20**	[0.09, 0.31]
Alabama	18,031	13.0	17,980	12.6	16,979	15.1	16,723	15.7	16,620	15.1	14,448	13.8	14,170	13.5	+0.14	[−0.47, 0.75]
Alaska	3,155	25.7	3,203	23.8	3,009	25.0	2,986	27.5	2,889	27.0	2,819	24.5	2,793	27.1	+0.27	[−0.43, 0.97]
Arizona	18,921	15.8	18,807	16.6	17,088	17.3	18,143	17.7	17,557	17.4	16,686	17.4	15,928	16.7	+0.16	[−0.14, 0.46]
Arkansas	10,090	16.7	10,639	16.1	9,789	17.2	9,734	17.4	8,895	17.4	8,864	17.9	8,157	17.7	**+0.24***	**[0.07, 0.42]**
California	110,075	18.6	109,624	18.5	104,393	18.7	104,291	18.3	96,441	17.9	89,585	17.9	84,878	17.1	**−0.23****	**[−0.36, −0.10]**
Colorado	11,418	10.8	11,282	12.5	11,522	13.6	11,227	13.5	10,596	13.5	9,595	13.6	9,478	14.9	**+0.51****	**[0.19, 0.84]**
Connecticut	7,775	13.9	7,694	16.5	6,843	18.0	6,660	16.9	5,878	17.3	5,780	18.8	5,875	18.8	**+0.66***	**[0.18, 1.14]**
Delaware	1,265	19.3	1,269	16.9	1,251	21.7	1,249	21.8	2,087	20.4	2,018	18.8	1,888	21.2	+0.29	[−0.60, 1.19]
District of Columbia	3,833	16.3	2,761	14.7	6,326	10.7	5,972	9.1	5,415	12.3	5,521	13.8	5,486	12.7	−0.39	[−1.60, 0.81]
Florida	37,263	16.5	36,593	17.4	37,563	18.1	38,242	17.8	37,205	17.1	37,604	17.3	36,894	17.2	+0.03	[−0.24, 0.30]
Georgia	25,237	15.2	25,054	15.6	23,667	16.5	24,075	15.4	23,525	16.3	21,212	15.1	22,005	14.6	−0.11	[−0.44, 0.23]
Hawaii	3,035	16.7	3,126	12.6	3,041	13.4	3,090	14.2	3,033	13.7	2,753	15.4	2,652	14.8	+0.01	[−0.72, 0.73]
Idaho	3,745	13.9	3,736	13.2	3,422	15.1	3,611	13.3	3,552	14.3	3,333	16.3	3,317	14.1	+0.21	[−0.31, 0.74]
Illinois	43,537	13.8	42,747	16.7	40,656	18.4	40,060	18.6	36,460	17.4	34,982	17.3	30,303	17.9	+0.45	[−0.25, 1.14]
Indiana	16,091	16.1	14,965	18.1	15,165	18.1	15,676	19.6	14,855	19.5	14,392	18.5	14,125	17.0	+0.17	[−0.47, 0.82]
Iowa	7,630	17.6	7,479	17.7	6,771	18.1	6,892	19.3	6,623	18.4	6,332	19.3	6,358	18.5	+0.22	[−0.04, 0.49]

State/District	2012		2013		2014		2015		2016		2017		2018		2012–2018	
	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	Average Annual Change[b]	95% Confidence Interval
Kansas	8,742	17.9	8,462	16.0	6,834	17.8	7,817	16.2	7,391	17.1	6,772	17.4	6,529	16.2	−0.11	[−0.52, 0.30]
Kentucky	16,974	18.5	17,385	19.5	16,709	19.3	16,803	20.5	16,016	18.5	15,620	18.1	13,992	17.4	−0.25	[−0.71, 0.22]
Louisiana	21,737	10.5	22,207	11.4	20,877	12.0	21,806	11.5	20,979	12.6	18,527	14.2	19,355	14.9	**+0.69** **	[**0.41**, **0.97**]
Maine	3,503	16.0	3,181	17.4	2,772	18.5	2,890	18.8	2,741	17.4	2,726	17.5	2,638	18.5	+0.24	[−0.20, 0.67]
Maryland	11,037	11.3	10,693	12.5	10,357	14.0	9,997	13.5	9,850	12.5	8,567	14.8	8,544	14.8	**+0.49** *	[**0.07**, **0.90**]
Massachusetts	13,806	19.0	13,516	19.0	11,858	20.3	12,819	19.4	12,362	19.0	11,955	20.1	11,646	19.7	+0.11	[−0.16, 0.37]
Michigan	36,876	15.4	37,134	14.4	34,032	16.1	31,576	16.6	30,702	16.4	27,739	16.7	27,069	16.6	**+0.30** *	[**0.02**, **0.59**]
Minnesota	14,305	18.6	14,212	18.2	13,388	18.4	13,532	18.7	13,170	19.1	12,798	20.4	12,170	17.8	+0.1	[−0.33, 0.53]
Mississippi	27,958	19.5	27,797	18.0	24,953	17.2	26,217	18.5	20,881	19.6	22,529	20.1	22,023	20.5	+0.34	[−0.15, 0.84]
Missouri	18,558	18.4	18,201	18.9	16,693	18.6	16,901	18.7	15,000	18.2	13,567	18.8	13,153	16.9	−0.18	[−0.48, 0.12]
Montana	4,490	14.1	4,583	13.1	4,350	11.8	4,198	16.6	4,435	14.8	4,351	13.7	4,296	13.7	+0.11	[−0.67, 0.89]
Nebraska	5,087	16.8	5,029	17.7	4,615	18.2	4,732	16.7	4,399	18.0	4,058	18.7	4,043	18.0	+0.19	[−0.13, 0.51]
Nevada	3,730	19.1	3,701	13.1	3,416	11.4	3,165	13.2	3,382	12.9	3,083	12.2	3,182	13.3	−0.63	[−1.76, 0.49]
New Hampshire	1,712	18.3	1,699	15.2	1,515	16.1	1,489	18.9	1,493	19.1	1,437	19.6	1,395	19.4	+0.54	[−0.14, 1.22]
New Jersey	16,313	13.4	13,951	12.9	13,311	13.6	13,826	16.7	13,894	14.8	13,162	19.1	12,857	18.9	**+1.08** **	[**0.43**, **1.72**]
New Mexico	8,990	15.0	8,858	14.0	8,332	14.8	8,331	14.2	8,208	14.4	8,006	15.1	7,846	14.6	+0.02	[−0.20, 0.24]
New York	56,329	12.0	54,191	11.1	54,527	11.4	54,473	11.1	53,817	12.2	51,499	13.0	48,287	13.6	+0.34	[−0.00, 0.67]
North Carolina	22,360	14.3	22,570	15.5	21,516	15.1	21,367	16.3	19,698	17.8	19,959	18.4	19,549	16.6	+0.55 *	[0.10, 1.00]
North Dakota	3,147	19.0	3,224	19.5	2,932	17.6	3,152	17.1	2,981	17.3	2,808	18.3	2,629	14.7	**−0.56** *	[**−1.09**, **−0.02**]

State/District	2012		2013		2014		2015		2016		2017		2018		2012–2018	
	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	No. of children	% Obesity	Average Annual Change[b]	95% Confidence Interval
Ohio	42,347	14.3	42,280	15.1	37,599	15.9	36,938	15.9	35,916	15.8	34,549	16.9	33,560	17.0	**+0.41** **	[**0.25**, **0.58**]
Oklahoma	17,904	12.6	18,007	13.6	16,868	14.7	16,460	14.2	16,304	14.2	16,073	14.5	15,612	14.9	**+0.29** *	[**0.05**, **0.54**]
Oregon	13,912	17.2	14,124	17.0	13,915	17.5	14,283	17.1	13,976	18.1	14,383	17.8	13,929	16.0	−0.05	[−0.40, 0.30]
Pennsylvania	37,349	11.8	36,958	12.6	33,763	13.8	36,751	15.6	34,122	14.7	34,730	15.4	33,789	16.3	**+0.71** **	[**0.39**, **1.03**]
Rhode Island	2,861	18.7	2,771	19.7	2,381	20.2	2,736	20.1	2,690	18.8	2,523	18.5	2,363	23.8	+0.41	[−0.44, 1.26]
South Carolina	13,021	12.7	13,352	11.4	13,126	15.6	13,127	12.3	12,144	12.4	11,839	11.9	11,594	12.5	−0.1	[−0.81, 0.61]
South Dakota	4,569	14.1	4,524	15.0	3,929	17.0	4,141	18.5	4,267	16.7	4,192	17.5	4,092	17.0	+0.48	[−0.10, 1.06]
Tennessee	18,679	16.0	18,511	16.7	17,367	16.6	17,952	18.5	17,975	18.3	17,234	18.6	17,502	16.3	+0.23	[−0.31, 0.77]
Texas	75,545	15.6	74,815	15.1	72,063	14.5	72,536	16.4	71,315	16.0	70,441	16.1	66,819	16.6	+0.23	[−0.06, 0.53]
Utah	6,517	15.4	6,535	14.3	6,117	14.4	6,318	13.7	6,229	12.9	5,989	13.1	5,623	13.5	**−0.34** *	[**−0.58**, **−0.10**]
Vermont	1,391	20.1	1,360	16.8	1,190	15.0	1,242	17.3	1,169	19.8	1,083	20.9	1,110	19.6	+0.41	[−0.63, 1.45]
Virginia	14,612	15.8	14,568	14.6	14,095	17.8	14,450	14.5	14,163	14.1	14,123	15.6	14,017	17.0	+0.07	[−0.66, 0.79]
Washington	14,154	16.4	13,948	16.6	13,563	18.5	13,438	18.5	12,750	18.4	12,300	19.5	12,185	18.8	**+0.46** *	[**0.15**, **0.77**]
West Virginia	8,285	12.6	8,287	13.4	7,803	12.5	7,972	15.2	8,036	15.3	7,782	16.9	7,663	15.8	**+0.69** **	[**0.26**, **1.12**]
Wisconsin	16,349	17.0	16,215	17.3	14,584	17.8	14,777	17.8	14,244	17.1	13,452	18.2	12,833	18.4	**+0.19** *	[**0.00**, **0.38**]
Wyoming	1,944	8.5	1,935	12.5	1,810	11.5	1,784	10.9	1,667	14.1	1,622	11.3	1,590	13.1	+0.5	[−0.27, 1.27]

[a] Weight status based on BMI-for-age percentile (kg/m^2), with obesity defined as BMI ≥95th percentile.

[b] Average Annual Change is measured in absolute percentage points and represents the coefficient from the simple linear regression;

* = $p < 0.05$,

** = $p < 0.01$,

*** = $p < 0.001$.

Significant values, with $p < 0.05$ by linear regression, are in bold.

Table 3.

Prevalence of Overweight (OW)[a] Among U.S. Children Enrolled in Head Start, by State, Head Start Program Information Reports, 2012–2018.

	2012		2013		2014		2015		2016		2017		2018		2012–2018	
State/District	No. of children	% OW	No. of children	% OW	No. of children	% OW	No. of children	% OW	No. of children	% OW	No. of children	% OW	No. of children	% OW	Average Annual Change[b]	95% Confidence Interval
Overall	906,194	13.7	895,743	13.5	850,645	13.4	858,627	13.3	819,997	13.3	787,402	13.4	759,791	13.7	−0.01	[−0.10, 0.08]
Alabama	18,031	10.3	17,980	10.9	16,979	10.7	16,723	10.4	16,620	10.4	14,448	9.5	14,170	8.9	**−0.26** *	[**−0.49**, **−0.03**]
Alaska	3,155	20.1	3,203	22.2	3,009	19.5	2,986	21.0	2,889	21.4	2,819	19.8	2,793	20.4	−0.07	[−0.57, 0.43]
Arizona	18,921	13.5	18,807	14.0	17,088	13.7	18,143	13.3	17,557	14.1	16,686	13.9	15,928	14.3	+0.09	[−0.06, 0.25]
Arkansas	10,090	12.8	10,639	12.8	9,789	13.9	9,734	13.9	8,895	14.3	8,864	13.3	8,157	14.4	+0.22	[−0.03, 0.47]
California	110,075	15.2	109,624	14.6	104,393	14.1	104,291	13.2	96,441	13.2	89,585	13.2	84,878	13.5	**−0.31** *	[**−0.54**, **−0.09**]
Colorado	11,418	12.8	11,282	12.5	11,522	13.2	11,227	12.7	10,596	12.3	9,595	12.2	9,478	12.4	−0.1	[−0.24, 0.05]
Connecticut	7,775	14.6	7,694	13.8	6,843	13.8	6,660	14.7	5,878	16.2	5,780	17.3	5,875	15.2	+0.40	[−0.10, 0.90]
Delaware	1,265	11.3	1,269	13.1	1,251	14.5	1,249	15.5	2,087	13.8	2,018	12.6	1,888	12.7	+0.09	[−0.64, 0.82]
District of Columbia	3,833	12.0	2,761	13.9	6,326	18.1	5,972	11.3	5,415	16.1	5,521	11.5	5,486	11.1	−0.34	[−1.74, 1.06]
Florida	37,263	12.2	36,593	12.6	37,563	12.2	38,242	12.5	37,205	12.1	37,604	12.0	36,894	11.9	−0.08	[−0.18, 0.02]
Georgia	25,237	13.1	25,054	12.4	23,667	12.1	24,075	11.7	23,525	11.0	21,212	10.7	22,005	11.2	**−0.36** **	[**−0.54**, **−0.19**]
Hawaii	3,035	14.7	3,126	11.8	3,041	13.4	3,090	13.3	3,033	12.8	2,753	12.4	2,652	13.0	−0.16	[−0.61, 0.29]
Idaho	3,745	15.2	3,736	15.0	3,422	15.2	3,611	14.7	3,552	14.0	3,333	15.2	3,317	16.3	+0.09	[−0.26, 0.44]
Illinois	43,537	11.8	42,747	13.7	40,656	14.3	40,060	14.0	36,460	13.7	34,982	13.4	30,303	13.9	+0.18	[−0.20, 0.56]
Indiana	16,091	15.6	14,965	15.0	15,165	14.3	15,676	13.9	14,855	14.9	14,392	14.5	14,125	15.3	−0.05	[−0.36, 0.26]
Iowa	7,630	17.0	7,479	16.6	6,771	17.3	6,892	16.7	6,623	16.4	6,332	16.1	6,358	17.3	−0.04	[−0.27, 0.20]
Kansas	8,742	16.0	8,462	14.4	6,834	15.6	7,817	15.2	7,391	13.7	6,772	14.5	6,529	14.6	−0.21	[−0.55, 0.13]
Kentucky	16,974	14.7	17,385	14.1	16,709	14.6	16,803	14.3	16,016	13.8	15,620	13.7	13,992	13.7	**−0.16** *	[**−0.28**, **−0.05**]
Louisiana	21,737	9.5	22,207	9.8	20,877	9.8	21,806	10.1	20,979	11.0	18,527	11.4	19,355	13.4	**+0.57** **	[**0.27**, **0.88**]
Maine	3,503	18.0	3,181	17.0	2,772	16.3	2,890	15.6	2,741	15.8	2,726	17.5	2,638	17.6	−0.02	[−0.52, 0.47]
Maryland	11,037	13.3	10,693	11.5	10,357	13.1	9,997	11.4	9,850	11.6	8,567	12.3	8,544	12.1	−0.12	[−0.51, 0.26]

State/District	2012		2013		2014		2015		2016		2017		2018		2012–2018	
	No. of children	% OW	No. of children	% OW	No. of children	% OW	No. of children	% OW	No. of children	% OW	No. of children	% OW	No. of children	% OW	Average Annual Change[b]	95% Confidence Interval
Massachusetts	13,806	17.8	13,516	17.0	11,858	16.9	12,819	17.3	12,362	15.8	11,955	16.5	11,646	16.2	**−0.25** *	[**−0.47**, **−0.02**]
Michigan	36,876	14.2	37,134	13.1	34,032	13.5	31,576	14.4	30,702	14.2	27,739	14.0	27,069	14.6	+0.13	[−0.10, 0.37]
Minnesota	14,305	16.7	14,212	15.1	13,388	17.2	13,532	14.8	13,170	16.0	12,798	16.9	12,170	15.9	0	[−0.48, 0.48]
Mississippi	27,958	14.8	27,797	11.7	24,953	12.8	26,217	11.3	20,881	11.8	22,529	12.0	22,023	12.3	−0.28	[−0.81, 0.25]
Missouri	18,558	15.4	18,201	14.7	16,693	14.8	16,901	14.8	15,000	14.4	13,567	15.0	13,153	14.7	−0.07	[−0.21, 0.08]
Montana	4,490	17.8	4,583	14.3	4,350	15.7	4,198	15.2	4,435	15.9	4,351	16.3	4,296	18.9	+0.27	[−0.51, 1.04]
Nebraska	5,087	14.9	5,029	15.0	4,615	14.9	4,732	14.7	4,399	15.4	4,058	14.8	4,043	15.4	+0.06	[−0.08, 0.19]
Nevada	3,730	15.5	3,701	15.8	3,416	12.2	3,165	12.8	3,382	14.3	3,083	14.1	3,182	13.4	−0.27	[−0.91, 0.36]
New Hampshire	1,712	18.5	1,699	15.2	1,515	17.3	1,489	16.9	1,493	17.8	1,437	18.2	1,395	18.2	+0.2	[−0.36, 0.76]
New Jersey	16,313	12.2	13,951	10.2	13,311	10.4	13,826	11.9	13,894	12.2	13,162	13.0	12,857	14.1	+0.47	[−0.03, 0.96]
New Mexico	8,990	14.2	8,858	13.5	8,332	13.2	8,331	13.4	8,208	12.5	8,006	13.1	7,846	13.2	−0.16	[−0.36, 0.04]
New York	56,329	12.9	54,191	13.1	54,527	12.4	54,473	11.9	53,817	12.4	51,499	12.4	48,287	12.7	−0.07	[−0.27, 0.12]
North Carolina	22,360	11.9	22,570	12.6	21,516	12.2	21,367	12.3	19,698	13.2	19,959	12.4	19,549	13.4	+0.18	[−0.02, 0.38]
North Dakota	3,147	18.7	3,224	15.8	2,932	15.2	3,152	15.0	2,981	16.8	2,808	14.9	2,629	16.1	−0.29	[−0.92, 0.35]
Ohio	42,347	13.7	42,280	14.5	37,599	13.6	36,938	13.2	35,916	14.2	34,549	14.0	33,560	14.2	+0.04	[−0.19, 0.27]
Oklahoma	17,904	12.5	18,007	12.8	16,868	13.7	16,460	13.5	16,304	13.4	16,073	14.3	15,612	13.6	**+0.21** *	[**0.02**, **0.41**]
Oregon	13,912	15.3	14,124	16.7	13,915	15.7	14,283	15.6	13,976	16.6	14,383	16.8	13,929	16.1	+0.12	[−0.16, 0.41]
Pennsylvania	37,349	11.5	36,958	11.1	33,763	12.2	36,751	13.2	34,122	13.1	34,730	12.3	33,789	14.1	**+0.40** *	[**0.08**, **0.71**]
Rhode Island	2,861	16.1	2,771	15.3	2,381	19.7	2,736	24.8	2,690	25.8	2,523	19.6	2,363	11.9	+0.07	[−2.61, 2.76]
South Carolina	13,021	10.9	13,352	10.0	13,126	11.8	13,127	10.8	12,144	9.9	11,839	9.1	11,594	10.4	−0.19	[−0.59, 0.22]
South Dakota	4,569	13.9	4,524	18.4	3,929	15.1	4,141	15.1	4,267	15.3	4,192	16.4	4,092	17.1	+0.21	[−0.56, 0.97]
Tennessee	18,679	11.9	18,511	12.5	17,367	13.0	17,952	11.9	17,975	12.3	17,234	12.5	17,502	13.2	+0.11	[−0.12, 0.35]
Texas	75,545	14.5	74,815	13.3	72,063	12.3	72,536	13.5	71,315	12.5	70,441	13.2	66,819	13.4	−0.12	[−0.48, 0.24]
Utah	6,517	11.8	6,535	12.2	6,117	13.0	6,318	12.4	6,229	11.5	5,989	12.9	5,623	13.6	+0.19	[−0.13, 0.51]
Vermont	1,391	15.0	1,360	17.9	1,190	14.1	1,242	16.5	1,169	15.7	1,083	17.0	1,110	17.5	+0.26	[−0.41, 0.93]
Virginia	14,612	13.6	14,568	13.5	14,095	12.4	14,450	12.0	14,163	13.9	14,123	14.3	14,017	14.5	+0.21	[−0.23, 0.64]
Washington	14,154	16.4	13,948	16.4	13,563	16.4	13,438	16.7	12,750	16.7	12,300	16.5	12,185	16.5	+0.03	[−0.04, 0.09]

State/District	2012		2013		2014		2015		2016		2017		2018		2012–2018	
	No. of children	% OW	No. of children	% OW	No. of children	% OW	No. of children	% OW	No. of children	% OW	No. of children	% OW	No. of children	% OW	Average Annual Change[b]	95% Confidence Interval
West Virginia	8,285	11.0	8,287	10.6	7,803	11.0	7,972	11.6	8,036	11.9	7,782	13.1	7,663	14.8	**+0.62** **	[**0.27**, **0.96**]
Wisconsin	16,349	15.5	16,215	16.1	14,584	15.9	14,777	15.4	14,244	15.0	13,452	16.2	12,833	16.1	+0.04	[−0.20, 0.27]
Wyoming	1,944	10.0	1,935	13.6	1,810	13.6	1,784	13.0	1,667	14.8	1,622	13.0	1,590	14.3	+0.46	[−0.17, 1.09]

[a] Weight status based on BMI-for-age percentile (kg/m^2), with overweight defined as BMI 85th to <95th percentile.

[b] Average Annual Change is measured in absolute percentage points and represents the coefficient from the simple linear regression;

* = $p < 0.05$,

** = $p < 0.01$,

*** = $p < 0.001$.

Significant values, with $p < 0.05$ by linear regression, are in bold.