

**Overweight and Obesity Prevalence among Children Ages 2 through 4 Years  
Enrolled in the Colorado WIC Program\* During 2013**

**New methodology:** In 2010, the Centers for Disease Control and Prevention (CDC) announced they would no longer produce the PedNSS (Pediatric Nutrition Surveillance System) reports. CDC published the last PedNSS results for 2011. States are now tasked with conducting their own analysis on their data. Of all the many data elements reported by PedNSS, pediatric overweight/obese data were viewed as most essential. CDC created an analysis methodology to obtain pediatric overweight/obese data that use a specific data set collected by all state WIC Programs, the WIC Participant and Program Characteristics (WIC PC) file. States have the option to use this methodology to produce their state-specific pediatric overweight/obese data.

During the summer of 2012, the Colorado WIC Program conducted an analysis of its 2012 PC file to assess the prevalence of overweight and obese children ages 2 through 4 years. The 2012 Colorado WIC PC file includes all actively enrolled participants in the WIC data base during the month of April 2012. This methodology is called “point prevalence methodology” and differs from past methodologies CDC produced. It contains children enrolled in the Colorado WIC Program during one month only. It does not contain the entire number of children participating in WIC over a one year time period (as previously presented in PedNSS). Hence, the number of children with biologically plausible data (data that are assumed accurate and consistent with what makes sense biologically) to analyze from 2012 is smaller than the number from past PedNSS estimates. Because of this new analysis methodology, the prevalence of overweight and obesity among children ages 2 through 4 years receiving WIC services from the WIC PC file are not directly comparable to past PedNSS prevalence estimates.

Point prevalence methodology will be used to generate overweight and obese prevalence estimates in 2012 and beyond. It is recommended that the 2012 WIC PC estimates serve as a new baseline for monitoring trends in future years. The **2012 Pediatric Overweight/Obese Data** can be found on the Colorado Department of Public Health and Environment’s Women, Infants, and Children webpage under Agency Staff Reports: <http://www.colorado.gov/cs/Satellite/CDPHE-PSD/CBON/1251618421096> .

**2013 State Prevalence:** Based on the new point prevalence methodology, the 2013 state prevalence of overweight and obesity among Colorado WIC Program participants ages 2 through 4 years is shown in Table 1. The prevalence estimate is reported along with its corresponding confidence interval (refer to the description about confidence intervals below). In 2013, 14.1 percent of low income children ages 2 through 4 years in Colorado were overweight, 7.9 percent were obese, and 22.0 percent were overweight or obese.

\*The Colorado Special Supplemental Nutrition Program for Women, Infants, and Children is commonly referred to as the Colorado WIC Program

**Table 1. Prevalence of overweight and obesity among children ages 2 through 4 years enrolled in the Colorado WIC Program (N = 33,875), 2013**

	n	Overweight 85 <sup>th</sup> -<95 <sup>th</sup> percentile <sup>^</sup> % (95% CI)	Obese >=95 <sup>th</sup> percentile <sup>^</sup> % (95% CI)	Overweight or Obese >=85 <sup>th</sup> percentile <sup>^</sup> % (95% CI)
Colorado	33,875	14.1 (13.8 - 14.5)	7.9 (7.6 - 8.2)	22.0 (21.6-22.5)

CI: Confidence Interval

<sup>^</sup>Based on 2000 CDC growth chart percentiles for BMI-for-age for children 2 years of age and older.

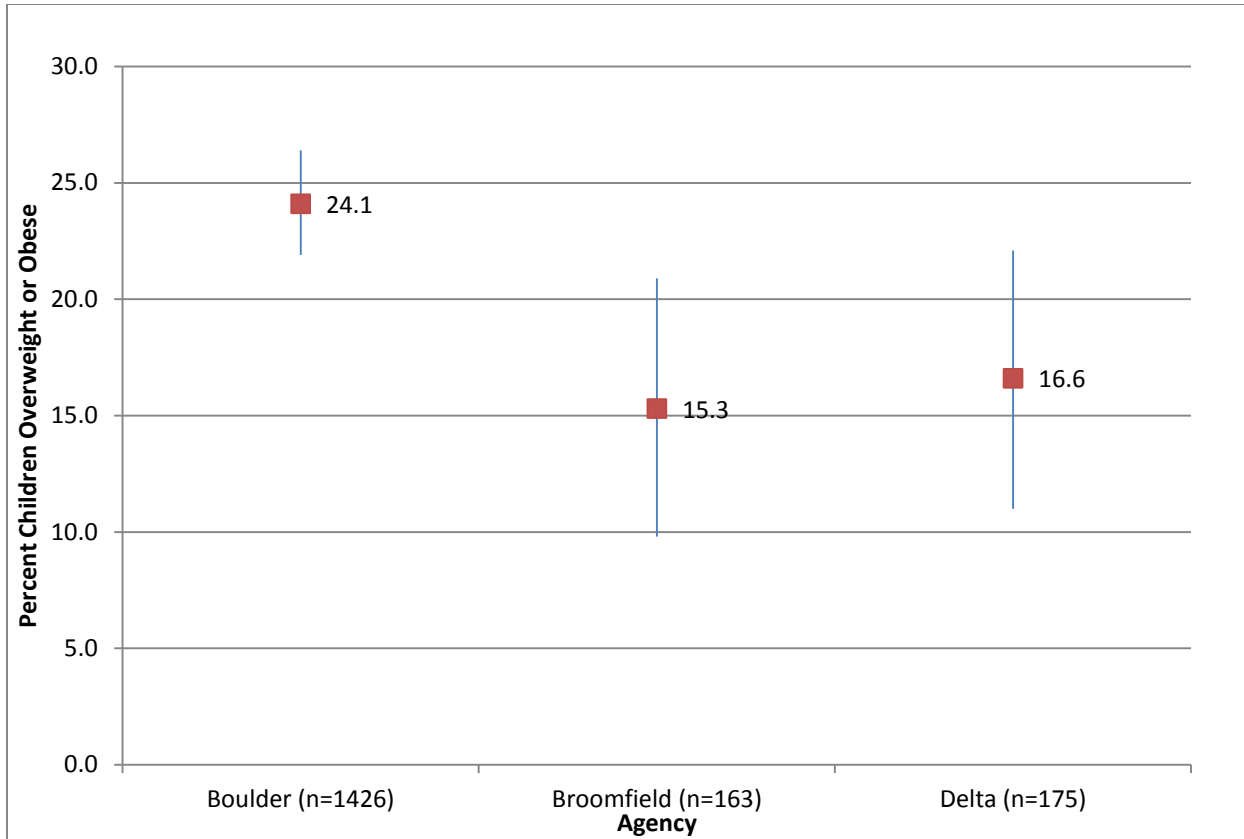
Data Source: 2013 WIC Participant and Program Characteristics (Colorado WIC PC) file

Note that the total number of children ages 2 through 4 years available for analysis after exclusions of implausible records was 33,875. This sample size is smaller than the sample sizes analyzed in the past by the PedNSS. The decreased sample size results in increased variability in estimates, which is why it becomes important to look at the confidence intervals, especially when making comparisons. It should be noted that prevalence estimates are suppressed for counties, agencies, and clinics with a sample size less than 100.

**Confidence Intervals (CI):** Confidence intervals are used to describe the possible margin of error of an estimated prevalence or rate. This report provides 95 percent confidence intervals. A 95 percent confidence interval indicates that 95 out of 100 times, the “true” prevalence value will be contained between the upper and lower limits of that confidence interval. Confidence intervals are directly affected by sample size. If the sample size is small, the confidence interval will likely be wide. Conversely, if the sample size is large, the confidence interval will likely be narrow. Confidence intervals are important for understanding if differences are statistically significant.

The CI example shows the prevalence of overweight or obese children for three agencies. The prevalence estimate is indicated by the red marker and the confidence interval is indicated by the blue line. Broomfield has the longest line and the smallest sample size, while Boulder has the shortest line and the largest sample size. The lines for Boulder and Broomfield do not overlap, so the prevalence estimates are statistically significantly different. In other words, the prevalence of overweight or obese children ages 2 through 4 years in Boulder County is statistically higher compared to Broomfield County. When comparing prevalence estimates for Boulder and Delta, the blue lines (or confidence intervals) do overlap signifying that there is no statistical difference between the two county estimates.

**CI Example: Prevalence of overweight or obese children ages 2 through 4 years enrolled in the Colorado WIC Program by select agencies, 2013**



**Data Interpretation:** Due to changes in methodology, these are a few things that cannot and can be done with these new estimates.

**Cannot:**

- Compare 2012 and later Colorado WIC PC file estimates to the PedNSS Colorado estimates from 2011 and earlier.
- Compare Colorado WIC PC data to other states' PedNSS data.

**Can:**

- Use the 2012 estimates as the new baseline for overweight and obese children ages 2 through 4. Use post-2012 estimates when available to track trends.
- Compare data within the same year to other agencies, clinics, counties, and the state.
- Compare with future data when available – make sure to check the confidence interval overlap when making comparisons by year.

The following pages indicate the prevalence of overweight and obesity among children ages 2 through 4 years in 2013 by local WIC agency (Table 2), WIC clinic (Table 3), and county of WIC clinic (Table 4) along with their respective confidence intervals.

**Note to Users of these Data:** Use the data as you monitor efforts to achieve healthy weight among the children you serve in your agency. It is helpful to look at the prevalence of overweight and obesity together because the sum of these values tells a much broader story of the burden among the population being served. Remember that although the 2013 data are valid, WIC PC overweight and obese estimates are not comparable to PedNSS overweight and obese estimates.

Other partner programs within your broader agencies or external organizations may also find the data to be a useful surveillance tool as programmatic efforts targeting the health of children in early childhood emerge. Specifically, local WIC agencies can use the data to monitor progress related to early childhood obesity prevention nutrition education plans.

The data are posted on the Colorado WIC Program's web site. Click "Agency Staff", then "Reports". Scroll past the PedNSS tables to locate the 2012 and 2013 data.

**Future plans:** When 2014 data are released, three years of data will be aggregated (2012-2014) at the local WIC agency level to supply overweight and obese estimates to agencies with smaller caseloads. Colorado will continue to explore ways to identify data elements (other than pediatric overweight/obesity) that were once available through PedNSS.

**Table 1. Prevalence of overweight and obesity among children ages 2 through 4 years enrolled in the Colorado WIC Program (N = 33,875), 2013**

	n	<b>Overweight 85<sup>th</sup>-&lt;95<sup>th</sup> percentile<sup>^</sup> % (95% CI)</b>	<b>Obese &gt;=95<sup>th</sup> percentile<sup>^</sup> % (95% CI)</b>	<b>Overweight or Obese &gt;=85<sup>th</sup> percentile<sup>^</sup> % (95% CI)</b>
Colorado	33,875	14.1 (13.8 - 14.5)	7.9 (7.6 - 8.2)	22.0 (21.6-22.5)

Table 2. Prevalence of overweight and obesity among children ages 2 through 4 years enrolled in the Colorado Women, Infants, and Children (WIC) program by WIC agency, Colorado, 2013

WIC Agency	Overweight 85th-<95th percentile^			Obese >=95th percentile^			Overweight or Obese >=85th percentile^			N
	%	Lower CI	Upper CI	%	Lower CI	Upper CI	%	Lower CI	Upper CI	
Baca County Public Health Agency	*	*	*	*	*	*	*	*	*	30
Bent County Public Health	*	*	*	*	*	*	*	*	*	53
Boulder County Public Health	14.8	12.96	16.65	9.3	7.82	10.85	24.1	21.92	26.36	1425
Broomfield County Health and Human Services	11.0	6.18	15.91	4.3	1.15	7.44	15.3	9.75	20.93	163
Clear Creek County Public and Environmental Health	*	*	*	*	*	*	*	*	*	25
Community Health Services Pitkin County	*	*	*	*	*	*	*	*	*	19
Delta County Health Department	12.0	7.14	16.86	4.6	1.45	7.70	16.6	11.01	22.13	175
Denver Health Medical Center	14.0	13.00	14.94	8.2	7.44	8.97	22.2	21.01	23.33	4912
Dolores County Public Health	*	*	*	*	*	*	*	*	*	8
Eagle County Public Health	16.4	11.95	20.88	7.5	4.30	10.63	23.9	18.74	29.02	268
El Paso County Public Health	13.4	12.42	14.31	4.5	3.90	5.05	17.8	16.78	18.90	4983
Garfield County Public Health	10.2	7.36	13.11	5.3	3.21	7.48	15.6	12.14	19.02	430
Grand County Public Health	*	*	*	*	*	*	*	*	*	64
Gunnison County Public Health	*	*	*	*	*	*	*	*	*	77
Jefferson County Department of Health and Environment	13.5	12.07	14.95	8.4	7.21	9.54	21.9	20.14	23.63	2161
Kit Carson County Health and Human Services	13.3	7.53	19.14	12.6	6.92	18.26	25.9	18.44	33.41	135
Larimer County Department of Health and Environment	16.6	14.65	18.63	7.9	6.43	9.32	24.5	22.22	26.82	1346
Las Animas--Huerfano Counties District Health Department	13.9	8.60	19.28	12.1	7.09	17.15	26.1	19.29	32.83	165
Lincoln County Public Health	*	*	*	*	*	*	*	*	*	63
Mesa County Health Department	14.8	12.47	17.07	9.6	7.71	11.54	24.4	21.61	27.19	914
Montezuma County Public Health Department	11.1	6.97	15.25	6.2	3.04	9.40	17.3	12.35	22.32	225
Montrose County Nursing Service	14.2	11.15	17.20	6.2	4.12	8.31	20.4	16.90	23.88	515
Northeast Colorado Health Department	18.7	16.12	21.33	10.9	8.79	12.95	29.6	26.55	32.64	865
Northwest Colorado Visiting Nurse Association	8.0	3.80	12.25	5.6	1.99	9.12	13.6	8.25	18.91	162
Otero County Health Department	17.3	13.48	21.18	10.4	7.30	13.50	27.7	23.18	32.29	375
Ouray County Public Health	*	*	*	*	*	*	*	*	*	5
Park County Public Health	*	*	*	*	*	*	*	*	*	47
Prowers County Public Health	15.1	9.87	20.24	12.4	7.59	17.14	27.4	20.95	33.89	186
Pueblo City-County Health Department	16.2	14.53	17.91	9.3	7.93	10.59	25.5	23.48	27.48	1825
Rio Blanco County Department of Public Health and	*	*	*	*	*	*	*	*	*	35
San Juan Basin Health Department	11.5	8.14	14.77	7.3	4.56	9.96	18.7	14.66	22.77	358
San Miguel County Department of Health and Environment	*	*	*	*	*	*	*	*	*	23
Summit County Public Health	8.2	2.98	13.39	4.5	0.59	8.50	12.7	6.40	19.05	110
Sunrise Community Health, Inc.	15.0	13.15	16.86	10.4	8.79	11.96	25.4	23.12	27.65	1426
Teller County Public Health	*	*	*	*	*	*	*	*	*	95
Tri-County Health Department	13.6	12.85	14.26	8.4	7.81	8.96	21.9	21.08	22.79	9017
Upper Arkansas Area Council of Governments	13.0	10.11	15.83	5.8	3.83	7.82	18.8	15.47	22.13	532
Valley-Wide Health Systems, Inc.	15.8	13.01	18.60	9.3	7.05	11.49	25.1	21.76	28.40	658
<b>Colorado</b>	<b>14.1</b>	<b>13.76</b>	<b>14.50</b>	<b>7.9</b>	<b>7.58</b>	<b>8.16</b>	<b>22.0</b>	<b>21.57</b>	<b>22.45</b>	<b>33875</b>

\*Percentages are not calculated if <100 records are available for analysis after exclusions.

^Based on 2000 CDC growth chart percentiles for BMI-for-age for children 2 years of age and older.

CI: Confidence Interval (95%)

Data Source: 2013 WIC Participant and Program Characteristics (WIC PC) file



Clinic	Overweight 85th-<95th percentile^			Obese >=95th percentile^			Overweight or Obese >=85th percentile^			N
	%	Lower CI	Upper CI	%	Lower CI	Upper CI	%	Lower CI	Upper CI	
Holyoke WIC Clinic	*	*	*	*	*	*	*	*	*	59
Hot Sulphur Springs WIC Clinic	*	*	*	*	*	*	*	*	*	58
Hotchkiss WIC Clinic	*	*	*	*	*	*	*	*	*	14
Hugo WIC Clinic	*	*	*	*	*	*	*	*	*	19
Idaho Springs WIC Clinic	*	*	*	*	*	*	*	*	*	22
Ignacio WIC Clinic	*	*	*	*	*	*	*	*	*	32
Iliff WIC Clinic	13.2	11.65	14.83	8.2	6.91	9.48	21.4	19.51	23.36	1745
Jackson County WIC Clinic	*	*	*	*	*	*	*	*	*	3
Julesburg WIC Clinic	*	*	*	*	*	*	*	*	*	20
La Junta WIC Clinic	16.6	10.91	22.23	11.2	6.43	16.05	27.8	20.99	34.64	169
Lafayette WIC Clinic	14.6	10.09	19.08	7.5	4.14	10.86	22.1	16.80	27.37	240
Lake Plaza WIC Clinic	13.2	10.82	15.59	6.4	4.69	8.13	19.6	16.82	22.41	780
Lakewood WIC Clinic	12.0	10.05	13.98	7.3	5.72	8.85	19.3	16.92	21.68	1057
Lamar WIC Clinic	15.1	9.87	20.24	12.4	7.59	17.14	27.4	20.95	33.89	186
Leadville WIC Clinic	*	*	*	*	*	*	*	*	*	49
Limon WIC Clinic	*	*	*	*	*	*	*	*	*	44
Lone Tree WIC Clinic	8.5	4.83	12.21	5.8	2.73	8.93	14.3	9.71	18.99	223
Longmont WIC Clinic	15.5	13.04	17.93	10.5	8.45	12.59	26.0	23.04	28.97	846
Loveland WIC Clinic	12.6	9.54	15.68	8.0	5.46	10.47	20.6	16.83	24.32	452
Meeker WIC Clinic	*	*	*	*	*	*	*	*	*	17
Montbello WIC Clinic	13.4	11.29	15.51	7.4	5.77	9.03	20.8	18.28	23.32	1000
Monte Vista WIC Clinic	11.5	6.14	16.88	12.2	6.72	17.74	23.7	16.58	30.90	139
Montrose WIC Clinic	14.3	10.95	17.62	5.9	3.62	8.09	20.1	16.32	23.96	427
North Broadway WIC Clinic	15.6	13.34	17.87	10.6	8.71	12.57	26.2	23.49	28.99	987
North WIC Clinic	14.1	12.45	15.70	4.4	3.48	5.41	18.5	16.70	20.34	1755
Northglenn WIC Clinic	15.3	13.47	17.21	8.7	7.26	10.18	24.1	21.84	26.27	1434
Norwood WIC Clinic	*	*	*	*	*	*	*	*	*	3
Nucla WIC Clinic	*	*	*	*	*	*	*	*	*	19
Olathe WIC Clinic	*	*	*	*	*	*	*	*	*	69
Ordway WIC Clinic	*	*	*	*	*	*	*	*	*	53
Ouray WIC Clinic	*	*	*	*	*	*	*	*	*	5
Pagosa Springs WIC Clinic	12.5	6.04	18.96	5.8	1.21	10.33	18.3	10.72	25.82	104
Pueblo WIC Clinic	16.2	14.53	17.95	9.2	7.89	10.57	25.5	23.46	27.49	1798
Rangely WIC Clinic	*	*	*	*	*	*	*	*	*	18
Rifle WIC Clinic	7.2	3.67	10.76	6.7	3.30	10.16	13.9	9.20	18.69	208
Rocky Ford WIC Clinic	20.9	14.40	27.43	7.8	3.53	12.15	28.8	21.50	36.01	153
Salida WIC Clinic	*	*	*	*	*	*	*	*	*	78
Steamboat Springs WIC Clinic	*	*	*	*	*	*	*	*	*	52
Sterling WIC Clinic	16.4	11.07	21.73	9.0	4.88	13.11	25.4	19.13	31.66	189
Summit County WIC Clinic	8.2	2.98	13.39	4.5	0.59	8.50	12.7	6.40	19.05	110
Telluride WIC Clinic	*	*	*	*	*	*	*	*	*	20
Trinidad WIC Clinic	10.6	4.85	16.39	10.6	4.85	16.39	21.2	13.58	28.90	113
Walsenburg WIC Clinic	*	*	*	*	*	*	*	*	*	52
Westcliffe WIC Clinic	*	*	*	*	*	*	*	*	*	13
Westside Family Health Center	15.0	13.50	16.42	9.2	7.98	10.34	24.1	22.36	25.87	2293
Yuma WIC Clinic	18.6	11.80	25.41	18.6	11.80	25.41	37.2	28.76	45.66	129
<b>Colorado</b>	<b>14.1</b>	<b>13.76</b>	<b>14.50</b>	<b>7.9</b>	<b>7.58</b>	<b>8.16</b>	<b>22.0</b>	<b>21.57</b>	<b>22.45</b>	<b>33875</b>

\*Percentages are not calculated if <100 records are available for analysis after exclusions.

^Based on 2000 CDC growth chart percentiles for BMI-for-age for children 2 years of age and older.

CI: Confidence Interval (95%)

Data Source: 2013 WIC Participant and Program Characteristics (WIC PC) file





County of WIC Clinic	Overweight 85th-<95th percentile^			Obese >=95th percentile^			Overweight or Obese >=85th percentile^			N
	%	Lower CI	Upper CI	%	Lower CI	Upper CI	%	Lower CI	Upper CI	
Routt	*	*	*	*	*	*	*	*	*	52
Saguache	*	*	*	*	*	*	*	*	*	99
San Miguel	*	*	*	*	*	*	*	*	*	23
Sedgwick	*	*	*	*	*	*	*	*	*	20
Summit	8.2	2.98	13.39	4.5	0.59	8.50	12.7	6.40	19.05	110
Teller	*	*	*	*	*	*	*	*	*	95
Washington	*	*	*	*	*	*	*	*	*	25
Weld	15.0	13.15	16.86	10.4	8.79	11.96	25.4	23.12	27.65	1426
Yuma	18.6	11.80	25.41	18.6	11.80	25.41	37.2	28.76	45.66	129
<b>Colorado</b>	<b>14.1</b>	<b>13.76</b>	<b>14.50</b>	<b>7.9</b>	<b>7.58</b>	<b>8.16</b>	<b>22.0</b>	<b>21.57</b>	<b>22.45</b>	<b>33875</b>

\*Percentages are not calculated if <100 records are available for analysis after exclusions.

^Based on 2000 CDC growth chart percentiles for BMI-for-age for children 2 years of age and older.

CI: Confidence Interval (95%)

Data Source: 2013 WIC Participant and Program Characteristics (WIC PC) file