

**Overweight and Obesity Prevalence among Children Ages 2 through 4 Years  
Enrolled in the Colorado WIC Program\* During 2015**

**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 used CDC's analysis methodology to analyze 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 actual height and weight measurements of 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 - 2014 Pediatric Overweight/Obese Data** can be found on the Colorado Department of Public Health and Environment's Women, Infants, and Children webpage under WIC Reports.gov: <https://www.colorado.gov/pacific/cdphe/wic-reports>.

**2015 State Prevalence:** Based on the new point prevalence methodology, the 2015 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 2015, 13.9 percent of low income children ages 2 through 4 years in Colorado were overweight, 7.3 percent were obese, and 21.2 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.

\*\*The 2011 PedNSS data represented a partial sample as Colorado WIC changed its program software. During data collection in 2011, some agencies were oversampled thus contributing to a temporary rise in the overweight and obesity rates.

**Table 1. Prevalence of overweight and obesity among children ages 2 through 4 years enrolled in the Colorado WIC Program (N = 30,217), during April 2015**

	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	30,217	13.9 (13.5 - 14.3)	7.3 (7.0 - 7.6)	21.2 (20.7 - 21.7)

CI: Confidence Interval

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

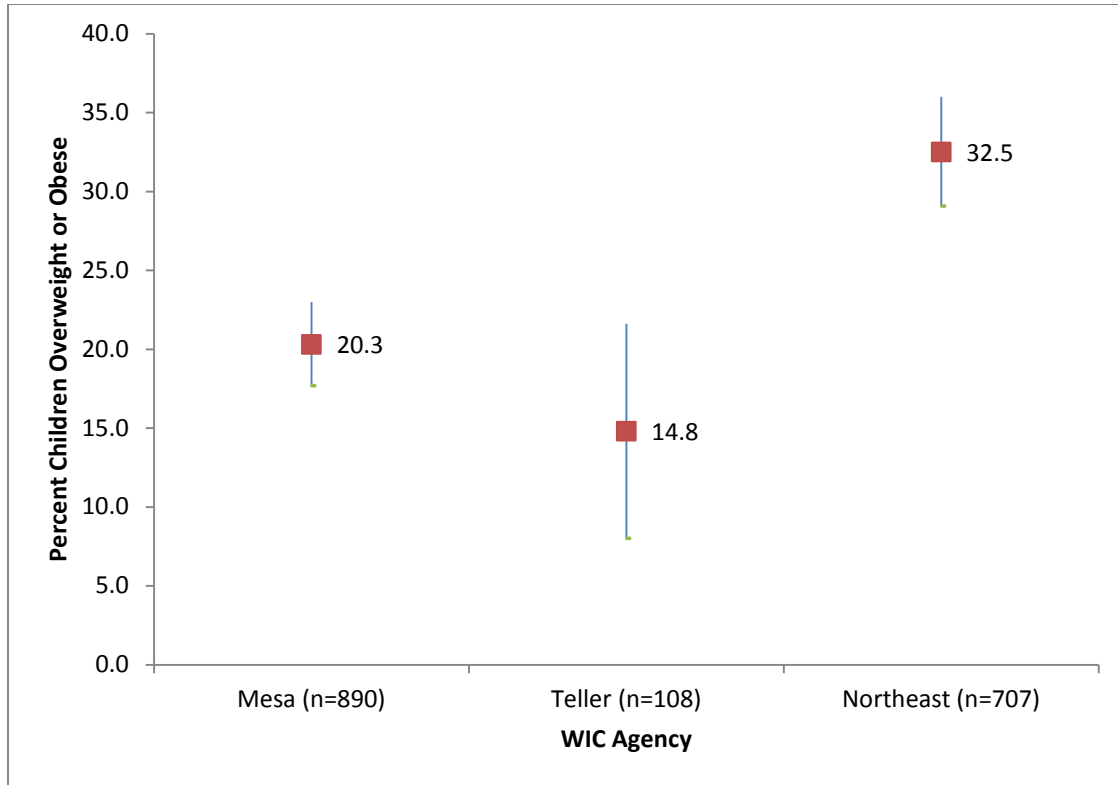
Data Source: 2015 WIC Participant and Program Characteristics (Colorado WIC PC) file

Note that the total number of children ages 2 through 4 years available for analysis after exclusions of implausible records was 30,217. 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 below shows the prevalence of overweight or obese children for three WIC agencies. The prevalence estimate is indicated by the red marker and the confidence interval is indicated by the blue line. Teller has the longest line and the smallest sample size, while Mesa has the shortest line and the largest sample size. The lines for Mesa and Northeast and the lines for Teller and Northeast 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 Northeast is statistically higher compared to Mesa and compared to Teller. When comparing prevalence estimates for Mesa and Teller, the blue lines (or confidence intervals) do overlap signifying that there is no statistical difference between the two agency estimates.

**CI Example: Prevalence of overweight or obese children ages 2 through 4 years enrolled in the Colorado WIC Program by select WIC agencies, 2015**



**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 Colorado PedNSS 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 2015 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 2015 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 "Local agencies", then "Reports". Scroll past the PedNSS tables to locate the 2012, 2013, 2014, and 2015 data.

Table 2. Prevalence of overweight and obesity among children ages 2 through 4 years enrolled in the Women, Infants, and Children (WIC) Program by WIC agency, Colorado, 2015

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	*	*	*	*	*	*	*	*	*	35
Bent County Public Health	*	*	*	*	*	*	*	*	*	43
Boulder County Public Health	13.3	11.34	15.18	9.7	8.00	11.35	22.9	20.55	25.32	1199
Broomfield County Health and Human Services	15.7	10.33	21.13	6.7	3.02	10.46	22.5	16.28	28.66	178
Clear Creek County Public and Environmental Health	*	*	*	*	*	*	*	*	*	31
Community Health Services Pitkin County	*	*	*	*	*	*	*	*	*	23
Delta County Health Department	11.6	6.75	16.37	4.6	1.46	7.79	16.2	10.64	21.73	173
Denver Health Medical Center	14.6	13.55	15.65	7.5	6.68	8.25	22.1	20.82	23.30	4315
Dolores County Public Health	*	*	*	*	*	*	*	*	*	13
Eagle County Public Health	12.0	8.06	15.91	7.1	4.01	10.22	19.1	14.36	23.85	267
El Paso County Public Health	13.8	12.77	14.74	5.2	4.56	5.84	19.0	17.83	20.08	4674
Garfield County Public Health	11.8	8.56	14.97	4.9	2.72	7.00	16.6	12.92	20.33	391
Grand County Public Health	*	*	*	*	*	*	*	*	*	48
Gunnison County Public Health	*	*	*	*	*	*	*	*	*	76
Jefferson County Public Health	13.4	11.89	14.99	7.2	6.03	8.38	20.6	18.80	22.49	1860
Kit Carson County Health and Human Services	15.0	8.35	21.74	9.7	4.18	15.28	24.8	16.70	32.86	113
Larimer County Department of Health and Environment	14.0	11.92	15.99	8.1	6.45	9.65	22.0	19.57	24.44	1118
Las Animas--Huerfano Counties District Health Department	14.4	9.00	19.75	7.2	3.23	11.14	21.6	15.26	27.86	167
Lincoln County Public Health	*	*	*	*	*	*	*	*	*	49
Mesa County Health Department	11.8	9.67	13.92	8.5	6.70	10.38	20.3	17.69	22.99	890
Montezuma County Public Health Department	20.9	15.23	26.56	10.4	6.18	14.71	31.3	24.88	37.81	201
Montrose County Nursing Service	12.9	9.92	15.83	5.4	3.43	7.43	18.3	14.90	21.72	497
Northeast Colorado Health Department	21.2	18.20	24.24	11.3	8.97	13.66	32.5	29.07	35.99	707
Northwest Colorado Visiting Nurse Association	8.5	4.21	12.86	4.3	1.14	7.39	12.8	7.64	17.97	164
Otero County Health Department	18.2	14.40	22.05	9.1	6.26	11.96	27.3	22.93	31.76	395
Ouray County Public Health	*	*	*	*	*	*	*	*	*	11
Park County Public Health	*	*	*	*	*	*	*	*	*	54
Prowers County Public Health	18.2	12.17	24.31	10.7	5.84	15.55	28.9	21.81	36.06	159
Pueblo City-County Health Department	13.1	11.45	14.83	8.2	6.79	9.52	21.3	19.25	23.34	1545
Rio Blanco County Department of Public Health and Environment	*	*	*	*	*	*	*	*	*	38
San Juan Basin Health Department	9.8	6.48	13.20	7.9	4.83	10.91	17.7	13.40	22.01	305
San Miguel County Department of Health and Environment	*	*	*	*	*	*	*	*	*	22
Summit County Public Health	*	*	*	*	*	*	*	*	*	94
Sunrise Community Health, Inc.	17.1	15.08	19.08	10.3	8.65	11.88	27.3	24.98	29.71	1364
Teller County Public Health	9.3	3.70	14.81	5.6	1.17	9.95	14.8	8.01	21.62	108
Tri-County Health Department	13.4	12.61	14.11	7.2	6.60	7.74	20.5	19.64	21.42	7910
Upper Arkansas Area Council of Governments	14.6	11.22	17.96	4.5	2.50	6.44	19.1	15.31	22.81	425
Valley-Wide Health Systems, Inc.	13.0	10.17	15.78	6.7	4.58	8.75	19.6	16.32	22.96	555
<b>Colorado</b>	<b>13.9</b>	<b>13.51</b>	<b>14.29</b>	<b>7.3</b>	<b>6.99</b>	<b>7.58</b>	<b>21.2</b>	<b>20.73</b>	<b>21.65</b>	<b>30217</b>

\*Percentages are not calculated if &lt;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: 2015 WIC Participant and Program Characteristics (WIC PC) file

Prepared by Health Surveys and Evaluation Branch, Center for Health and Environmental Data, Colorado Department of Public Health and Environment, October 2015



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	
Hugo WIC Clinic	*	*	*	*	*	*	*	*	*	11
Idaho Springs WIC Clinic	*	*	*	*	*	*	*	*	*	31
Ignacio WIC Clinic	*	*	*	*	*	*	*	*	*	19
Iliff WIC Clinic	12.4	10.74	14.09	6.3	5.05	7.50	18.7	16.72	20.67	1498
Jackson County WIC Clinic	*	*	*	*	*	*	*	*	*	4
Julesburg WIC Clinic	*	*	*	*	*	*	*	*	*	34
La Junta WIC Clinic	20.0	14.18	25.82	16.2	10.86	21.58	36.2	29.23	43.21	185
Lafayette WIC Clinic	12.7	8.32	17.00	7.4	4.00	10.84	20.1	14.86	25.32	229
Lake Plaza WIC Clinic	12.1	9.77	14.41	5.8	4.12	7.44	17.9	15.14	20.60	761
Lakewood WIC Clinic	11.8	9.55	13.98	5.6	4.05	7.22	17.4	14.80	20.01	816
Lamar WIC Clinic	18.6	12.42	24.76	10.9	5.95	15.84	29.5	22.25	36.72	156
Leadville WIC Clinic	*	*	*	*	*	*	*	*	*	51
Limon WIC Clinic	*	*	*	*	*	*	*	*	*	38
Lone Tree WIC Clinic	14.4	9.83	18.99	6.1	2.99	9.24	20.5	15.25	25.79	229
Longmont WIC Clinic	14.7	11.99	17.34	11.0	8.60	13.33	25.6	22.33	28.93	675
Loveland WIC Clinic	16.4	12.43	20.41	7.5	4.63	10.29	23.9	19.29	28.47	335
Lowry Family Health Center	12.6	9.68	15.52	8.6	6.13	11.07	21.2	17.61	24.79	500
Meeker WIC Clinic	*	*	*	*	*	*	*	*	*	21
Montbello WIC Clinic	11.7	9.66	13.76	5.2	3.76	6.58	16.9	14.49	19.27	948
Monte Vista WIC Clinic	11.7	5.35	17.95	7.8	2.51	13.02	19.4	11.65	27.19	103
Montrose WIC Clinic	13.7	10.38	17.02	3.6	1.81	5.40	17.3	13.66	20.96	416
North Broadway WIC Clinic	16.9	14.49	19.22	10.1	8.23	12.04	27.0	24.19	29.79	967
North WIC Clinic	14.9	13.11	16.62	5.4	4.32	6.56	20.3	18.32	22.29	1581
Northglenn WIC Clinic	17.1	15.01	19.13	8.5	6.97	10.02	25.6	23.17	27.96	1283
Norwood WIC Clinic	*	*	*	*	*	*	*	*	*	2
Nucla WIC Clinic	*	*	*	*	*	*	*	*	*	19
Olathe WIC Clinic	*	*	*	*	*	*	*	*	*	62
Ordway WIC Clinic	*	*	*	*	*	*	*	*	*	37
Ouray WIC Clinic	*	*	*	*	*	*	*	*	*	11
Pagosa Springs WIC Clinic	*	*	*	*	*	*	*	*	*	85
Pueblo WIC Clinic	13.2	11.52	14.92	8.2	6.80	9.56	21.4	19.34	23.46	1528
Rangely WIC Clinic	*	*	*	*	*	*	*	*	*	17
Rifle WIC Clinic	8.6	4.65	12.52	3.0	0.62	5.44	11.6	7.11	16.12	198
Rocky Ford WIC Clinic	18.5	12.65	24.34	3.5	0.71	6.22	22.0	15.73	28.20	173
Salida WIC Clinic	*	*	*	*	*	*	*	*	*	42
Steamboat Springs WIC Clinic	*	*	*	*	*	*	*	*	*	57
Sterling WIC Clinic	9.8	4.48	15.20	10.7	5.10	16.21	20.5	13.23	27.76	122
Summit County WIC Clinic	*	*	*	*	*	*	*	*	*	94
Telluride WIC Clinic	*	*	*	*	*	*	*	*	*	20
Trinidad WIC Clinic	16.4	9.34	23.39	6.4	1.73	11.00	22.7	14.77	30.68	110
Walsenburg WIC Clinic	*	*	*	*	*	*	*	*	*	57
Westcliffe WIC Clinic	*	*	*	*	*	*	*	*	*	12
Westside Family Health Center	18.0	16.24	19.81	9.4	8.07	10.79	27.5	25.38	29.53	1781
Yuma WIC Clinic	16.0	8.94	23.14	20.8	12.91	28.60	36.8	27.46	46.12	106
<b>Colorado</b>	<b>13.9</b>	<b>13.51</b>	<b>14.29</b>	<b>7.3</b>	<b>6.99</b>	<b>7.58</b>	<b>21.2</b>	<b>20.73</b>	<b>21.65</b>	<b>30217</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: 2015 WIC Participant and Program Characteristics (WIC PC) file

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Table 4. Prevalence of overweight and obesity among children ages 2 through 4 years enrolled in the Women, Infants, and Children (WIC) Program by county of WIC clinic, Colorado, 2015

County of WIC Clinic	Overweight 85th-<95th percentile <sup>^</sup>			Obese >=95th percentile <sup>^</sup>			Overweight or Obese >=85th percentile <sup>^</sup>			N
	%	Lower CI	Upper CI	%	Lower CI	Upper CI	%	Lower CI	Upper CI	
Adams	15.9	14.68	17.18	8.4	7.49	9.38	24.4	22.90	25.83	3296
Alamosa	13.2	10.17	16.33	6.8	4.54	9.13	20.1	16.44	23.73	468
Arapahoe	11.6	10.62	12.56	6.2	5.49	6.95	17.8	16.65	18.97	4211
Archuleta	*	*	*	*	*	*	*	*	*	85
Baca	*	*	*	*	*	*	*	*	*	35
Bent	*	*	*	*	*	*	*	*	*	43
Boulder	13.3	11.34	15.18	9.7	8.00	11.35	22.9	20.55	25.32	1199
Broomfield	15.7	10.33	21.13	6.7	3.02	10.46	22.5	16.28	28.66	178
Chaffee	*	*	*	*	*	*	*	*	*	70
Clear Creek	*	*	*	*	*	*	*	*	*	31
Crowley	*	*	*	*	*	*	*	*	*	37
Custer	*	*	*	*	*	*	*	*	*	12
Delta	11.6	6.75	16.37	4.6	1.46	7.79	16.2	10.64	21.73	173
Denver	14.6	13.55	15.65	7.5	6.68	8.25	22.1	20.82	23.30	4315
Dolores	*	*	*	*	*	*	*	*	*	13
Douglas	11.1	7.95	14.22	6.7	4.20	9.20	17.8	13.96	21.61	388
Eagle	12.0	8.06	15.91	7.1	4.01	10.22	19.1	14.36	23.85	267
El Paso	13.8	12.77	14.74	5.2	4.56	5.84	19.0	17.83	20.08	4674
Elbert	*	*	*	*	*	*	*	*	*	15
Fremont	13.7	9.73	17.67	5.5	2.85	8.11	19.2	14.64	23.72	292
Garfield	11.8	8.56	14.97	4.9	2.72	7.00	16.6	12.92	20.33	391
Grand	*	*	*	*	*	*	*	*	*	48
Gunnison	*	*	*	*	*	*	*	*	*	76
Huerfano	*	*	*	*	*	*	*	*	*	57
Jackson	*	*	*	*	*	*	*	*	*	4
Jefferson	13.4	11.89	14.99	7.2	6.03	8.38	20.6	18.80	22.49	1860
Kiowa	*	*	*	*	*	*	*	*	*	3
Kit Carson	15.0	8.35	21.74	9.7	4.18	15.28	24.8	16.70	32.86	113
La Plata	9.1	5.26	12.92	8.6	4.90	12.38	17.7	12.64	22.81	220
Lake	*	*	*	*	*	*	*	*	*	51
Larimer	14.0	11.92	15.99	8.1	6.45	9.65	22.0	19.57	24.44	1118
Las Animas	16.4	9.34	23.39	6.4	1.73	11.00	22.7	14.77	30.68	110
Lincoln	*	*	*	*	*	*	*	*	*	49
Logan	9.8	4.48	15.20	10.7	5.10	16.21	20.5	13.23	27.76	122
Mesa	11.8	9.67	13.92	8.5	6.70	10.38	20.3	17.69	22.99	890
Moffat	6.8	1.85	11.74	3.9	0.09	7.68	10.7	4.61	16.75	103
Montezuma	20.9	15.23	26.56	10.4	6.18	14.71	31.3	24.88	37.81	201
Montrose	12.9	9.92	15.83	5.4	3.43	7.43	18.3	14.90	21.72	497
Morgan	28.8	24.10	33.43	7.7	4.93	10.41	36.4	31.48	41.40	365
Otero	19.3	15.17	23.38	10.1	6.93	13.19	29.3	24.59	34.07	358
Ouray	*	*	*	*	*	*	*	*	*	11
Park	*	*	*	*	*	*	*	*	*	54
Phillips	*	*	*	*	*	*	*	*	*	63
Pitkin	*	*	*	*	*	*	*	*	*	23
Prowers	18.6	12.42	24.76	10.9	5.95	15.84	29.5	22.25	36.72	156
Pueblo	13.1	11.45	14.83	8.2	6.79	9.52	21.3	19.25	23.34	1545
Rio Blanco	*	*	*	*	*	*	*	*	*	38
Routt	*	*	*	*	*	*	*	*	*	57
Saguache	*	*	*	*	*	*	*	*	*	87
San Miguel	*	*	*	*	*	*	*	*	*	22
Sedgwick	*	*	*	*	*	*	*	*	*	34
Summit	*	*	*	*	*	*	*	*	*	94
Teller	9.3	3.70	14.81	5.6	1.17	9.95	14.8	8.01	21.62	108
Washington	*	*	*	*	*	*	*	*	*	17
Weld	17.1	15.08	19.08	10.3	8.65	11.88	27.3	24.98	29.71	1364
Yuma	16.0	8.94	23.14	20.8	12.91	28.60	36.8	27.46	46.12	106
<b>Colorado</b>	<b>13.9</b>	<b>13.51</b>	<b>14.29</b>	<b>7.3</b>	<b>6.99</b>	<b>7.58</b>	<b>21.2</b>	<b>20.73</b>	<b>21.65</b>	<b>30217</b>

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

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

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