

Prevalence of High Weight-for-recumbent Length Among Infants and Toddlers From Birth to 24 Months of Age: United States, 1971–1974 Through 2017–2018

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Excess weight in infants is often defined using weight-for-recumbent length. The Centers for Disease Control and Prevention (CDC) recommends using the World Health Organization (WHO) growth standards to monitor growth in children under age 2 years in the United States (1). The recommended definition of excess weight in infants is $+2$ z scores (corresponding to the 97.7th percentile) on the WHO sex-specific, weight-for-recumbent length growth standards (2). Some analyses have used the 95th percentile on the CDC sex-specific weight-for-recumbent length growth charts (3) as a cut point for excess weight in infants. Consequently, this report presents estimates of excess weight using both definitions.

Based on the WHO growth standards, results from the 2017–2018 National Health and Nutrition Examination Survey (NHANES), using measured recumbent lengths and weights, indicate that an estimated 9.6% of infants and children under age 24 months have high weight-for-recumbent length. Based on the CDC growth charts, an estimated 9.9% of infants and children under 24 months have high weight-for-recumbent length.

Table 1 shows the unweighted sample sizes for infants and toddlers with measured recumbent length and weight by age for each survey cycle. Because data collection began at different ages in different surveys, Table 2 shows the prevalence of high weight-for-recumbent length from birth to 24 months, from birth to 6 months, from 6 to 24 months, and from 12 to 24 months by survey years. The 1971–1974 NHANES included individuals starting at 12 months, the 1976–1980 NHANES included individuals starting at 6 months, and the 1988–1994 NHANES included individuals aged 2 months and over (data beginning at 6 months are shown in the tables). Beginning with 1999–2000, NHANES included individuals from birth. Consequently, trends from 1971–1974 to the present can be reported only for the 12- to 24-month age group. The variability and statistical reliability of the 2-year estimates over time and for a specific age group are consistent with what might be observed in the smaller sample size of infants and toddlers in NHANES.

NHANES, conducted by the National Center for Health Statistics, uses a stratified, multistage probability sample of the civilian noninstitutionalized U.S. population. A household interview and a physical examination are conducted for each survey participant. During the physical examination, conducted in a mobile examination center, recumbent length and weight are

measured as part of a more comprehensive set of body measurements. These measurements are taken by trained health technicians, using standardized measuring procedures and equipment. Observations for persons missing a valid recumbent length or weight measurement are not included in the data analysis.

For additional information on NHANES methods, visit: <https://wwwn.cdc.gov/nchs/nhanes/analyticguidelines.aspx>.

For more detailed estimates, see:

Ogden CL, Fryar CD, Martin CB, Freedman DS, Carroll MD, Gu Q, Hales CM. Trends in obesity prevalence by race and Hispanic origin—1999–2000 to 2017–2018. *JAMA* 324(12):1208–10. 2020. doi:10.1001/jama.2020.14590.

References

1. Grummer-Strawn LM, Reinold C, Krebs NF, Centers for Disease Control and Prevention (CDC). Use of World Health Organization and CDC growth charts for children aged 0–59 months in the United States. *MMWR Recomm Rep* 59(RR–9):1–15. 2010. Available from: <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5909a1.htm>.
2. World Health Organization. WHO child growth standards. Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: Methods and development. 2006. Available from: https://www.who.int/childgrowth/standards/Technical_report.pdf?ua=1.
3. Kuczmarski RJ, Ogden CL, Guo SS, Grummer-Strawn LM, Flegal KM, Mei Z, et al. 2000 CDC growth charts for the United States: Methods and development. National Center for Health Statistics. *Vital Health Stat* 11(246). 2002. Available from: https://www.cdc.gov/nchs/data/series/sr_11/sr11_246.pdf.

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Table 1. Unweighted sample size for infants and toddlers from birth to 24 months with measured weight and recumbent length, by age: United States, 1971–1974 through 2017–2018

Survey period	Birth to under 24 months	Birth to under 6 months	6–24 months	12–24 months
1971–1974	---	---	---	553
1976–1980	---	---	1,014	719
1988–1994	---	---	2,442	1,287
1999–2000	671	205	466	256
2001–2002	667	179	488	256
2003–2004	766	192	574	332
2005–2006	822	220	602	345
2007–2008	719	195	524	295
2009–2010	703	182	521	317
2011–2012	584	181	403	219
2013–2014	609	159	450	240
2015–2016	630	165	465	272
2017–2018	535	172	363	221

--- Data not available.

SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Surveys, 1971–1974, 1976–1980, 1988–1994, and 1999–2018.

Table 2. High weight-for-recumbent length among infants and toddlers from birth to 24 months, by age: United States, 1971–1974 through 2017–2018

Survey period	WHO growth standards ¹				CDC growth charts ²			
	Birth to under 24 months	Birth to under 6 months	6–24 months	12–24 months	Birth to under 24 months	Birth to under 6 months	6–24 months	12–24 months
	Percent (standard error)							
1971–1974	---	---	---	6.5 (1.2)	---	---	---	6.7 (1.3)
1976–1980	---	---	6.3 (1.0)	6.8 (1.1)	---	---	7.1 (1.0)	7.2 (1.2)
1988–1994	---	---	7.8 (0.7)	8.0 (1.0)	---	---	8.8 (0.7)	8.5 (1.1)
1999–2000	9.2 (1.3)	*7.5 (2.3)	9.8 (1.7)	7.9 (2.1)	10.4 (1.6)	*10.3 (4.0)	10.5 (1.6)	7.8 (2.1)
2001–2002	7.8 (1.1)	8.3 (1.5)	7.7 (1.3)	6.3 (1.3)	7.9 (1.1)	8.1 (1.3)	7.8 (1.3)	6.4 (1.3)
2003–2004	8.5 (1.2)	*6.3 (2.0)	9.0 (1.7)	9.0 (2.1)	9.5 (1.3)	*6.8 (1.9)	10.1 (1.6)	9.8 (2.1)
2005–2006	7.1 (1.0)	7.4 (1.5)	7.1 (1.4)	6.7 (1.7)	8.2 (1.1)	8.5 (1.8)	8.1 (1.5)	6.9 (1.7)
2007–2008	8.8 (0.9)	*5.7 (1.9)	9.7 (1.1)	9.7 (1.1)	9.5 (1.1)	*6.2 (2.0)	10.4 (1.2)	10.1 (1.2)
2009–2010	8.6 (1.3)	*5.0 (2.1)	9.6 (1.7)	9.4 (2.1)	9.7 (1.1)	6.6 (1.6)	10.7 (1.6)	9.6 (2.0)
2011–2012	7.1 (1.3)	*4.0 (1.3)	8.2 (1.6)	*7.1 (2.2)	8.1 (1.2)	7.7 (2.0)	8.2 (1.6)	*6.3 (2.0)
2013–2014	8.1 (1.2)	7.3 (1.9)	8.4 (1.5)	7.9 (1.8)	9.1 (1.4)	7.3 (1.9)	9.5 (1.7)	8.3 (1.7)
2015–2016	8.9 (0.9)	8.4 (2.3)	9.0 (1.1)	8.4 (1.3)	9.9 (1.2)	8.9 (1.9)	10.2 (1.3)	8.1 (1.5)
2017–2018	9.6 (2.1)	7.7 (2.2)	10.3 (2.7)	*12.3 (3.6)	9.9 (1.9)	8.6 (1.9)	10.3 (2.7)	*11.9 (3.5)

--- Data not available.

* Estimate has a confidence interval width between 5 and 30 and a relative confidence interval width greater than 130%, and does not meet National Center for Health Statistics standards of reliability; see Series Report 2, Number 175 (https://www.cdc.gov/nchs/data/series/sr_02/sr02_175.pdf).

¹High weight-for-recumbent length is at or above the 97.7th percentile of the sex-specific weight-for-recumbent length World Health Organization (WHO) growth standards (available from: https://www.cdc.gov/growthcharts/who_charts.htm).

²High weight-for-recumbent length is at or above the 95th percentile of the sex-specific weight-for-recumbent length 2000 Centers for Disease Control and Prevention (CDC) growth charts (available from: https://www.cdc.gov/growthcharts/cdc_charts.htm).

SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Surveys, 1971–1974, 1976–1980, 1988–1994, and 1999–2018.