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# National Health Statistics Reports

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Number 10 ■ October 22, 2008

## Anthropometric Reference Data for Children and Adults: United States, 2003–2006

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### Abstract

*Objective*—This report presents national anthropometric reference data for all ages of the U.S. population in 2003–2006, adding to results published previously from 1960–2002.

*Methods*—Data are from the National Health and Nutrition Examination Survey (NHANES), a complex, stratified, and multistage probability sample of the civilian, noninstitutionalized U.S. population. Anthropometry measurements were obtained from 19,593 survey participants. The anthropometric measures included weight, height, recumbent length, circumferences, limb lengths, and skinfold thickness measurements.

*Results*—The tables in this report include weighted population means, standard errors of the means, and selected percentiles of body measurement values. Because measurements varied by sex and age (as well as race and ethnicity in adults), results are reported by these subgroups.

*Conclusions*—These latest NHANES data add to the knowledge about trends in child growth and development and trends in the distribution of body measurements, such as weight and height, in the U.S. population.

**Keywords:** anthropometry • body measures • nutrition surveys • National Health and Nutrition Examination Survey (NHANES)

### Methods

National Health and Nutrition Examination Surveys (NHANES) are conducted by the Centers for Disease Control and Prevention's National Center for Health Statistics (NCHS). NHANES data are the primary source of body measurement and related health and nutrition data for the civilian, noninstitutionalized U.S. population. Surveys were conducted on a periodic basis from 1960 to 1994. NHANES became a continuous survey in 1999. Each of the continuous NHANES annual survey samples is nationally representative; 2 or more years of data are required for subgroup analyses (2). NHANES 1999–2006 data were released publicly in four data sets, each one spanning 2 years (1999–2000, 2001–2002, 2003–2004, and 2005–2006) (3–5). A combined 4-year dataset based on 2003–2004 and 2005–2006 data was used for this report to improve the stability and reliability of the statistical estimates (4–5). Additional 2-year data sets will be released in the future as more data become available.

Household interviews and health examinations are used to collect NHANES data. All health examinations

### Introduction

The field of anthropometry encompasses a variety of human body measurements, such as weight, height, and size, including skinfold thicknesses, circumferences, lengths, and breadths. Anthropometry is a key component of nutritional status assessment in children and adults (1). Anthropometric data for

children reflect general health status, dietary adequacy, and growth and development over time. In adults, body measurement data are used to evaluate health and dietary status, disease risk, and body composition changes that occur over the adult lifespan. This report provides anthropometric reference data for U.S. children and adults of all ages.



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are conducted in mobile examination centers. The examination centers are staffed by full-time personnel, including health technicians who obtain body measurements from survey participants. All of the NHANES health technicians completed a comprehensive body measurement training program that utilized videotape, demonstration, and practice exercises with an expert examiner. Health technician performance was monitored by means of direct observation, data review, and expert examiner evaluations.

Although portions of the health examination component have varied during the surveys' history, much of the anthropometry component methodology has remained consistent over time. The NHANES anthropometry examinations are completed in a room that is equipped with a digital scale, a wall-mounted stadiometer, a bench, a wall mirror, an infantometer, and a computer workstation. A health technician performs the anthropometry exam and is assisted by a recorder. NHANES subjects wear socks and disposable examination gowns during the examination. The use of consistent data collection methods in representative population samples makes possible the examination of trends in body measurements over time in the U.S. population.

## Sample description

NHANES is a complex, multistage probability sample of the civilian noninstitutionalized U.S. population. The NHANES 2003–2006 sample included participants of all ages. Adolescents 12–19 years of age, persons 60 years of age and older, Mexican Americans, black persons, and low-income persons were oversampled to improve the precision of the statistical estimates for these groups. Additional information pertaining to the NHANES 2003–2006 survey design, survey methodology, and public-use data is available on the NHANES website (4–5).

The analytic sample for this report was based on the 2003–2006 examined sample of 19,593 persons. Pregnant

females were excluded from the tabulations of weight, body mass index (BMI), circumference measurements, and skinfold thickness data.

## Anthropometry examination component

The *NHANES 2005–2006 Anthropometry Training and Procedures Manual* describes the protocol, equipment, quality control, and measurement procedures that were used during the NHANES anthropometry examination (6). An anthropometry methodology videotape that was produced during NHANES III (1988–1994) illustrates the NHANES anthropometry methodology that was used to collect the 2003–2006 data (7).

Weight was measured to the nearest 0.1 kilogram. Stature, length, and circumference measurements were made to the nearest millimeter. Skinfold thickness measures were made to the nearest 0.1 millimeter. Weight was measured using a digital floor scale, and an infantometer was used to measure recumbent length on infants and young children. Standing height was measured with a wall-mounted stadiometer. Head circumference measurements were made using a plastic head circumference measurement tape. Upper arm length was measured with a tape measure from the posterior border of the acromion process to the tip of the olecranon process; during the measurement the upper arm length midpoint was marked. The mid-arm circumference was measured with a tape measure. Triceps and subscapular skinfolds were measured with a skinfold caliper. Waist circumference was measured with a tape measure at the uppermost lateral border of the hip crest (ilium). Weight, recumbent length, and standing height values were recorded automatically. The other body measurement data were recorded using computer-assisted data entry, and all results were based on a single body measurement examination.

In addition to the measurements above, three additional measurements were taken on participants aged 8 years and older. Upper leg length measurements were taken on seated

participants; the distance from the inguinal crease to the distal end of the femur was measured. Maximal calf circumference was also measured in a seated position; a measurement tape was positioned around the calf at the point of maximum circumference. Mid-thigh circumference was measured on standing participants with the measurement tape placed around the mid-thigh, perpendicular to the long axis of the femur bone.

## Statistical analysis

Population means, standard errors of the means, and percentiles were weighted using the NHANES examination sample weights to produce national estimates. The NHANES examination sample weights incorporate the differential probabilities of selection and include adjustments for oversampling of selected populations, noncoverage, and nonresponse. Standard errors were estimated using SUDAAN by Taylor series linearization because of the complex sample design (8).

The reliability of the estimates produced for this report was evaluated. The relative standard error (RSE), calculated as the standard error divided by the estimate, and minimum sample size criterion were used. NCHS recommends that an estimate with an RSE greater than 30 percent be considered unreliable (2). The recommended minimum sample sizes were based on a combination of the average design effects and specified proportions (or percentiles) (9). The average design effects reflect the impact of the complex sample design on variance estimates. They were calculated as the ratio of the variance of a statistic (accounting for the complex sample design) to the variance of the same statistic based on a hypothetical simple random sample of the same size. Average design effects were calculated for each anthropometry variable over sex for children and adolescents and over sex and race-ethnicity for adults aged 20 years and older. Minimum sample sizes for a specified design effect and percentile were obtained from published tables (9). The percentile

estimates that did not meet the standards for either RSE or minimum sample size were replaced with asterisks (Tables 1–41).

The age categories used for adults aged 20 years and older were based on the survey sample domains that were recommended in the NHANES Analytic Guidelines (2). The results for participants who were under 20 years of age are by single years or, in the case of infants under 1 year of age, single months of age.

## Results

The anthropometric measurements that were performed in the survey are listed in Table A. Results for children

are reported by sex and age group, and the results for adults aged 20 years and older are also presented by sex, race-ethnicity group, and age. Results from previous surveys for most measurements have been reported for the National Health Examination Survey and NHANES conducted from 1960–2002 (10–30).

## References

1. Simko MD, Cowell C, Gilbride JA. Nutrition assessment: A comprehensive guide for planning intervention. 2nd ed. Gaithersburg, MD: Aspen Publishers. 1995.
2. Centers for Disease Control and Prevention. Analytic guidelines. Hyattsville, MD: National Center for Health Statistics. Available from: [http://www.cdc.gov/nchs/data/nhanes/nhanes\\_03\\_04/nhanes\\_analytic\\_guidelines\\_dec\\_2005.pdf](http://www.cdc.gov/nchs/data/nhanes/nhanes_03_04/nhanes_analytic_guidelines_dec_2005.pdf). September 2006.
3. National Center for Health Statistics. National Health and Nutrition Examination Surveys 1999–2006. <http://www.cdc.gov/nchs/about/major/nhanes/datalink.htm>.
4. National Center for Health Statistics. National Health and Nutrition Examination Survey, 2003–2004 examination files. Available from: [http://www.cdc.gov/nchs/about/major/nhanes/nhanes2003-2004/exam03\\_04.htm](http://www.cdc.gov/nchs/about/major/nhanes/nhanes2003-2004/exam03_04.htm). 2005.
5. National Center for Health Statistics. National Health and Nutrition

**Table A. Anthropometric measurements performed in the National Health and Nutrition Examination Survey, 2003–2006**

Table number	Measurement (unit of measure)	Age group and sex
1	Weight (kilograms)	Birth–19 years of age
2	Weight (pounds)	Birth–19 years of age
3	Weight (kilograms)	Females 20 years and older
4	Weight (pounds)	Females 20 years and older
5	Weight (kilograms)	Males 20 years and older
6	Weight (pounds)	Males 20 years and older
7	Standing height (centimeters)	Males and females 2–19 years
8	Standing height (inches)	Males and females 2–19 years
9	Standing height (centimeters)	Females 20 years and older
10	Standing height (inches)	Females 20 years and older
11	Standing height (centimeters)	Males 20 years and older
12	Standing height (inches)	Males 20 years and older
13	Body mass index (BMI value)	Males and females 2–19 years
14	Body mass index (BMI value)	Females 20 years and older
15	Body mass index (BMI value)	Males 20 years and older
16	Head circumference (centimeters)	Birth–6 months
17	Recumbent length (centimeters)	Birth–47 months
18	Waist circumference (centimeters)	Males and females 2–19 years
19	Waist circumference (centimeters)	Females 20 years and older
20	Waist circumference (centimeters)	Males 20 years and older
21	Mid-arm circumference (centimeters)	Males and females 2 months–19 years
22	Mid-arm circumference (centimeters)	Females 20 years and older
23	Mid-arm circumference (centimeters)	Males 20 years and older
24	Upper arm length (centimeters)	Males and females 2 months–19 years
25	Upper arm length (centimeters)	Females 20 years and older
26	Upper arm length (centimeters)	Males 20 years and older
27	Subscapular skinfold (millimeters)	Males and females 2 months–19 years
28	Subscapular skinfold (millimeters)	Females 20 years and older
29	Subscapular skinfold (millimeters)	Males 20 years and older
30	Triceps skinfold (millimeters)	Males and females 2 months–19 years
31	Triceps skinfold (millimeters)	Females 20 years and older
32	Triceps skinfold (millimeters)	Males 20 years and older
33	Maximal calf circumference (centimeters)	Males and females 8–19 years
34	Maximal calf circumference (centimeters)	Females 20 years and older
35	Maximal calf circumference (centimeters)	Males 20 years and older
36	Upper leg length (centimeters)	Males and females 8–19 years
37	Upper leg length (centimeters)	Females 20 years and older
38	Upper leg length (centimeters)	Males 20 years and older
38	Mid-thigh circumference (centimeters)	Males and females 8–19 years
40	Mid-thigh circumference (centimeters)	Females 20 years and older
41	Mid-thigh circumference (centimeters)	Males 20 years and older

- Examination Survey, 2005–2006 examination files. Available from: [http://www.cdc.gov/nchs/about/major/nhanes/nhanes2005-2006/exam05\\_06.htm](http://www.cdc.gov/nchs/about/major/nhanes/nhanes2005-2006/exam05_06.htm). 2007.
6. Centers for Disease Control and Prevention. NHANES anthropometry and physical activity monitor procedures manual. Available from: [http://www.cdc.gov/nchs/data/nhanes/nhanes\\_05\\_06/BM.pdf](http://www.cdc.gov/nchs/data/nhanes/nhanes_05_06/BM.pdf). January 2005.
  7. Centers for Disease Control and Prevention. NHANES III anthropometric procedures video. Washington, DC: U.S. Government Printing Office. GPO stock no: 017–022–01335–5. Available from: <http://www.cdc.gov/nchs/about/major/nhanes/avideo.htm>.
  8. Wolter KM. Introduction to variance estimation. New York, NY: Springer-Verlag. 1990.
  9. National Center for Health Statistics. Analytic and reporting guidelines: The Third National Health and Nutrition Examination Survey, NHANES III (1988–94), appendix B. Available from: <http://www.cdc.gov/nchs/data/nhanes/nhanes3/nh3gui.pdf>. October 1996.
  10. Stoudt HW, Damon A, McFarland R, Roberts J. Skin folds, body girths, biacromial diameter, and selected anthropometric indices of adults, United States, 1960–1962. National Center for Health Statistics. Vital Health Stat 11(35). Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_035acc.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_035acc.pdf). 1970.
  11. Stoudt HW, Damon A, McFarland R, Roberts J. Weight, height, and selected body dimensions of adults: United States, 1960–1962. National Center for Health Statistics. Vital Health Stat 11(8). 1965.
  12. Roberts J. Weight by height and age of adults: United States, 1960–1962. National Center for Health Statistics. Vital Health Stat 11(14). 1966.
  13. Malina RM, Hamill PVV, Johnston FE, Lemeshow S. Selected body measurements of children 6–11 years, United States. National Center for Health Statistics. Vital Health Stat 11(123). Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_123acc.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_123acc.pdf). 1973.
  14. Hamill PV, Johnston FE, Lemeshow S. Height and weight of youths 12–17 years, United States. National Center for Health Statistics. Vital Health Stat 11(124). Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_124.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_124.pdf). 1973.
  15. Abraham S, Johnson CL, Najjar MF. Weight and height of adults 18–74 years of age: United States, 1971–74. National Center for Health Statistics. Vital Health Stat 11(211). 1979.
  16. Johnson CL, Fulwood R, Abraham S, Bryner JD. Basic data on anthropometric measurements and angular measurements of the hip and knee joints for selected age groups 1–74 years of age: United States, 1971–1975. National Center for Health Statistics. Vital Health Stat 11(219). Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_219.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_219.pdf). 1981.
  17. Najjar MF, Rowland M. Anthropometric reference data and prevalence of overweight: United States, 1976–80. National Center for Health Statistics. Vital Health Stat 11(238). Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_238.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_238.pdf). 1987.
  18. Najjar MF, Kuczarski RJ. Anthropometric data and prevalence of overweight for Hispanics: 1982–84. Vital Health Stat 11(239). Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_239.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_239.pdf). 1989.
  19. National Center for Health Statistics. Anthropometric Reference Data, United States, 1988–1994. Available from: [http://www.cdc.gov/nchs/about/major/nhanes/anthropometric\\_measures.htm](http://www.cdc.gov/nchs/about/major/nhanes/anthropometric_measures.htm).
  20. Ogden CL, Fryar CD, Carroll MD, Flegal KM. Mean body weight, height, and body mass index, United States 1960–2002. Advance data from vital and health statistics; no 347. Hyattsville, MD: National Center for Health Statistics. 2004.
  21. McDowell MA, Fryar CD, Hirsch R, Ogden CL. Anthropometric reference data for children and adults: U.S. population, 1999–2002. Advance data from vital and health statistics; no 361. Hyattsville, MD: National Center for Health Statistics. 2005.
  22. Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999–2004. JAMA 295(13):1549–55. 2006.
  23. Freedman DS, Khan LK, Serdula MK, Ogden CL, Dietz WH. Racial and ethnic differences in secular trends for childhood BMI, weight, and height. Obesity (Silver Spring) 14(2):301–8. 2006.
  24. Flegal KM, Ogden CL, Carroll MD. Prevalence and trends in overweight in Mexican-American adults and children. Nutr Rev 62(7 Pt 2):S144–8. 2004.
  25. Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtin LR, Flegal KM. Prevalence of overweight and obesity among U.S. children, adolescents, and adults, 1999–2002. JAMA 291(23):2847–50. 2004.
  26. Ogden CL, Carroll MD, Flegal KM. Epidemiologic trends in overweight and obesity. Endocrinol Metab Clin North Am 32(4):741–60.vii. 2003.
  27. Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among U.S. children and adolescents, 1999–2000. JAMA 288(14):1728–32. 2002.
  28. Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among U.S. adults, 1999–2000. JAMA 288(14):1723–7. 2002.
  29. Ogden CL, Troiano RP, Briefel RR, Kuczarski RJ, Flegal KM, Johnson CL. Prevalence of overweight among preschool children in the United States, 1971 through 1994. Pediatrics 99(4):E1. 1997.
  30. Kuczarski RJ, Flegal KM, Campbell SM, Johnson CL. Increasing prevalence of overweight among U.S. adults. The National Health and Nutrition Examination Surveys, 1960 to 1991. JAMA 272(3):205–11. 1994.

**Table 1. Weight in kilograms for children and adolescents from birth through 19 years of age by sex and age, by mean, standard error of the mean, and selected percentiles: United States, 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Kilograms												
Birth to 2 months . . . . .	101	5.2	0.12	*	*	4.2	4.6	5.2	5.9	6.3	*	*
3–5 months . . . . .	139	7.3	0.08	*	6.2	6.4	6.7	7.2	7.8	8.0	8.2	*
6–8 months . . . . .	130	8.4	0.13	*	6.8	7.2	7.6	8.4	9.1	9.5	9.9	*
9–11 months . . . . .	124	9.7	0.15	*	*	8.6	8.9	9.7	10.4	10.6	*	*
1 year . . . . .	360	11.6	0.12	8.9	9.2	9.8	10.5	11.5	12.6	13.3	13.8	14.4
2 years . . . . .	292	14.1	0.14	11.3	12.0	12.3	12.8	13.9	15.1	15.8	16.4	16.9
3 years . . . . .	210	15.8	0.16	*	13.4	13.6	14.2	15.3	17.1	18.1	18.7	*
4 years . . . . .	208	18.6	0.31	*	15.2	15.5	16.2	18.1	20.0	21.3	22.7	*
5 years . . . . .	202	22.1	0.49	*	17.4	18.1	18.9	21.0	23.5	25.2	26.9	*
6 years . . . . .	176	24.2	0.33	*	19.5	20.0	20.9	23.7	26.2	27.6	29.5	*
7 years . . . . .	181	26.6	0.58	*	19.6	21.0	22.4	25.6	29.6	32.3	33.9	*
8 years . . . . .	151	31.4	0.90	*	23.4	24.2	25.3	29.0	34.3	38.3	41.9	*
9 years . . . . .	176	34.6	0.71	*	25.8	26.6	28.2	32.3	39.4	42.5	44.1	*
10 years . . . . .	172	40.1	0.86	*	28.4	29.7	31.7	37.3	45.1	53.6	56.8	*
11 years . . . . .	158	46.8	1.62	*	33.2	34.1	35.5	44.2	54.0	63.3	67.0	*
12 years . . . . .	275	50.8	1.23	32.0	35.9	37.0	39.5	46.9	57.3	65.1	72.8	82.9
13 years . . . . .	284	57.8	1.37	35.9	39.4	41.9	43.9	55.6	64.4	73.5	81.0	90.9
14 years . . . . .	260	63.1	1.73	42.5	43.9	47.2	51.4	59.8	70.7	76.5	84.3	99.1
15 years . . . . .	270	70.2	1.36	48.5	52.4	55.0	58.2	66.3	76.9	84.7	89.9	100.4
16 years . . . . .	308	76.1	1.50	53.4	55.3	57.9	61.5	70.7	88.5	96.3	101.9	116.1
17 years . . . . .	279	75.0	1.30	54.1	56.7	58.6	60.9	70.6	84.2	92.0	101.3	111.0
18 years . . . . .	283	77.2	1.67	53.7	57.2	59.4	64.0	72.7	83.7	97.8	105.8	110.4
19 years . . . . .	271	80.2	1.60	54.3	58.1	61.2	64.7	76.5	92.9	99.6	107.3	117.3
Female												
Birth to 2 months . . . . .	81	4.9	0.10	*	*	*	4.4	4.9	5.4	*	*	*
3–5 months . . . . .	94	6.8	0.10	*	*	*	6.2	6.6	7.3	*	*	*
6–8 months . . . . .	122	8.1	0.13	*	*	7.1	7.3	8.0	8.8	9.2	*	*
9–11 months . . . . .	126	9.2	0.11	*	*	8.0	8.2	9.0	10.0	10.3	*	*
1 year . . . . .	328	10.9	0.11	8.4	8.8	9.1	9.9	10.9	11.9	12.5	13.0	13.4
2 years . . . . .	335	13.4	0.13	10.2	10.7	11.2	12.1	13.1	14.4	15.4	16.1	16.8
3 years . . . . .	191	15.8	0.20	*	12.8	13.4	14.1	15.5	16.8	17.8	18.5	*
4 years . . . . .	226	17.9	0.21	*	14.8	15.2	16.1	17.5	19.4	20.2	20.8	*
5 years . . . . .	199	20.5	0.37	*	15.9	16.9	17.6	19.6	22.1	24.4	25.5	*
6 years . . . . .	193	23.4	0.49	*	18.4	19.1	19.9	22.1	25.3	27.4	29.7	*
7 years . . . . .	157	27.3	0.62	*	21.1	21.7	23.9	25.7	29.7	33.6	35.5	*
8 years . . . . .	184	30.7	0.94	*	22.3	23.5	25.0	28.2	33.9	39.1	42.1	*
9 years . . . . .	185	36.7	0.99	*	26.2	27.8	29.6	34.0	42.0	46.7	50.7	*
10 years . . . . .	189	42.4	1.07	*	29.1	30.7	32.5	40.5	49.0	55.5	58.5	*
11 years . . . . .	175	49.2	1.31	*	33.3	34.8	38.0	47.3	56.7	62.4	68.2	*
12 years . . . . .	249	52.9	1.31	*	36.4	40.4	43.6	49.5	59.7	67.4	76.2	*
13 years . . . . .	292	57.4	0.98	36.8	41.2	43.0	47.1	54.4	63.4	72.6	76.0	88.5
14 years . . . . .	269	58.8	1.75	*	44.0	45.8	48.5	54.4	64.8	75.8	81.0	*
15 years . . . . .	248	60.9	0.76	*	46.5	47.6	50.7	57.6	67.6	76.7	81.0	*
16 years . . . . .	253	61.5	0.95	*	47.2	49.5	53.2	58.8	67.0	71.5	79.6	*
17 years . . . . .	252	66.0	1.66	*	49.1	51.4	54.1	60.6	71.9	79.7	87.3	*
18 years . . . . .	272	67.6	2.15	*	47.8	49.7	54.6	63.0	76.2	86.2	92.1	*
19 years . . . . .	239	67.4	1.79	*	50.9	52.8	55.3	63.0	73.6	84.3	92.7	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.

NOTE: Pregnant females were excluded.



**Table 2. Weight in pounds for children and adolescents from birth through 19 years of age by sex and age, by mean, standard error of the mean, and selected percentiles: United States, 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Pounds												
Birth to 2 months . . . . .	101	11.5	0.27	*	*	9.2	10.1	11.5	12.9	13.8	*	*
3–5 months . . . . .	139	16.0	0.18	*	13.6	14.1	14.7	15.9	17.1	17.7	18.1	*
6–8 months . . . . .	130	18.6	0.30	*	15.0	15.9	16.7	18.5	20.0	20.9	21.8	*
9–11 months . . . . .	124	21.5	0.32	*	*	18.9	19.7	21.4	23.0	23.4	*	*
1 year . . . . .	360	25.5	0.28	19.6	20.3	21.5	23.1	25.3	27.7	29.3	30.5	31.6
2 years . . . . .	292	31.1	0.31	24.8	26.5	27.2	28.2	30.7	33.2	34.9	36.1	37.2
3 years . . . . .	210	34.8	0.35	*	29.5	30.1	31.3	33.8	37.8	39.9	41.2	*
4 years . . . . .	208	40.9	0.68	*	33.4	34.2	35.8	39.8	44.0	46.9	50.1	*
5 years . . . . .	202	48.7	1.07	*	38.4	40.0	41.7	46.3	51.7	55.5	59.3	*
6 years . . . . .	176	53.3	0.72	*	43.0	44.1	46.1	52.2	57.8	60.8	65.1	*
7 years . . . . .	181	58.7	1.28	*	43.3	46.3	49.3	56.4	65.2	71.3	74.6	*
8 years . . . . .	151	69.3	1.99	*	51.7	53.4	55.7	64.0	75.6	84.5	92.3	*
9 years . . . . .	176	76.3	1.57	*	56.9	58.7	62.2	71.2	86.9	93.7	97.2	*
10 years . . . . .	172	88.3	1.89	*	62.6	65.4	70.0	82.2	99.5	118.2	125.3	*
11 years . . . . .	158	103.2	3.58	*	73.2	75.2	78.2	97.4	119.0	139.6	147.8	*
12 years . . . . .	275	112.0	2.71	70.5	79.2	81.6	87.0	103.3	126.3	143.6	160.5	182.7
13 years . . . . .	284	127.4	3.03	79.1	86.9	92.4	96.8	122.5	142.0	162.0	178.6	200.5
14 years . . . . .	260	139.1	3.81	93.6	96.9	104.2	113.4	131.8	155.9	168.6	185.8	218.4
15 years . . . . .	270	154.9	2.99	106.9	115.4	121.2	128.3	146.1	169.4	186.8	198.1	221.3
16 years . . . . .	308	167.7	3.31	117.8	121.8	127.8	135.7	155.8	195.1	212.3	224.7	256.0
17 years . . . . .	279	165.4	2.86	119.2	125.0	129.2	134.2	155.6	185.7	202.8	223.4	244.7
18 years . . . . .	283	170.2	3.68	118.5	126.2	130.8	141.1	160.3	184.6	215.5	233.2	243.3
19 years . . . . .	271	176.8	3.54	119.7	128.1	134.8	142.5	168.7	204.8	219.7	236.5	258.6
Female												
Birth to 2 months . . . . .	81	10.9	0.22	*	*	*	9.7	10.8	11.8	*	*	*
3–5 months . . . . .	94	14.9	0.23	*	*	*	13.7	14.5	16.2	*	*	*
6–8 months . . . . .	122	17.9	0.30	*	*	15.7	16.1	17.7	19.4	20.2	*	*
9–11 months . . . . .	126	20.2	0.25	*	*	17.5	18.1	19.9	22.1	22.7	*	*
1 year . . . . .	328	24.1	0.24	18.4	19.3	20.0	21.7	24.1	26.3	27.5	28.6	29.5
2 years . . . . .	335	29.5	0.29	22.4	23.7	24.6	26.6	29.0	31.8	34.0	35.4	37.0
3 years . . . . .	191	34.8	0.45	*	28.2	29.5	31.2	34.2	37.0	39.3	40.8	*
4 years . . . . .	226	39.4	0.46	*	32.6	33.5	35.4	38.6	42.7	44.6	45.8	*
5 years . . . . .	199	45.3	0.82	*	35.1	37.2	38.7	43.3	48.7	53.8	56.1	*
6 years . . . . .	193	51.5	1.08	*	40.6	42.1	43.8	48.8	55.8	60.4	65.5	*
7 years . . . . .	157	60.2	1.37	*	46.5	47.9	52.7	56.6	65.5	74.1	78.3	*
8 years . . . . .	184	67.7	2.07	*	49.3	51.8	55.1	62.1	74.8	86.3	92.8	*
9 years . . . . .	185	81.0	2.18	*	57.9	61.3	65.3	75.0	92.7	102.8	111.8	*
10 years . . . . .	189	93.5	2.35	*	64.1	67.7	71.6	89.2	108.1	122.4	129.1	*
11 years . . . . .	175	108.4	2.88	*	73.3	76.7	83.7	104.3	125.1	137.6	150.3	*
12 years . . . . .	249	116.7	2.88	*	80.2	89.0	96.0	109.1	131.7	148.5	168.0	*
13 years . . . . .	292	126.4	2.15	81.2	90.9	94.7	103.9	119.9	139.8	160.0	167.6	195.2
14 years . . . . .	269	129.6	3.85	*	97.1	101.1	106.8	120.0	142.9	167.2	178.6	*
15 years . . . . .	248	134.2	1.67	*	102.4	104.9	111.7	126.9	149.0	169.0	178.5	*
16 years . . . . .	253	135.6	2.10	*	104.2	109.1	117.3	129.7	147.7	157.7	175.5	*
17 years . . . . .	252	145.6	3.65	*	108.1	113.3	119.4	133.6	158.5	175.6	192.5	*
18 years . . . . .	272	149.0	4.75	*	105.3	109.6	120.3	138.8	168.1	190.0	203.0	*
19 years . . . . .	239	148.6	3.95	*	112.2	116.4	121.9	138.9	162.2	185.8	204.3	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.

NOTE: Pregnant females were excluded.

**Table 3. Weight in kilograms for females 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States, 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Kilograms												
20 years and over . . . . .	4,330	74.7	0.53	50.5	53.5	56.1	60.2	70.7	84.3	94.1	101.8	113.6
20–29 years . . . . .	706	70.7	1.03	48.0	51.3	53.1	56.3	65.3	78.8	88.7	98.6	110.7
30–39 years . . . . .	663	74.7	1.06	51.2	54.1	56.5	59.8	70.2	83.6	94.3	101.7	114.2
40–49 years . . . . .	779	77.7	1.03	52.3	55.2	58.2	62.8	72.9	89.2	100.1	106.6	116.9
50–59 years . . . . .	602	78.0	1.15	51.8	54.7	57.5	62.9	73.7	88.1	99.4	106.3	117.8
60–69 years . . . . .	694	77.3	0.91	51.9	56.8	59.2	64.0	74.0	86.9	96.4	102.0	112.9
70–79 years . . . . .	468	70.6	1.07	49.4	53.2	55.1	60.0	68.3	78.9	84.1	91.2	98.9
80 years and over . . . . .	418	64.5	0.69	46.1	49.8	52.3	55.3	63.8	71.9	76.7	80.6	86.4
Non-Hispanic white												
20 years and over . . . . .	2,233	74.3	0.57	50.8	53.8	56.4	60.3	70.1	83.4	92.6	100.7	111.6
20–39 years . . . . .	615	72.1	0.99	50.4	52.7	54.6	58.1	67.1	80.7	90.2	98.5	110.7
40–59 years . . . . .	674	77.6	0.91	52.2	55.4	57.8	62.8	72.9	88.3	97.7	106.1	116.6
60 years and over . . . . .	944	72.0	0.60	49.1	53.5	55.7	60.6	70.0	80.7	87.0	93.1	102.1
Non-Hispanic black												
20 years and over . . . . .	959	83.8	0.71	53.0	57.9	61.4	68.6	80.2	95.1	105.8	114.4	125.2
20–39 years . . . . .	329	82.4	1.33	52.5	56.4	59.7	66.6	77.6	94.3	104.0	113.2	124.3
40–59 years . . . . .	355	86.2	0.73	54.5	60.5	66.5	72.2	82.1	97.1	108.1	117.8	126.4
60 years and over . . . . .	275	82.0	1.33	52.8	56.1	59.4	66.1	79.0	93.9	101.8	108.4	118.7
Mexican American												
20 years and over . . . . .	817	73.6	0.94	50.5	53.8	56.3	60.7	70.8	83.1	90.8	96.9	103.9
20–39 years . . . . .	300	72.8	1.24	49.8	53.0	54.7	59.6	70.4	82.9	90.0	95.7	103.9
40–59 years . . . . .	234	76.4	1.22	53.7	56.5	59.1	63.5	73.4	85.5	94.0	99.7	106.9
60 years and over . . . . .	283	69.4	1.01	49.8	52.4	55.1	58.9	67.4	77.9	84.0	89.0	98.3

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

NOTE: Pregnant females were excluded.

**Table 4. Weight in pounds for females 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States, 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Pounds												
20 years and over . . . . .	4,330	164.7	1.17	111.2	118.0	123.8	132.8	155.8	185.9	207.5	224.3	250.4
20–29 years . . . . .	706	155.9	2.27	105.8	113.1	117.0	124.1	144.0	173.7	195.5	217.4	244.2
30–39 years . . . . .	663	164.7	2.34	112.8	119.3	124.5	131.9	154.8	184.3	208.0	224.3	251.8
40–49 years . . . . .	779	171.3	2.27	115.3	121.8	128.2	138.4	160.8	196.6	220.7	235.0	257.7
50–59 years . . . . .	602	172.1	2.53	114.1	120.7	126.7	138.7	162.5	194.2	219.1	234.3	259.7
60–69 years . . . . .	694	170.5	2.02	114.3	125.1	130.6	141.1	163.1	191.6	212.6	224.9	248.8
70–79 years . . . . .	468	155.6	2.35	109.0	117.3	121.4	132.2	150.6	174.0	185.3	201.0	218.0
80 years and over . . . . .	418	142.2	1.53	101.7	109.9	115.3	121.8	140.6	158.5	169.0	177.7	190.5
Non-Hispanic white												
20 years and over . . . . .	2,233	163.7	1.26	112.1	118.5	124.3	133.0	154.5	183.9	204.2	221.9	246.0
20–39 years . . . . .	615	158.9	2.17	111.2	116.1	120.4	128.1	148.0	177.9	198.8	217.1	244.0
40–59 years . . . . .	674	171.0	2.01	115.2	122.1	127.5	138.5	160.7	194.6	215.3	233.8	257.0
60 years and over . . . . .	944	158.8	1.32	108.3	118.0	122.9	133.6	154.2	178.0	191.8	205.2	225.1
Non-Hispanic black												
20 years and over . . . . .	959	184.8	1.56	116.9	127.6	135.3	151.2	176.8	209.6	233.3	252.2	275.9
20–39 years . . . . .	329	181.6	2.94	115.8	124.3	131.7	146.8	171.0	207.9	229.2	249.6	274.0
40–59 years . . . . .	355	190.1	1.61	120.2	133.4	146.5	159.2	180.9	214.2	238.4	259.7	278.7
60 years and over . . . . .	275	180.8	2.94	116.3	123.7	131.1	145.7	174.2	207.0	224.4	238.9	261.8
Mexican American												
20 years and over . . . . .	817	162.2	2.07	111.4	118.6	124.1	133.7	156.0	183.1	200.2	213.6	229.1
20–39 years . . . . .	300	160.5	2.73	109.8	116.9	120.6	131.4	155.2	182.7	198.4	210.9	229.2
40–59 years . . . . .	234	168.4	2.68	118.4	124.6	130.2	139.9	161.9	188.4	207.3	219.7	235.7
60 years and over . . . . .	283	153.0	2.22	109.8	115.6	121.6	129.9	148.6	171.7	185.3	196.2	216.8

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

NOTE: Pregnant females were excluded.



**Table 5. Weight in kilograms for males 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States, 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Kilograms												
20 years and over . . . . .	4,489	88.3	0.46	62.2	66.7	70.1	75.2	85.6	98.4	106.4	111.5	122.6
20–29 years . . . . .	811	85.4	1.06	59.9	63.4	66.5	71.4	81.1	94.3	104.6	111.5	122.6
30–39 years . . . . .	741	88.1	0.80	62.6	67.1	70.0	74.3	85.9	98.1	104.3	109.6	120.8
40–49 years . . . . .	769	91.8	0.83	65.9	71.1	74.1	79.3	88.9	101.2	109.8	114.0	124.7
50–59 years . . . . .	591	90.2	0.95	64.5	69.1	72.6	77.0	88.7	100.5	108.0	113.1	124.4
60–69 years . . . . .	669	90.0	0.98	63.8	68.5	72.0	77.7	88.0	100.2	108.0	112.9	121.3
70–79 years . . . . .	555	85.0	0.92	61.4	65.4	68.4	73.4	83.8	94.7	98.9	104.5	116.7
80 years and over . . . . .	353	76.3	0.62	55.4	59.7	63.4	66.9	75.5	84.7	89.4	92.9	99.7
Non-Hispanic white												
20 years and over . . . . .	2,339	89.6	0.48	64.2	68.6	71.7	76.8	87.3	99.2	107.0	111.9	122.7
20–39 years . . . . .	666	87.7	0.90	62.6	66.5	69.9	74.6	84.2	96.9	104.4	109.8	122.2
40–59 years . . . . .	709	92.5	0.85	66.9	72.1	75.1	79.8	90.5	102.6	110.2	114.6	124.1
60 years and over . . . . .	964	87.2	0.58	62.4	66.7	69.8	75.5	85.4	96.4	103.9	109.8	118.7
Non-Hispanic black												
20 years and over . . . . .	941	90.6	0.99	62.3	66.6	70.2	75.0	86.2	100.5	109.6	117.8	137.2
20–39 years . . . . .	361	91.8	1.50	62.0	66.6	70.4	74.4	86.2	102.7	112.1	122.3	143.1
40–59 years . . . . .	316	91.2	1.16	63.4	68.2	70.5	75.9	86.7	100.6	107.6	118.5	137.6
60 years and over . . . . .	264	85.7	1.21	59.6	64.0	67.3	72.2	84.4	96.9	105.2	109.3	116.7
Mexican American												
20 years and over . . . . .	903	81.9	0.85	60.0	62.7	66.0	70.5	79.6	90.0	97.7	102.1	112.9
20–39 years . . . . .	375	82.1	1.31	59.8	61.7	64.8	69.3	79.0	91.1	99.5	103.2	114.3
40–59 years . . . . .	247	82.0	0.92	61.2	65.5	68.5	72.4	80.6	89.0	93.5	97.5	109.3
60 years and over . . . . .	281	79.8	1.15	55.6	61.2	64.9	68.6	78.6	89.2	95.2	99.4	107.1

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

**Table 6. Weight in pounds for males 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States, 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Pounds												
20 years and over . . . . .	4,489	194.7	1.02	137.1	147.0	154.6	165.7	188.8	216.8	234.5	245.8	270.3
20–29 years . . . . .	811	188.3	2.33	132.0	139.7	146.5	157.3	178.7	207.9	230.5	245.8	270.3
30–39 years . . . . .	741	194.1	1.77	137.9	148.0	154.2	163.8	189.3	216.3	230.0	241.6	266.4
40–49 years . . . . .	769	202.3	1.83	145.4	156.7	163.3	174.8	196.1	223.1	242.0	251.2	275.0
50–59 years . . . . .	591	198.8	2.10	142.2	152.2	159.9	169.8	195.5	221.6	238.1	249.4	274.3
60–69 years . . . . .	669	198.3	2.16	140.7	151.1	158.7	171.2	194.1	220.8	238.1	248.9	267.4
70–79 years . . . . .	555	187.4	2.03	135.4	144.2	150.7	161.8	184.7	208.8	218.0	230.4	257.4
80 years and over . . . . .	353	168.1	1.36	122.1	131.5	139.8	147.6	166.5	186.7	197.0	204.9	219.9
Non-Hispanic white												
20 years and over . . . . .	2,339	197.4	1.05	141.6	151.3	158.0	169.2	192.5	218.6	236.0	246.7	270.5
20–39 years . . . . .	666	193.5	1.98	138.1	146.6	154.1	164.5	185.7	213.7	230.2	242.0	269.4
40–59 years . . . . .	709	203.8	1.88	147.5	158.9	165.5	176.0	199.6	226.2	243.0	252.7	273.5
60 years and over . . . . .	964	192.3	1.27	137.5	147.1	154.0	166.4	188.3	212.5	229.1	242.1	261.6
Non-Hispanic black												
20 years and over . . . . .	941	199.8	2.19	137.3	146.8	154.7	165.3	190.1	221.5	241.7	259.6	302.5
20–39 years . . . . .	361	202.4	3.31	136.8	146.8	155.2	164.0	190.0	226.4	247.2	269.6	315.5
40–59 years . . . . .	316	201.0	2.56	139.7	150.3	155.3	167.4	191.1	221.7	237.3	261.3	303.2
60 years and over . . . . .	264	189.0	2.66	131.3	141.1	148.4	159.3	186.1	213.7	231.8	240.9	257.2
Mexican American												
20 years and over . . . . .	903	180.5	1.88	132.3	138.2	145.5	155.5	175.5	198.3	215.4	225.1	248.8
20–39 years . . . . .	375	181.1	2.89	131.9	136.0	142.9	152.7	174.1	200.9	219.5	227.5	251.9
40–59 years . . . . .	247	180.7	2.03	134.9	144.5	151.0	159.6	177.7	196.3	206.2	214.9	240.9
60 years and over . . . . .	281	175.9	2.55	122.6	134.9	143.2	151.3	173.2	196.7	209.8	219.1	236.2

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

**Table 7. Height in centimeters for children and adolescents aged 2–19 years by sex and age, by mean, standard error of the mean, and selected percentiles: United States, 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Centimeters												
2 years	258	91.9	0.22	*	86.9	88.0	89.2	91.9	94.5	96.2	96.8	*
3 years	209	98.5	0.44	*	92.6	93.3	94.9	98.2	102.1	103.8	105.2	*
4 years	206	107.1	0.44	*	99.9	102.0	104.4	106.8	110.8	111.8	113.9	*
5 years	202	114.4	0.52	*	107.0	108.5	111.4	114.6	117.9	119.6	120.8	*
6 years	176	120.6	0.47	*	114.0	115.7	117.5	120.8	124.0	125.6	127.0	*
7 years	181	124.7	0.75	*	113.5	115.6	120.2	125.2	129.3	131.5	133.1	*
8 years	152	131.1	0.68	*	123.6	124.6	127.1	130.3	134.6	138.0	139.1	*
9 years	176	136.8	0.49	*	129.2	130.3	132.9	137.1	141.4	143.3	143.9	*
10 years	171	142.3	0.77	*	133.0	134.3	136.8	141.5	147.0	149.3	151.3	*
11 years	158	150.0	1.16	*	140.6	141.4	144.4	149.4	156.1	159.8	161.1	*
12 years	275	154.7	0.54	*	145.2	146.5	149.5	153.9	160.3	162.5	164.8	*
13 years	284	161.9	0.87	*	149.7	151.7	154.1	162.2	168.3	171.3	173.5	*
14 years	260	168.7	0.70	*	158.4	159.9	163.1	169.0	174.7	177.5	179.0	*
15 years	270	173.6	0.61	*	163.5	165.4	169.2	174.8	178.0	180.2	182.0	*
16 years	308	175.9	0.66	164.2	166.9	167.8	170.4	176.0	180.2	183.8	186.9	188.7
17 years	278	176.6	0.49	*	167.5	168.7	171.2	176.8	181.7	183.4	185.2	*
18 years	284	176.8	0.54	*	167.1	169.5	172.4	176.4	181.3	183.5	186.3	*
19 years	271	176.7	0.91	*	165.3	168.0	170.8	177.4	182.5	185.5	186.6	*
Female												
2 years	285	90.2	0.39	*	84.0	84.8	87.2	90.2	93.2	94.5	95.6	*
3 years	187	98.3	0.35	*	91.9	93.7	95.9	98.1	101.5	102.8	104.1	*
4 years	225	105.2	0.40	*	99.2	100.6	101.9	105.2	107.9	110.4	111.9	*
5 years	199	112.2	0.54	*	105.2	105.8	107.4	111.7	116.6	119.0	119.6	*
6 years	193	119.0	0.53	*	112.7	113.3	114.8	118.2	122.8	125.7	127.6	*
7 years	157	125.8	0.77	*	118.0	119.3	121.4	125.6	129.3	131.5	133.1	*
8 years	184	131.3	0.54	*	123.3	124.3	126.8	130.5	135.2	137.9	138.7	*
9 years	185	138.6	0.70	*	130.2	131.4	133.4	138.3	143.7	146.0	147.1	*
10 years	189	144.2	0.73	*	135.0	136.9	138.6	143.7	148.7	151.3	152.8	*
11 years	174	151.3	0.69	*	141.1	143.8	146.2	151.4	156.9	159.9	161.3	*
12 years	249	156.7	0.55	*	148.3	149.4	152.0	156.7	160.8	164.0	166.6	*
13 years	292	158.6	0.62	147.1	150.0	151.2	153.8	157.7	163.0	166.5	167.9	170.5
14 years	270	160.5	0.58	*	150.7	152.3	155.7	161.0	165.0	167.5	169.3	*
15 years	254	162.1	0.60	*	154.3	155.9	158.4	162.0	165.8	168.5	170.1	*
16 years	261	162.9	0.58	*	153.6	154.7	157.0	162.8	168.7	171.5	172.4	*
17 years	275	162.2	0.41	*	155.6	157.0	158.5	162.2	166.2	168.0	169.2	*
18 years	304	163.0	0.49	151.9	154.7	156.1	158.4	162.8	167.6	169.8	171.1	173.3
19 years	267	163.1	0.58	*	153.1	155.4	158.1	163.3	168.0	170.3	172.4	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.

**Table 8. Height in inches for children and adolescents aged 2–19 years by sex and age, by mean, standard error of the mean, and selected percentiles: United States, 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Inches												
2 years	258	36.2	0.09	*	34.2	34.7	35.1	36.2	37.2	37.9	38.1	*
3 years	209	38.8	0.17	*	36.5	36.7	37.4	38.7	40.2	40.9	41.4	*
4 years	206	42.2	0.17	*	39.3	40.1	41.1	42.1	43.6	44.0	44.8	*
5 years	202	45.0	0.20	*	42.1	42.7	43.9	45.1	46.4	47.1	47.6	*
6 years	176	47.5	0.19	*	44.9	45.5	46.3	47.6	48.8	49.4	50.0	*
7 years	181	49.1	0.29	*	44.7	45.5	47.3	49.3	50.9	51.8	52.4	*
8 years	152	51.6	0.27	*	48.7	49.0	50.0	51.3	53.0	54.3	54.8	*
9 years	176	53.9	0.19	*	50.9	51.3	52.3	54.0	55.7	56.4	56.6	*
10 years	171	56.0	0.30	*	52.4	52.9	53.9	55.7	57.9	58.8	59.6	*
11 years	158	59.1	0.46	*	55.4	55.7	56.8	58.8	61.4	62.9	63.4	*
12 years	275	60.9	0.21	*	57.2	57.7	58.9	60.6	63.1	64.0	64.9	*
13 years	284	63.7	0.34	*	58.9	59.7	60.7	63.9	66.3	67.4	68.3	*
14 years	260	66.4	0.28	*	62.3	63.0	64.2	66.5	68.8	69.9	70.5	*
15 years	270	68.3	0.24	*	64.4	65.1	66.6	68.8	70.1	70.9	71.7	*
16 years	308	69.2	0.26	64.6	65.7	66.1	67.1	69.3	71.0	72.4	73.6	74.3
17 years	278	69.5	0.19	*	65.9	66.4	67.4	69.6	71.5	72.2	72.9	*
18 years	284	69.6	0.21	*	65.8	66.7	67.9	69.4	71.4	72.2	73.3	*
19 years	271	69.6	0.36	*	65.1	66.1	67.3	69.8	71.8	73.0	73.5	*
Female												
2 years	285	35.5	0.15	*	33.1	33.4	34.3	35.5	36.7	37.2	37.6	*
3 years	187	38.7	0.14	*	36.2	36.9	37.8	38.6	40.0	40.5	41.0	*
4 years	225	41.4	0.16	*	39.1	39.6	40.1	41.4	42.5	43.5	44.1	*
5 years	199	44.2	0.21	*	41.4	41.6	42.3	44.0	45.9	46.8	47.1	*
6 years	193	46.9	0.21	*	44.4	44.6	45.2	46.6	48.4	49.5	50.2	*
7 years	157	49.5	0.30	*	46.5	47.0	47.8	49.5	50.9	51.8	52.4	*
8 years	184	51.7	0.21	*	48.5	48.9	49.9	51.4	53.2	54.3	54.6	*
9 years	185	54.5	0.28	*	51.2	51.7	52.5	54.5	56.6	57.5	57.9	*
10 years	189	56.8	0.29	*	53.2	53.9	54.6	56.6	58.5	59.6	60.1	*
11 years	174	59.6	0.27	*	55.6	56.6	57.6	59.6	61.8	63.0	63.5	*
12 years	249	61.7	0.22	*	58.4	58.8	59.8	61.7	63.3	64.6	65.6	*
13 years	292	62.4	0.24	57.9	59.1	59.5	60.5	62.1	64.2	65.6	66.1	67.1
14 years	270	63.2	0.23	*	59.3	60.0	61.3	63.4	65.0	65.9	66.7	*
15 years	254	63.8	0.24	*	60.7	61.4	62.4	63.8	65.3	66.3	67.0	*
16 years	261	64.1	0.23	*	60.5	60.9	61.8	64.1	66.4	67.5	67.9	*
17 years	275	63.9	0.16	*	61.3	61.8	62.4	63.8	65.4	66.1	66.6	*
18 years	304	64.2	0.19	59.8	60.9	61.5	62.3	64.1	66.0	66.8	67.3	68.2
19 years	267	64.2	0.23	*	60.3	61.2	62.2	64.3	66.1	67.0	67.9	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.

**Table 9. Height in centimeters for females 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States, 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,857	162.2	0.16	150.7	153.3	154.9	157.7	162.2	166.7	169.1	170.8	173.1
20–29 years . . . . .	1,061	163.2	0.31	152.2	154.8	156.5	158.7	163.0	167.9	169.8	171.4	172.8
30–39 years . . . . .	842	163.2	0.32	152.4	154.4	156.2	158.9	163.0	167.6	170.4	172.0	174.2
40–49 years . . . . .	784	163.1	0.29	152.1	153.9	155.8	158.5	163.1	167.6	169.8	171.9	174.0
50–59 years . . . . .	604	162.2	0.34	150.7	153.3	155.4	158.1	162.1	166.8	168.7	170.3	172.4
60–69 years . . . . .	691	161.8	0.33	151.9	153.8	155.1	157.6	161.9	165.9	168.0	170.0	171.5
70–79 years . . . . .	463	159.2	0.34	149.0	150.9	152.6	155.0	159.0	163.7	165.5	167.4	169.4
80 years and over . . . . .	412	156.0	0.37	146.2	148.0	149.4	151.7	155.8	159.7	162.3	164.3	166.1
Non-Hispanic white												
20 years and over . . . . .	2,477	163.0	0.15	152.1	154.4	156.3	158.7	163.0	167.5	169.7	171.3	173.6
20–39 years . . . . .	866	164.8	0.22	154.7	157.2	158.6	160.7	164.7	168.9	171.1	172.4	174.4
40–59 years . . . . .	677	163.6	0.27	152.6	155.5	157.5	159.4	163.4	167.7	169.9	171.8	174.0
60 years and over . . . . .	934	160.2	0.27	149.7	152.0	153.6	155.9	159.8	164.5	166.7	168.6	170.5
Non-Hispanic black												
20 years and over . . . . .	1,035	162.7	0.26	151.5	153.9	155.5	158.2	162.7	167.0	169.6	171.0	173.8
20–39 years . . . . .	407	163.2	0.43	151.6	154.7	156.3	158.5	163.0	167.3	170.1	171.8	174.5
40–59 years . . . . .	355	163.2	0.40	152.2	154.1	155.9	158.7	163.5	167.5	169.7	171.2	173.7
60 years and over . . . . .	273	160.6	0.32	150.0	152.6	153.6	156.2	160.5	165.2	166.8	169.0	170.5
Mexican American												
20 years and over . . . . .	975	157.8	0.24	147.3	149.8	151.1	153.6	157.8	161.9	164.3	166.2	168.1
20–39 years . . . . .	455	158.7	0.32	148.2	150.7	152.5	154.6	159.0	162.6	165.0	166.6	168.9
40–59 years . . . . .	238	157.7	0.48	*	149.9	151.1	153.5	157.6	161.7	164.0	165.8	*
60 years and over . . . . .	282	153.9	0.48	144.9	145.9	147.4	150.1	154.0	158.1	159.7	161.6	164.3

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

**Table 10. Height in inches for females 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Inches												
20 years and over . . . . .	4,857	63.8	0.06	59.3	60.3	61.0	62.1	63.8	65.6	66.6	67.2	68.2
20–29 years . . . . .	1,061	64.3	0.12	59.9	60.9	61.6	62.5	64.2	66.1	66.9	67.5	68.0
30–39 years . . . . .	842	64.3	0.13	60.0	60.8	61.5	62.5	64.2	66.0	67.1	67.7	68.6
40–49 years . . . . .	784	64.2	0.12	59.9	60.6	61.4	62.4	64.2	66.0	66.9	67.7	68.5
50–59 years . . . . .	604	63.9	0.13	59.3	60.4	61.2	62.2	63.8	65.7	66.4	67.1	67.9
60–69 years . . . . .	691	63.7	0.13	59.8	60.5	61.1	62.1	63.7	65.3	66.1	66.9	67.5
70–79 years . . . . .	463	62.7	0.13	58.6	59.4	60.1	61.0	62.6	64.4	65.2	65.9	66.7
80 years and over . . . . .	412	61.4	0.15	57.5	58.3	58.8	59.7	61.3	62.9	63.9	64.7	65.4
Non-Hispanic white												
20 years and over . . . . .	2,477	64.2	0.06	59.9	60.8	61.5	62.5	64.2	66.0	66.8	67.5	68.4
20–39 years . . . . .	866	64.9	0.09	60.9	61.9	62.4	63.3	64.8	66.5	67.4	67.9	68.7
40–59 years . . . . .	677	64.4	0.11	60.1	61.2	62.0	62.8	64.3	66.0	66.9	67.6	68.5
60 years and over . . . . .	934	63.1	0.11	58.9	59.8	60.5	61.4	62.9	64.8	65.6	66.4	67.1
Non-Hispanic black												
20 years and over . . . . .	1,035	64.1	0.10	59.7	60.6	61.2	62.3	64.0	65.8	66.8	67.3	68.4
20–39 years . . . . .	407	64.3	0.17	59.7	60.9	61.5	62.4	64.2	65.9	67.0	67.6	68.7
40–59 years . . . . .	355	64.3	0.16	59.9	60.7	61.4	62.5	64.4	65.9	66.8	67.4	68.4
60 years and over . . . . .	273	63.2	0.12	59.1	60.1	60.5	61.5	63.2	65.0	65.7	66.5	67.1
Mexican American												
20 years and over . . . . .	975	62.1	0.10	58.0	59.0	59.5	60.5	62.1	63.7	64.7	65.4	66.2
20–39 years . . . . .	455	62.5	0.13	58.3	59.3	60.1	60.9	62.6	64.0	64.9	65.6	66.5
40–59 years . . . . .	238	62.1	0.19	*	59.0	59.5	60.4	62.0	63.7	64.6	65.3	*
60 years and over . . . . .	282	60.6	0.19	57.1	57.4	58.0	59.1	60.6	62.2	62.9	63.6	64.7

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.



**Table 11. Height in centimeters for males 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,482	176.3	0.17	163.6	166.6	168.4	171.3	176.3	181.5	184.4	186.0	188.7
20–29 years . . . . .	808	177.6	0.34	164.2	167.1	169.3	172.3	177.8	183.0	185.3	186.8	190.1
30–39 years . . . . .	742	176.4	0.33	162.7	165.9	167.9	171.4	176.4	181.5	184.6	186.4	189.6
40–49 years . . . . .	769	177.1	0.28	165.6	168.2	169.8	172.3	177.0	181.8	184.6	186.2	188.0
50–59 years . . . . .	591	176.6	0.38	165.1	167.2	168.8	171.4	176.6	181.5	184.6	186.5	189.1
60–69 years . . . . .	668	175.4	0.28	163.1	166.2	167.8	170.5	175.3	180.7	182.7	184.8	187.2
70–79 years . . . . .	555	173.8	0.41	162.1	164.1	166.3	168.6	174.0	178.5	180.4	182.9	185.7
80 years and over . . . . .	349	170.7	0.36	159.2	161.7	163.4	166.4	170.7	175.0	177.8	179.0	181.2
Non-Hispanic white												
20 years and over . . . . .	2,331	177.5	0.20	166.0	168.5	170.2	172.6	177.4	182.4	184.9	186.5	189.1
20–39 years . . . . .	664	178.9	0.25	167.4	170.1	171.9	174.4	178.9	183.4	185.7	187.7	190.3
40–59 years . . . . .	710	178.0	0.35	167.3	169.2	170.8	173.1	177.9	182.8	185.2	186.6	188.8
60 years and over . . . . .	957	174.6	0.20	162.6	165.2	167.1	169.8	174.6	179.7	182.2	183.7	186.4
Non-Hispanic black												
20 years and over . . . . .	943	177.2	0.20	165.4	167.8	169.8	172.3	177.0	181.9	184.7	186.4	189.6
20–39 years . . . . .	361	178.0	0.35	166.3	167.9	170.1	173.1	177.7	183.0	185.2	187.1	190.6
40–59 years . . . . .	316	177.4	0.33	166.0	168.6	170.3	172.7	177.2	181.6	184.5	186.6	189.0
60 years and over . . . . .	266	174.3	0.52	163.0	164.7	166.8	169.4	174.0	179.1	181.8	183.5	185.7
Mexican American												
20 years and over . . . . .	902	170.3	0.34	158.7	161.1	163.0	165.2	170.4	174.9	177.0	178.9	182.0
20–39 years . . . . .	375	170.6	0.46	158.3	161.2	163.3	165.3	170.6	175.2	177.6	180.5	183.7
40–59 years . . . . .	246	170.2	0.40	159.4	161.4	163.3	165.6	170.8	174.9	176.3	178.1	180.1
60 years and over . . . . .	281	167.8	0.42	157.7	159.4	160.8	163.4	167.8	172.4	173.7	175.1	176.9

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

**Table 12. Height in inches for males 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Inches												
20 years and over . . . . .	4,482	69.4	0.07	64.4	65.6	66.3	67.4	69.4	71.5	72.6	73.2	74.3
20–29 years . . . . .	808	69.9	0.13	64.7	65.8	66.6	67.8	70.0	72.0	73.0	73.5	74.8
30–39 years . . . . .	742	69.4	0.13	64.1	65.3	66.1	67.5	69.5	71.5	72.7	73.4	74.7
40–49 years . . . . .	769	69.7	0.11	65.2	66.2	66.8	67.9	69.7	71.6	72.7	73.3	74.0
50–59 years . . . . .	591	69.5	0.15	65.0	65.8	66.5	67.5	69.5	71.5	72.7	73.4	74.4
60–69 years . . . . .	668	69.0	0.11	64.2	65.4	66.1	67.1	69.0	71.1	71.9	72.7	73.7
70–79 years . . . . .	555	68.4	0.16	63.8	64.6	65.5	66.4	68.5	70.3	71.0	72.0	73.1
80 years and over . . . . .	349	67.2	0.14	62.7	63.6	64.3	65.5	67.2	68.9	70.0	70.5	71.3
Non-Hispanic white												
20 years and over . . . . .	2,331	69.9	0.08	65.4	66.3	67.0	68.0	69.8	71.8	72.8	73.4	74.5
20–39 years . . . . .	664	70.4	0.10	65.9	67.0	67.7	68.6	70.4	72.2	73.1	73.9	74.9
40–59 years . . . . .	710	70.1	0.14	65.9	66.6	67.3	68.2	70.0	72.0	72.9	73.5	74.3
60 years and over . . . . .	957	68.8	0.08	64.0	65.0	65.8	66.8	68.8	70.7	71.7	72.3	73.4
Non-Hispanic black												
20 years and over . . . . .	943	69.8	0.08	65.1	66.1	66.9	67.8	69.7	71.6	72.7	73.4	74.6
20–39 years . . . . .	361	70.1	0.14	65.5	66.1	67.0	68.1	70.0	72.0	72.9	73.7	75.1
40–59 years . . . . .	316	69.8	0.13	65.4	66.4	67.0	68.0	69.8	71.5	72.7	73.5	74.4
60 years and over . . . . .	266	68.6	0.20	64.2	64.9	65.7	66.7	68.5	70.5	71.6	72.2	73.1
Mexican American												
20 years and over . . . . .	902	67.0	0.13	62.5	63.4	64.2	65.0	67.1	68.8	69.7	70.5	71.6
20–39 years . . . . .	375	67.2	0.18	62.3	63.5	64.3	65.1	67.1	69.0	69.9	71.1	72.3
40–59 years . . . . .	246	67.0	0.16	62.8	63.6	64.3	65.2	67.2	68.9	69.4	70.1	70.9
60 years and over . . . . .	281	66.1	0.17	62.1	62.7	63.3	64.3	66.1	67.9	68.4	68.9	69.6

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

**Table 13. Body mass index values for children and adolescents aged 2–19 years by sex and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Body mass index												
2 years	258	16.8	0.10	15.1	15.3	15.6	15.8	16.6	17.6	18.1	18.3	19.2
3 years	209	16.2	0.11	*	14.5	14.8	15.3	16.2	16.9	17.2	17.6	*
4 years	206	16.2	0.14	*	14.1	14.3	14.8	16.0	16.9	17.7	18.4	*
5 years	202	16.8	0.25	*	14.2	14.5	14.9	16.0	17.5	18.5	19.5	*
6 years	176	16.5	0.15	*	14.2	14.7	15.0	16.1	17.4	18.7	19.1	*
7 years	181	16.9	0.24	*	14.3	14.7	15.1	16.2	17.6	19.3	20.0	*
8 years	151	18.1	0.35	*	14.6	15.0	15.5	17.2	19.1	20.8	22.5	*
9 years	176	18.4	0.34	*	14.7	15.1	15.7	17.3	20.3	21.6	22.7	*
10 years	171	19.6	0.33	*	15.5	15.7	16.5	18.0	21.8	24.4	26.0	*
11 years	158	20.5	0.54	*	15.9	16.5	16.9	18.3	22.8	26.6	27.4	*
12 years	275	21.0	0.44	15.2	16.0	16.6	17.3	19.7	23.2	25.8	28.1	31.8
13 years	284	21.8	0.40	15.7	16.8	17.3	17.8	20.8	24.0	25.9	28.5	31.5
14 years	260	22.0	0.51	16.4	17.2	17.5	18.5	20.9	23.8	26.4	29.1	32.4
15 years	270	23.2	0.36	17.7	17.9	18.7	19.7	21.9	25.0	27.7	30.5	31.6
16 years	308	24.5	0.43	17.5	18.9	19.4	20.3	22.6	27.7	30.6	32.7	35.5
17 years	278	24.0	0.45	18.3	18.8	19.0	20.0	22.4	26.7	29.4	31.3	34.0
18 years	283	24.6	0.54	17.7	19.0	19.6	20.9	23.1	27.5	30.2	31.7	36.3
19 years	271	25.6	0.53	18.4	19.3	20.1	21.6	24.2	28.6	31.7	34.0	36.4
Female												
2 years	285	16.6	0.11	*	14.7	15.1	15.4	16.3	17.4	18.3	18.7	*
3 years	187	16.3	0.18	*	14.5	14.8	15.1	15.9	16.9	18.0	19.0	*
4 years	224	16.1	0.14	*	14.3	14.6	15.0	15.8	16.7	17.1	18.0	*
5 years	199	16.2	0.19	*	14.3	14.5	14.9	15.5	16.9	18.1	18.9	*
6 years	193	16.4	0.21	*	14.1	14.5	14.8	15.9	17.3	18.4	19.4	*
7 years	157	17.1	0.26	*	14.4	14.8	15.2	16.4	18.2	19.6	20.5	*
8 years	184	17.6	0.42	*	14.2	14.6	15.1	16.6	18.7	21.5	22.8	*
9 years	185	18.9	0.36	*	15.1	15.5	15.9	18.1	21.1	22.6	24.4	*
10 years	189	20.2	0.40	*	15.3	15.7	16.5	19.3	22.4	25.7	26.9	*
11 years	174	21.3	0.47	*	15.9	16.3	17.6	20.6	23.9	26.1	28.4	*
12 years	249	21.4	0.45	*	15.5	16.9	18.0	20.0	23.1	27.5	29.0	*
13 years	292	22.7	0.35	*	17.0	17.8	18.9	21.4	25.8	28.1	30.1	*
14 years	269	22.8	0.62	*	17.7	18.1	18.6	21.2	25.2	28.9	31.0	*
15 years	247	23.2	0.28	*	18.3	18.7	19.7	22.1	25.8	27.3	29.4	*
16 years	253	23.2	0.39	*	18.5	19.1	20.1	21.5	25.0	27.4	30.1	*
17 years	252	25.0	0.60	*	19.1	19.5	20.7	22.9	27.4	30.8	32.7	*
18 years	271	25.4	0.80	*	18.5	19.1	20.7	23.5	28.2	33.1	34.7	*
19 years	238	25.3	0.64	*	19.6	20.1	21.1	23.6	27.4	31.1	33.7	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.NOTE: Pregnant females were excluded. Body mass index (BMI) is calculated as follows: BMI = weight(kilograms)/height(meters<sup>2</sup>).

**Table 14. Body mass index values for females 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Body mass index												
20 years and over . . . . .	4,313	28.4	0.19	19.4	20.7	21.6	23.1	26.9	32.2	35.5	38.1	41.6
20–29 years . . . . .	705	26.5	0.36	18.2	19.4	20.1	21.4	24.4	30.0	33.4	35.9	41.3
30–39 years . . . . .	663	28.1	0.38	19.4	20.3	21.2	22.9	26.1	32.2	35.4	37.9	41.2
40–49 years . . . . .	778	29.2	0.39	19.8	21.2	21.9	23.6	27.5	33.4	36.9	38.9	43.5
50–59 years . . . . .	602	29.6	0.39	20.2	21.3	22.4	23.9	28.3	33.9	37.7	40.2	44.1
60–69 years . . . . .	691	29.5	0.33	20.6	22.1	23.2	24.7	28.1	32.9	36.1	37.9	42.0
70–79 years . . . . .	463	27.8	0.40	19.6	21.1	22.5	24.0	27.0	30.9	33.1	35.8	39.6
80 years and over . . . . .	411	26.4	0.27	19.7	20.8	21.7	23.1	26.0	29.6	31.7	33.0	34.3
Non-Hispanic white												
20 years and over . . . . .	2,222	27.9	0.22	19.3	20.5	21.4	22.9	26.4	31.6	34.9	37.3	41.1
20–39 years . . . . .	615	26.5	0.36	19.0	19.6	20.4	21.6	24.5	30.1	33.8	36.0	40.4
40–59 years . . . . .	673	29.0	0.35	19.8	21.0	21.7	23.5	27.3	33.3	36.5	38.8	43.0
60 years and over . . . . .	934	28.0	0.21	19.8	21.3	22.4	24.0	27.1	31.0	33.4	35.8	39.6
Non-Hispanic black												
20 years and over . . . . .	956	31.6	0.28	20.5	22.2	23.7	25.9	30.5	36.2	39.7	41.4	46.4
20–39 years . . . . .	328	30.8	0.46	19.8	21.3	22.5	24.8	29.4	35.1	39.5	40.9	45.4
40–59 years . . . . .	355	32.4	0.33	20.6	23.3	24.8	27.1	30.8	37.4	40.4	43.2	47.3
60 years and over . . . . .	273	31.8	0.44	22.1	23.1	24.0	26.0	31.0	35.9	38.3	41.2	46.4
Mexican American												
20 years and over . . . . .	815	29.5	0.37	20.8	22.1	22.8	24.6	28.2	33.2	36.3	38.1	42.6
20–39 years . . . . .	300	28.8	0.47	20.2	21.3	22.1	23.6	27.7	32.8	35.2	37.8	42.5
40–59 years . . . . .	234	30.7	0.50	22.0	23.0	23.8	25.2	29.9	34.6	37.6	39.0	43.1
60 years and over . . . . .	281	29.2	0.44	21.9	22.7	23.6	25.1	28.2	32.4	34.5	36.1	40.2

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

NOTE: Pregnant females were excluded. Body mass index (BMI) is calculated as follows: BMI = weight(kilograms)/height(meters<sup>2</sup>).

**Table 15. Body mass index values for males 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Body mass index												
20 years and over . . . . .	4,474	28.4	0.14	20.8	22.1	23.1	24.6	27.7	31.2	33.4	35.3	38.6
20–29 years . . . . .	808	27.0	0.31	19.2	20.7	21.7	23.1	25.8	30.1	32.6	34.2	38.9
30–39 years . . . . .	741	28.2	0.23	21.0	22.3	23.1	24.5	27.6	31.0	32.9	34.7	37.7
40–49 years . . . . .	768	29.2	0.26	22.1	23.1	24.0	25.5	28.4	31.9	34.1	36.0	38.8
50–59 years . . . . .	590	28.9	0.27	21.1	22.4	23.6	25.3	28.1	31.7	34.3	36.5	39.3
60–69 years . . . . .	665	29.2	0.29	21.5	23.1	24.1	25.8	28.6	32.0	34.2	36.2	38.5
70–79 years . . . . .	554	28.1	0.25	21.1	22.3	23.5	24.8	27.6	30.9	32.8	34.2	36.5
80 years and over . . . . .	348	26.2	0.19	19.7	21.0	21.7	23.1	26.1	28.7	30.4	31.8	33.3
Non-Hispanic white												
20 years and over . . . . .	2,328	28.4	0.16	20.9	22.2	23.1	24.7	27.7	31.2	33.6	35.4	38.6
20–39 years . . . . .	664	27.4	0.26	20.1	21.4	22.2	23.5	26.4	30.2	32.6	34.2	37.3
40–59 years . . . . .	708	29.2	0.26	21.6	23.0	24.0	25.5	28.4	31.8	34.3	36.4	39.2
60 years and over . . . . .	956	28.6	0.16	21.2	22.7	23.9	25.2	28.1	31.2	33.2	35.2	37.8
Non-Hispanic black												
20 years and over . . . . .	939	28.8	0.30	20.5	21.5	22.8	24.4	27.5	32.0	34.6	36.7	41.4
20–39 years . . . . .	360	28.9	0.45	20.2	20.8	22.1	24.0	27.8	32.0	34.8	38.2	42.4
40–59 years . . . . .	316	28.9	0.37	21.3	22.4	23.1	24.7	27.3	32.0	34.6	36.9	41.3
60 years and over . . . . .	263	28.1	0.30	20.4	21.6	22.9	24.4	27.3	31.5	33.6	35.1	38.0
Mexican American												
20 years and over . . . . .	901	28.2	0.26	21.2	22.8	23.5	24.9	27.7	30.6	32.4	34.0	37.1
20–39 years . . . . .	375	28.1	0.36	20.8	22.4	23.2	24.7	27.7	30.7	32.8	34.0	37.7
40–59 years . . . . .	246	28.3	0.31	21.9	23.4	24.1	25.7	27.9	30.5	31.6	33.0	36.2
60 years and over . . . . .	280	28.2	0.33	21.5	23.0	23.7	24.9	27.5	30.7	33.0	34.6	36.2

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.NOTE: Body mass index (BMI) is calculated as follows: BMI = weight(kilograms)/height(meters<sup>2</sup>).**Table 16. Head circumference in centimeters for infants from birth through 6 months of age by sex and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Centimeters												
Birth–2 months . . . . .	100	39.1	0.21	*	*	37.4	37.9	39.0	40.5	40.8	*	*
3–5 months . . . . .	137	42.9	0.17	*	40.6	41.2	41.7	42.8	43.8	44.6	44.7	*
6 months . . . . .	44	44.2	0.34	*	*	*	*	*	*	*	*	*
Female												
Birth–2 months . . . . .	81	38.4	0.18	*	*	37.1	37.5	38.4	39.2	39.7	*	*
3–5 months . . . . .	93	41.3	0.16	*	*	39.6	40.3	41.5	42.4	42.6	*	*
6 months . . . . .	41	43.2	0.30	*	*	*	*	*	*	*	*	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.

**Table 17. Recumbent length in centimeters for children from birth through 47 months of age by sex and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Centimeters												
0–2 months . . . . .	100	56.9	0.42	*	*	53.2	54.7	57.0	59.7	60.5	*	*
3–5 months . . . . .	139	64.4	0.39	*	60.8	61.1	62.3	64.3	66.5	67.3	68.1	*
6–8 months . . . . .	130	69.2	0.36	*	64.8	65.6	67.3	69.2	71.5	72.2	73.0	*
9–11 months . . . . .	123	73.8	0.33	*	70.4	70.9	71.6	74.0	75.4	76.8	77.3	*
12–23 months . . . . .	353	82.3	0.30	74.7	76.4	77.4	78.6	82.3	85.9	87.5	88.6	91.1
24–35 months . . . . .	268	92.4	0.28	85.5	87.3	88.1	89.6	92.3	95.1	96.7	97.9	99.2
36–47 months . . . . .	198	99.4	0.42	*	93.3	93.8	95.9	99.2	102.9	104.4	106.0	*
Female												
0–2 months . . . . .	80	56.5	0.62	*	*	*	54.3	56.0	57.9	*	*	*
3–5 months . . . . .	94	63.1	0.36	*	*	59.7	61.5	63.5	64.9	65.8	*	*
6–8 months . . . . .	121	67.8	0.35	*	*	65.1	66.3	67.9	69.2	70.5	*	*
9–11 months . . . . .	125	71.6	0.27	*	*	68.4	70.1	71.9	73.4	74.2	*	*
12–23 months . . . . .	324	80.5	0.29	73.3	75.0	75.7	76.8	80.6	84.0	85.2	86.3	88.1
24–35 months . . . . .	312	90.4	0.40	82.3	84.0	84.9	87.0	90.3	93.9	95.6	96.3	97.8
36–47 months . . . . .	183	99.5	0.37	*	93.2	95.2	97.0	99.4	102.2	103.8	105.1	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.



**Table 18. Waist circumference in centimeters for children and adolescents aged 2–19 years by sex and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Centimeters												
2 years	231	48.7	0.25	*	45.0	45.4	46.4	48.3	50.9	51.9	52.8	*
3 years	199	50.2	0.30	*	45.9	46.5	47.7	50.0	52.3	53.4	54.3	*
4 years	199	52.3	0.40	*	47.4	47.9	49.0	51.5	54.3	55.8	58.0	*
5 years	198	56.5	0.73	*	49.4	50.4	51.4	54.4	58.3	60.8	64.1	*
6 years	174	57.0	0.46	*	50.8	52.3	53.0	55.5	59.4	63.0	65.7	*
7 years	177	58.9	0.77	*	51.8	52.4	53.4	56.5	61.9	65.8	69.7	*
8 years	146	63.2	1.11	*	53.7	54.8	56.3	59.7	67.3	72.1	81.0	*
9 years	173	64.9	0.91	*	55.0	55.5	57.0	63.0	68.8	75.5	77.0	*
10 years	171	69.1	0.93	*	57.4	58.0	60.0	65.4	76.3	81.9	86.2	*
11 years	153	72.9	1.63	*	58.2	60.3	61.6	67.4	83.1	89.5	93.5	*
12 years	272	75.3	1.17	59.1	60.9	62.0	64.6	71.2	82.5	88.5	91.5	107.9
13 years	282	77.9	1.13	62.2	63.7	64.9	66.8	74.6	84.2	89.4	97.4	107.1
14 years	257	78.3	1.34	63.4	65.7	66.9	68.6	73.8	82.9	93.5	99.4	103.0
15 years	266	81.3	0.92	66.5	68.1	69.4	72.1	78.2	86.9	92.8	98.9	104.3
16 years	303	85.5	1.12	68.1	70.4	71.1	74.3	79.0	94.3	105.0	109.8	114.5
17 years	272	83.9	0.87	68.8	70.7	71.6	74.1	79.0	90.4	99.5	105.2	110.7
18 years	277	86.3	1.44	69.6	70.9	72.5	75.2	81.3	95.4	103.4	107.1	116.4
19 years	262	88.1	1.27	70.0	72.2	74.0	76.5	83.5	96.8	106.0	110.9	118.6
Female												
2 years	269	48.4	0.29	*	43.4	44.5	45.4	48.3	50.5	52.5	53.5	*
3 years	177	50.5	0.36	*	46.0	46.5	47.9	49.6	51.7	54.1	54.8	*
4 years	223	52.6	0.34	*	47.5	48.4	49.6	52.3	54.6	55.7	57.2	*
5 years	194	54.9	0.64	*	49.0	49.6	50.7	53.0	57.1	60.8	63.4	*
6 years	188	56.2	0.50	*	49.8	50.6	52.0	55.1	58.9	61.6	63.1	*
7 years	154	60.0	0.85	*	52.5	53.1	55.0	57.9	62.6	67.8	71.0	*
8 years	179	62.6	1.19	*	52.8	53.5	54.8	58.8	65.9	75.5	80.1	*
9 years	183	67.5	1.06	*	56.3	57.8	59.7	64.5	72.8	77.9	80.5	*
10 years	183	71.4	1.02	*	58.6	60.1	62.3	69.1	77.9	84.1	86.0	*
11 years	172	75.1	1.13	*	61.0	61.8	65.1	72.5	82.5	90.3	92.5	*
12 years	242	75.3	1.06	*	60.6	63.6	66.1	73.6	80.6	89.2	94.3	*
13 years	289	78.4	0.88	61.8	65.0	65.9	69.1	75.5	84.7	94.3	97.8	100.1
14 years	265	79.1	1.50	*	66.7	67.9	70.1	74.8	85.8	91.8	99.2	*
15 years	237	80.4	0.90	*	67.2	69.6	71.6	76.7	87.8	92.6	99.0	*
16 years	248	79.9	0.98	*	67.9	69.7	71.7	77.2	84.7	91.6	98.6	*
17 years	244	83.4	1.23	*	68.5	71.1	74.1	79.0	87.7	98.7	101.3	*
18 years	268	84.0	1.52	*	68.5	70.6	73.2	80.5	90.5	100.7	106.6	*
19 years	230	85.8	1.71	*	69.5	71.5	73.6	81.3	92.7	102.9	107.8	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.

NOTE: Pregnant females were excluded.

**Table 19. Waist circumference in centimeters for females 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,134	94.1	0.44	71.9	74.8	77.4	81.8	92.0	104.0	110.8	115.6	123.3
20–29 years . . . . .	680	88.2	0.90	68.6	71.7	73.1	75.8	84.3	96.7	106.1	113.5	119.5
30–39 years . . . . .	648	91.6	0.92	71.6	74.1	76.2	79.6	89.3	100.2	106.9	111.8	121.1
40–49 years . . . . .	767	95.2	0.75	72.9	76.2	79.3	83.7	92.6	105.4	111.4	116.8	125.5
50–59 years . . . . .	582	96.9	0.92	72.3	76.3	78.8	84.8	95.4	108.1	113.8	117.7	127.7
60–69 years . . . . .	670	98.6	0.62	75.7	79.8	82.8	88.1	97.1	108.8	114.8	118.9	123.8
70–79 years . . . . .	441	96.2	0.91	72.6	79.0	82.6	87.5	96.1	103.9	109.7	113.1	120.8
80 years and over . . . . .	346	94.0	0.72	74.9	78.6	80.8	86.1	93.9	101.6	105.5	109.3	112.8
Non-Hispanic white												
20 years and over . . . . .	2,127	93.7	0.54	71.8	74.3	76.8	81.5	91.7	103.6	110.4	115.2	122.6
20–39 years . . . . .	599	88.9	0.90	70.2	72.8	74.0	76.9	85.2	97.4	105.3	112.3	119.9
40–59 years . . . . .	664	95.4	0.73	72.0	75.3	78.0	83.2	93.3	105.9	111.9	116.9	125.6
60 years and over . . . . .	864	96.6	0.51	74.7	78.8	82.0	87.3	96.0	104.9	110.6	114.9	121.5
Non-Hispanic black												
20 years and over . . . . .	906	99.2	0.55	73.6	77.7	81.0	87.0	97.4	110.2	116.5	121.7	129.5
20–39 years . . . . .	315	95.8	1.04	70.9	74.6	77.3	81.8	93.4	107.3	114.4	119.1	128.2
40–59 years . . . . .	343	101.2	0.73	75.9	81.3	85.6	89.2	99.7	111.6	117.3	123.5	131.4
60 years and over . . . . .	248	102.4	0.75	79.4	83.5	86.4	91.1	100.9	112.4	118.8	121.9	128.5
Mexican American												
20 years and over . . . . .	790	95.8	0.79	75.9	78.6	80.9	85.2	94.1	104.3	110.0	114.7	121.2
20–39 years . . . . .	292	93.8	0.93	74.6	77.3	79.7	83.4	91.7	102.9	107.8	112.0	120.5
40–59 years . . . . .	228	98.2	1.07	77.4	80.5	83.1	88.1	96.5	107.0	112.7	116.1	123.6
60 years and over . . . . .	270	98.4	0.82	80.1	83.1	87.0	90.0	97.4	106.4	111.5	113.1	121.2

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

NOTE: Pregnant females were excluded.

**Table 20. Waist circumference in centimeters for males 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,310	100.8	0.43	78.6	82.6	85.9	90.4	99.6	109.8	115.0	119.2	127.8
20–29 years . . . . .	783	93.8	0.80	73.5	76.8	78.8	82.8	90.9	101.3	108.4	113.3	123.9
30–39 years . . . . .	715	98.2	0.63	78.9	81.9	85.1	88.9	96.8	105.7	111.4	115.0	120.7
40–49 years . . . . .	750	102.9	0.66	82.4	86.6	89.3	93.4	101.8	111.4	115.3	119.6	128.6
50–59 years . . . . .	564	103.9	0.69	83.6	87.1	90.2	94.0	102.9	111.1	117.3	122.3	129.7
60–69 years . . . . .	649	106.7	0.74	84.6	90.2	93.0	97.5	105.5	115.6	120.8	124.6	129.9
70–79 years . . . . .	530	105.4	0.73	84.8	88.9	91.8	96.1	104.4	113.5	118.3	121.9	129.1
80 years and over . . . . .	319	100.4	0.38	82.1	84.9	88.4	92.5	100.2	108.0	112.9	116.0	119.4
Non-Hispanic white												
20 years and over . . . . .	2,242	102.0	0.45	80.2	84.2	87.0	91.6	101.0	110.7	116.1	120.0	128.7
20–39 years . . . . .	652	96.5	0.63	76.7	79.9	81.9	86.0	94.1	104.1	110.6	114.1	123.4
40–59 years . . . . .	686	104.3	0.65	84.2	88.2	90.5	95.1	103.1	112.0	117.0	122.3	130.4
60 years and over . . . . .	904	106.3	0.41	85.7	90.2	93.0	96.9	105.1	114.7	118.9	123.3	129.8
Non-Hispanic black												
20 years and over . . . . .	899	98.3	0.73	74.2	78.4	81.5	86.8	95.9	107.4	114.8	119.6	130.2
20–39 years . . . . .	345	95.5	1.04	73.3	76.0	78.2	82.9	92.4	104.9	112.6	117.0	130.3
40–59 years . . . . .	299	100.0	0.95	77.9	81.5	83.7	89.2	97.3	108.2	114.9	120.4	130.7
60 years and over . . . . .	255	102.0	0.86	79.3	83.0	88.6	92.2	101.8	110.4	117.7	121.0	125.0
Mexican American												
20 years and over . . . . .	875	97.8	0.85	79.3	83.2	85.6	88.9	96.7	104.6	109.4	113.2	118.9
20–39 years . . . . .	358	96.2	1.07	76.6	81.3	83.9	87.3	94.2	102.8	108.6	112.0	118.8
40–59 years . . . . .	243	99.4	0.71	*	85.8	88.3	93.1	98.3	105.4	109.0	111.3	*
60 years and over . . . . .	274	103.0	0.89	84.0	89.6	92.1	95.7	102.1	110.4	115.6	118.5	121.6

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

**Table 21. Mid-arm circumference in centimeters for children and adolescents aged 2 months–19 years by sex and age, by mean, standard error of the mean, and selected percentiles: United States, 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Centimeters												
2 months . . . . .	13	*	*	*	*	*	*	*	*	*	*	*
3–5 months . . . . .	133	14.1	0.07	*	12.9	13.2	13.5	14.1	14.7	15.0	15.2	*
6–8 months . . . . .	129	14.7	0.13	*	13.2	13.6	13.9	14.6	15.5	15.9	16.3	*
9–11 months . . . . .	123	15.3	0.12	*	*	14.2	14.7	15.2	15.9	16.4	*	*
1 year . . . . .	341	15.6	0.09	13.7	14.0	14.2	14.7	15.6	16.4	16.9	17.3	17.5
2 years . . . . .	270	16.1	0.09	14.3	14.5	14.9	15.3	16.0	16.9	17.3	17.5	18.1
3 years . . . . .	199	16.6	0.11	*	14.7	15.1	15.4	16.3	17.3	18.0	18.4	*
4 years . . . . .	200	17.3	0.18	*	15.2	15.5	16.0	17.1	18.1	18.8	19.5	*
5 years . . . . .	200	18.4	0.24	*	15.9	16.2	16.6	17.9	19.1	20.1	21.2	*
6 years . . . . .	174	18.9	0.15	*	16.4	16.9	17.4	18.5	20.2	21.4	21.7	*
7 years . . . . .	177	19.7	0.24	*	16.9	17.4	17.9	19.1	20.6	21.8	23.1	*
8 years . . . . .	146	20.9	0.31	*	17.8	18.1	18.4	20.3	22.2	23.6	24.4	*
9 years . . . . .	173	21.7	0.32	*	17.6	18.2	19.1	21.3	23.6	24.8	25.8	*
10 years . . . . .	170	23.4	0.31	*	19.1	19.7	20.5	22.2	26.1	28.1	29.4	*
11 years . . . . .	154	24.6	0.55	*	19.5	20.3	21.3	23.3	27.6	29.7	31.3	*
12 years . . . . .	271	25.4	0.42	19.4	20.3	20.9	22.0	24.2	28.2	30.0	32.6	34.3
13 years . . . . .	282	26.8	0.38	20.3	21.5	22.4	23.5	26.1	29.5	31.8	32.6	34.3
14 years . . . . .	257	27.7	0.40	21.1	22.9	23.2	24.2	27.2	30.0	31.8	33.7	36.1
15 years . . . . .	267	29.3	0.33	24.0	24.6	25.1	26.3	28.3	32.2	33.4	34.5	36.2
16 years . . . . .	302	30.8	0.37	24.5	25.6	26.0	26.8	29.8	33.6	36.8	38.3	39.7
17 years . . . . .	273	30.7	0.36	24.9	26.1	26.6	27.3	29.6	33.1	35.0	37.1	38.8
18 years . . . . .	278	31.5	0.42	24.7	26.2	27.0	28.3	30.2	34.4	36.2	37.8	39.8
19 years . . . . .	266	32.4	0.41	25.6	26.9	27.5	29.0	31.9	35.3	38.2	38.8	40.6
Female												
2 months . . . . .	10	*	*	*	*	*	*	*	*	*	*	*
3–5 months . . . . .	93	13.8	0.11	*	*	*	13.1	13.6	14.2	*	*	*
6–8 months . . . . .	120	14.6	0.11	*	*	13.4	13.7	14.4	15.4	15.9	*	*
9–11 months . . . . .	122	15.0	0.13	*	*	13.7	14.2	14.9	15.9	16.3	*	*
1 year . . . . .	319	15.4	0.09	13.1	13.7	14.0	14.5	15.4	16.1	16.6	17.0	17.5
2 years . . . . .	305	16.1	0.09	14.1	14.4	14.7	15.1	16.0	17.0	17.6	17.9	18.4
3 years . . . . .	176	16.8	0.12	*	15.2	15.4	15.8	16.6	17.3	18.1	18.5	*
4 years . . . . .	223	17.4	0.12	*	15.6	15.9	16.2	17.1	18.3	18.9	19.2	*
5 years . . . . .	195	17.9	0.18	*	15.8	16.1	16.6	17.4	19.1	20.0	20.6	*
6 years . . . . .	187	18.8	0.19	*	16.3	16.9	17.3	18.3	19.7	20.7	22.0	*
7 years . . . . .	155	20.1	0.25	*	17.0	17.3	18.1	19.4	21.5	23.3	24.0	*
8 years . . . . .	181	20.9	0.42	*	17.1	17.8	18.5	20.1	22.4	24.8	25.6	*
9 years . . . . .	183	22.5	0.38	*	18.6	19.0	19.8	22.1	25.2	26.4	27.2	*
10 years . . . . .	183	23.9	0.37	*	18.9	19.8	20.8	23.3	26.2	28.3	30.0	*
11 years . . . . .	174	25.3	0.41	*	20.1	20.7	21.7	24.8	28.1	29.6	30.8	*
12 years . . . . .	243	25.5	0.44	*	20.8	21.5	22.6	24.5	27.2	29.9	32.0	*
13 years . . . . .	289	26.9	0.32	19.9	21.6	22.5	23.8	25.7	29.5	31.7	32.7	35.8
14 years . . . . .	264	27.0	0.52	*	22.2	22.6	23.4	26.1	29.4	32.0	33.2	*
15 years . . . . .	240	27.7	0.27	*	22.9	23.6	24.7	26.7	30.5	32.1	33.2	*
16 years . . . . .	248	27.8	0.34	*	23.3	23.9	24.9	26.8	29.5	32.0	33.4	*
17 years . . . . .	247	29.0	0.46	*	23.4	24.4	25.3	28.1	31.4	33.0	35.5	*
18 years . . . . .	272	29.3	0.58	*	23.3	24.1	25.6	28.3	32.1	34.6	36.5	*
19 years . . . . .	235	29.4	0.51	*	24.6	25.0	25.9	28.0	31.1	34.2	36.9	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.

NOTE: Pregnant females were excluded.

**Table 22. Mid-arm circumference in centimeters for females 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,195	31.9	0.15	24.3	25.7	26.5	27.9	31.0	35.1	37.4	39.2	42.0
20–29 years . . . . .	685	30.3	0.30	23.5	24.2	25.1	26.2	29.0	33.1	35.8	37.6	41.4
30–39 years . . . . .	652	31.9	0.29	24.7	25.8	26.9	27.9	30.7	35.3	37.9	39.5	41.3
40–49 years . . . . .	773	32.7	0.28	24.9	26.2	27.1	28.7	31.7	35.9	38.2	40.1	42.4
50–59 years . . . . .	585	32.8	0.23	25.6	26.3	27.4	28.6	32.0	35.9	38.5	40.0	42.3
60–69 years . . . . .	683	33.0	0.20	25.5	27.0	27.8	29.0	32.1	36.1	37.9	39.5	43.7
70–79 years . . . . .	452	31.3	0.28	24.4	25.8	26.7	27.9	30.6	34.1	35.9	37.3	39.5
80 years and over . . . . .	365	29.2	0.23	22.7	23.8	24.9	26.1	28.9	32.0	33.5	34.5	36.0
Non-Hispanic white												
20 years and over . . . . .	2,158	31.7	0.18	24.2	25.6	26.4	27.8	30.8	34.8	36.9	38.7	41.5
20–39 years . . . . .	602	30.8	0.30	23.7	24.9	25.7	27.1	29.5	33.5	36.3	38.3	40.6
40–59 years . . . . .	665	32.5	0.23	25.0	26.1	27.0	28.4	31.6	35.6	37.9	39.8	42.2
60 years and over . . . . .	891	31.4	0.17	23.8	25.6	26.6	27.9	30.9	34.4	36.3	37.4	40.1
Non-Hispanic black												
20 years and over . . . . .	925	34.4	0.25	25.3	26.8	28.2	29.9	33.9	38.0	40.5	42.3	45.6
20–39 years . . . . .	319	33.6	0.38	24.6	26.0	27.1	28.8	33.0	37.5	40.0	41.5	44.6
40–59 years . . . . .	347	35.3	0.31	26.1	27.8	29.6	31.0	34.7	39.2	41.4	43.1	45.8
60 years and over . . . . .	259	34.2	0.45	25.7	26.8	28.3	30.1	34.1	37.3	39.7	41.3	45.3
Mexican American												
20 years and over . . . . .	798	32.2	0.25	25.3	26.4	27.2	28.6	31.6	35.1	37.4	38.6	40.5
20–39 years . . . . .	294	31.7	0.34	25.0	26.0	26.5	28.0	31.1	34.6	36.9	37.9	40.3
40–59 years . . . . .	231	33.2	0.29	26.6	27.7	28.3	29.7	32.5	36.0	38.1	39.2	40.5
60 years and over . . . . .	273	32.1	0.30	25.5	26.2	27.5	28.5	31.4	35.2	36.5	38.3	40.5

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

NOTE: Pregnant females were excluded.

**Table 23. Mid-arm circumference in centimeters for males 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,349	34.1	0.11	27.5	29.0	29.9	31.2	33.8	36.6	38.2	39.5	41.4
20–29 years . . . . .	791	33.7	0.23	26.7	28.1	29.4	30.6	33.1	36.4	38.2	39.3	41.8
30–39 years . . . . .	726	34.6	0.17	28.6	29.7	30.4	31.6	34.1	36.8	38.4	39.8	41.9
40–49 years . . . . .	751	35.1	0.20	28.7	30.2	31.0	32.5	34.7	37.5	38.9	40.2	42.2
50–59 years . . . . .	570	34.2	0.20	27.9	29.4	30.1	31.3	33.9	36.6	38.3	39.4	41.4
60–69 years . . . . .	652	34.0	0.23	27.7	29.4	30.1	31.1	33.7	36.4	37.9	39.1	40.6
70–79 years . . . . .	534	32.5	0.19	26.2	27.8	28.6	30.0	32.3	34.7	36.2	37.5	38.8
80 years and over . . . . .	325	29.9	0.15	24.4	25.8	26.5	27.6	29.9	31.8	32.8	34.3	35.4
Non-Hispanic white												
20 years and over . . . . .	2,264	34.2	0.13	27.6	29.1	30.0	31.3	33.9	36.7	38.2	39.5	41.3
20–39 years . . . . .	658	34.2	0.22	27.6	29.1	29.9	31.3	33.7	36.7	38.2	39.7	41.9
40–59 years . . . . .	692	34.8	0.22	28.5	30.0	30.7	32.3	34.6	37.2	38.7	40.1	41.5
60 years and over . . . . .	914	33.0	0.14	26.4	28.1	29.1	30.4	32.6	35.3	37.0	38.1	40.0
Non-Hispanic black												
20 years and over . . . . .	908	35.0	0.21	28.0	29.3	30.0	31.6	34.4	37.9	39.7	41.5	44.4
20–39 years . . . . .	351	35.5	0.31	28.3	29.1	30.5	31.8	35.0	38.2	40.8	42.5	45.4
40–59 years . . . . .	298	35.1	0.29	28.6	29.6	30.1	31.8	34.4	37.9	39.5	41.3	43.6
60 years and over . . . . .	259	33.3	0.25	25.2	27.4	28.7	30.4	33.2	36.1	37.9	39.0	40.7
Mexican American												
20 years and over . . . . .	880	33.3	0.19	27.7	28.7	29.6	30.9	33.1	35.6	36.9	37.9	39.8
20–39 years . . . . .	364	33.5	0.30	27.8	28.7	29.7	31.0	33.2	35.9	37.2	38.2	40.0
40–59 years . . . . .	243	33.2	0.19	*	29.0	29.7	31.1	33.2	35.4	36.3	37.0	*
60 years and over . . . . .	273	32.2	0.33	25.6	27.4	28.3	29.7	31.9	34.7	36.2	37.0	38.6

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.



**Table 24. Upper arm length in centimeters for children and adolescents aged 2 months–19 years by sex and age, by mean, standard error of the mean, and selected percentiles: United States, 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Centimeters												
2 months	13	*	*	*	*	*	*	*	*	*	*	*
3–5 months	133	12.8	0.09	*	*	11.8	11.9	12.7	13.4	13.7	*	*
6–8 months	129	13.9	0.18	*	*	12.4	12.8	13.8	14.8	15.1	*	*
9–11 months	123	15.1	0.14	*	*	14.0	14.3	15.0	15.9	16.0	*	*
1 year	343	16.7	0.10	14.4	14.9	15.2	15.8	16.9	17.5	18.0	18.2	18.9
2 years	271	18.8	0.09	*	17.1	17.4	17.9	18.7	19.5	19.9	20.4	*
3 years	199	20.2	0.14	*	18.3	18.6	19.3	20.2	21.2	21.7	22.0	*
4 years	201	21.9	0.14	*	19.9	20.2	20.9	21.9	22.9	23.5	24.0	*
5 years	200	23.8	0.16	*	21.9	22.0	22.7	23.9	24.6	25.0	25.7	*
6 years	174	25.0	0.13	*	23.2	23.5	24.0	25.0	25.8	26.5	26.7	*
7 years	177	26.2	0.16	*	23.7	24.2	24.9	26.0	27.5	28.2	28.5	*
8 years	146	27.6	0.22	*	25.3	25.5	26.3	27.6	28.7	29.2	29.5	*
9 years	173	29.1	0.18	*	26.9	27.3	27.9	28.9	30.5	31.0	31.3	*
10 years	170	30.5	0.23	*	27.9	28.4	28.8	30.2	32.1	32.9	33.6	*
11 years	154	32.3	0.32	*	28.7	29.9	30.7	32.2	34.3	34.9	35.8	*
12 years	271	33.3	0.22	*	30.0	30.7	31.5	33.3	34.5	35.8	36.5	*
13 years	282	34.9	0.24	*	31.5	31.9	32.9	34.8	36.7	37.5	38.3	*
14 years	257	36.4	0.26	*	33.1	33.7	34.6	36.4	38.0	38.9	39.9	*
15 years	267	37.7	0.18	*	35.0	35.4	36.1	37.6	39.1	40.0	40.3	*
16 years	302	38.3	0.18	34.8	35.8	36.1	36.6	38.0	39.9	40.5	41.0	41.8
17 years	273	38.6	0.16	*	35.6	36.1	37.0	38.7	40.1	41.0	41.6	*
18 years	279	38.8	0.16	*	35.7	36.1	37.0	38.8	40.5	41.2	42.0	*
19 years	266	38.9	0.22	*	35.2	36.4	37.5	38.9	40.1	41.1	41.8	*
Female												
2 months	10	*	*	*	*	*	*	*	*	*	*	*
3–5 months	93	12.2	0.16	*	*	11.0	11.4	12.0	12.9	13.3	*	*
6–8 months	120	13.6	0.15	*	*	12.4	12.9	13.5	14.0	14.6	*	*
9–11 months	122	14.4	0.11	*	*	13.5	13.9	14.5	15.0	15.3	*	*
1 year	320	16.2	0.09	13.5	14.3	14.7	15.2	16.2	17.2	17.7	18.0	18.5
2 years	306	18.4	0.10	16.3	16.7	17.0	17.5	18.4	19.2	19.5	19.9	20.5
3 years	177	20.2	0.11	*	18.8	18.9	19.4	20.0	21.0	21.5	21.8	*
4 years	223	21.5	0.11	*	19.5	19.9	20.7	21.4	22.4	22.7	23.0	*
5 years	195	22.9	0.15	*	21.0	21.3	21.9	22.9	23.9	24.2	24.7	*
6 years	188	24.6	0.14	*	22.9	23.0	23.4	24.4	25.4	26.0	26.7	*
7 years	155	26.1	0.17	*	24.0	24.3	24.9	25.9	27.0	28.1	28.4	*
8 years	181	27.4	0.15	*	25.3	25.7	26.1	27.2	28.7	29.4	29.7	*
9 years	183	29.3	0.19	*	26.6	27.0	27.6	29.3	30.7	31.5	31.9	*
10 years	183	30.8	0.21	*	28.0	28.4	29.4	30.8	32.0	32.9	33.5	*
11 years	174	32.3	0.22	*	29.4	29.9	30.6	32.4	33.8	34.6	34.9	*
12 years	243	33.9	0.18	*	31.0	31.4	32.3	33.9	35.3	36.0	36.8	*
13 years	289	34.5	0.14	31.1	31.9	32.5	33.3	34.3	36.1	36.7	37.0	37.7
14 years	265	34.9	0.19	*	32.4	33.0	33.5	34.6	36.2	37.0	37.7	*
15 years	246	35.1	0.19	*	32.4	32.9	33.8	34.8	36.5	37.3	37.9	*
16 years	255	35.3	0.16	*	32.7	33.0	33.9	35.2	36.5	37.4	38.0	*
17 years	271	35.3	0.15	*	32.8	33.1	33.9	35.0	36.6	37.4	37.9	*
18 years	304	35.7	0.26	32.3	32.9	33.4	34.0	35.8	37.0	38.0	38.5	39.7
19 years	264	35.5	0.19	*	32.4	33.1	33.8	35.5	36.9	37.9	38.2	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.

**Table 25. Upper arm length in centimeters for females 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,722	36.0	0.06	32.4	33.2	33.7	34.4	35.9	37.4	38.2	38.8	39.7
20–29 years . . . . .	1,035	35.7	0.10	32.3	33.1	33.5	34.3	35.5	37.0	37.9	38.5	39.1
30–39 years . . . . .	824	36.0	0.12	32.5	33.2	33.6	34.3	35.8	37.4	38.1	38.8	39.9
40–49 years . . . . .	778	36.1	0.10	32.4	33.2	33.9	34.5	35.9	37.6	38.5	39.0	39.9
50–59 years . . . . .	585	35.9	0.12	32.2	33.2	33.6	34.3	35.8	37.4	38.2	38.7	39.4
60–69 years . . . . .	683	36.4	0.11	32.9	33.5	34.0	34.9	36.3	37.7	38.4	39.0	40.1
70–79 years . . . . .	453	36.0	0.12	32.3	33.3	34.0	34.5	35.9	37.2	37.9	38.6	39.9
80 years and over . . . . .	364	35.6	0.11	32.1	33.0	33.4	34.0	35.5	37.1	37.8	38.0	39.0
Non-Hispanic white												
20 years and over . . . . .	2,405	36.1	0.05	32.7	33.4	33.9	34.5	35.9	37.4	38.2	38.7	39.7
20–39 years . . . . .	849	36.0	0.10	32.7	33.4	33.8	34.5	35.8	37.3	38.0	38.7	39.5
40–59 years . . . . .	666	36.1	0.07	32.6	33.3	33.8	34.5	35.9	37.5	38.4	38.9	39.9
60 years and over . . . . .	890	36.1	0.08	32.9	33.5	34.0	34.7	36.0	37.4	38.0	38.6	39.7
Non-Hispanic black												
20 years and over . . . . .	1,001	37.0	0.07	33.4	34.0	34.6	35.4	36.9	38.2	39.0	39.7	40.9
20–39 years . . . . .	394	36.8	0.14	33.4	33.9	34.2	35.0	36.7	38.1	38.8	39.4	40.5
40–59 years . . . . .	347	37.0	0.09	33.3	34.3	34.9	35.5	37.0	38.3	39.1	39.6	40.5
60 years and over . . . . .	260	37.3	0.18	33.8	34.3	34.8	35.5	37.0	38.7	39.8	40.6	41.4
Mexican American												
20 years and over . . . . .	953	35.1	0.08	32.0	32.6	33.1	33.9	35.0	36.4	37.0	37.6	38.5
20–39 years . . . . .	445	35.1	0.10	31.9	32.5	33.2	33.9	35.0	36.3	37.0	37.6	38.5
40–59 years . . . . .	235	35.3	0.11	32.4	32.9	33.3	34.0	35.2	36.4	37.0	37.5	38.4
60 years and over . . . . .	273	34.8	0.13	31.2	32.2	32.7	33.2	34.6	36.2	37.1	37.7	38.1

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

**Table 26. Upper arm length in centimeters for males 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,348	39.4	0.06	35.6	36.4	37.0	37.8	39.4	40.9	41.6	42.4	43.1
20–29 years . . . . .	790	39.2	0.11	35.5	36.2	36.8	37.5	39.2	40.7	41.5	42.3	43.0
30–39 years . . . . .	726	39.1	0.11	35.2	35.9	36.5	37.4	39.1	40.6	41.3	41.9	42.9
40–49 years . . . . .	751	39.5	0.08	35.9	36.5	37.2	37.9	39.5	40.9	41.6	42.1	43.0
50–59 years . . . . .	569	39.6	0.12	35.8	36.7	37.2	38.0	39.6	41.0	42.2	42.7	43.4
60–69 years . . . . .	653	39.7	0.10	36.0	36.7	37.2	38.1	39.7	41.2	42.0	42.5	43.2
70–79 years . . . . .	534	39.5	0.14	35.6	36.5	37.0	37.8	39.4	41.2	41.9	42.5	43.4
80 years and over . . . . .	325	38.9	0.10	35.6	36.3	36.8	37.4	38.8	40.3	41.0	41.5	42.0
Non-Hispanic white												
20 years and over . . . . .	2,264	39.7	0.07	36.1	36.9	37.4	38.0	39.6	41.0	41.8	42.5	43.2
20–39 years . . . . .	658	39.5	0.11	35.9	36.6	37.3	38.0	39.4	40.9	41.5	42.2	43.0
40–59 years . . . . .	692	39.8	0.09	36.4	37.1	37.5	38.2	39.8	41.2	42.0	42.6	43.3
60 years and over . . . . .	914	39.7	0.07	36.1	36.9	37.4	38.1	39.6	41.2	42.0	42.5	43.2
Non-Hispanic black												
20 years and over . . . . .	909	39.9	0.09	36.0	37.0	37.4	38.3	39.9	41.4	42.3	43.0	43.9
20–39 years . . . . .	351	39.9	0.13	35.9	36.9	37.4	38.3	39.9	41.4	42.5	43.0	43.9
40–59 years . . . . .	298	39.9	0.12	35.9	36.9	37.4	38.4	39.8	41.4	42.2	42.9	43.9
60 years and over . . . . .	260	39.9	0.15	36.6	37.0	37.5	38.2	39.9	41.2	42.0	42.7	43.6
Mexican American												
20 years and over . . . . .	880	37.9	0.12	34.6	35.2	35.6	36.3	37.7	39.4	40.1	40.7	41.5
20–39 years . . . . .	364	37.9	0.16	34.4	35.0	35.6	36.2	37.5	39.5	40.2	40.9	41.6
40–59 years . . . . .	243	38.1	0.14	35.0	35.4	35.9	36.5	37.9	39.4	40.0	40.5	41.2
60 years and over . . . . .	273	37.9	0.13	34.5	35.0	35.4	36.2	37.9	39.3	40.0	40.5	41.0

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

**Table 27. Subscapular skinfold thickness in millimeters for children and adolescents aged 2 months–19 years by sex and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Millimeters												
2 months	12	*	*	*	*	*	*	*	*	*	*	*
3–5 months	126	8.3	0.20	*	*	6.5	7.0	7.9	9.2	10.6	*	*
6–8 months	126	7.6	0.18	*	*	5.8	6.2	7.3	8.4	9.2	*	*
9–11 months	121	7.6	0.26	*	*	5.6	5.9	7.1	9.0	9.5	*	*
1 year	333	6.8	0.11	4.8	5.0	5.2	5.7	6.5	7.5	8.2	8.5	9.7
2 years	255	6.5	0.10	*	4.8	4.9	5.2	6.0	7.1	8.2	8.5	*
3 years	195	6.7	0.18	*	4.4	4.7	5.2	6.2	7.7	8.4	9.1	*
4 years	197	6.1	0.19	*	4.1	4.3	4.8	5.4	6.3	7.3	8.4	*
5 years	196	7.3	0.46	*	4.3	4.5	4.9	5.9	7.3	9.1	11.9	*
6 years	170	7.0	0.20	*	4.3	4.5	4.9	5.9	7.9	9.2	10.5	*
7 years	174	7.1	0.35	*	4.3	4.5	4.9	5.9	7.5	9.0	10.4	*
8 years	140	7.9	0.53	*	4.2	4.4	4.8	5.9	8.7	11.3	15.0	*
9 years	164	8.8	0.50	*	4.4	4.9	5.4	6.7	9.7	14.3	16.5	*
10 years	165	10.4	0.65	*	4.9	5.1	5.9	7.4	13.4	17.1	20.4	*
11 years	141	10.7	0.59	*	5.2	5.4	5.9	7.8	14.8	17.3	20.5	*
12 years	258	11.5	0.61	4.9	5.1	5.5	6.0	8.5	14.6	18.1	21.9	29.3
13 years	272	12.0	0.64	5.0	5.6	6.1	6.6	9.3	15.2	19.8	22.4	25.8
14 years	242	10.6	0.46	*	5.7	6.1	6.7	8.5	13.4	15.8	19.3	*
15 years	257	11.2	0.41	6.0	6.5	6.9	7.2	9.0	12.9	15.2	20.1	24.5
16 years	285	12.7	0.38	6.4	6.7	7.2	7.8	9.6	16.3	20.8	23.6	26.5
17 years	256	12.7	0.60	6.2	7.1	7.5	8.2	10.0	14.4	20.5	24.2	27.8
18 years	257	13.9	0.69	7.1	7.4	8.0	8.7	10.5	17.4	21.7	24.5	28.4
19 years	240	14.5	0.62	*	7.8	8.2	9.1	12.4	18.0	21.4	26.1	*
Female												
2 months	10	*	*	*	*	*	*	*	*	*	*	*
3–5 months	92	8.4	0.26	*	*	5.9	6.4	8.1	9.6	10.4	*	*
6–8 months	116	8.4	0.37	*	*	5.9	6.3	7.8	9.6	10.8	*	*
9–11 months	120	8.3	0.16	*	5.9	6.1	6.6	7.9	9.2	10.4	11.0	*
1 year	310	7.3	0.12	4.9	5.1	5.3	5.9	6.9	8.3	8.9	9.3	10.5
2 years	292	7.0	0.16	4.5	4.9	5.0	5.4	6.3	7.9	9.0	9.8	10.7
3 years	173	7.2	0.23	*	4.6	4.9	5.3	6.5	8.0	9.1	11.0	*
4 years	216	7.2	0.21	*	4.9	5.0	5.2	6.3	7.9	9.5	10.4	*
5 years	191	7.8	0.40	*	4.9	5.2	5.4	6.3	8.2	9.9	12.1	*
6 years	185	7.5	0.24	*	4.5	4.8	5.3	6.5	8.4	10.3	11.8	*
7 years	148	8.5	0.40	*	4.6	5.0	5.4	7.3	9.8	11.9	12.9	*
8 years	174	9.1	0.53	*	4.7	5.0	5.5	6.8	10.1	13.4	17.9	*
9 years	174	11.1	0.50	*	5.4	6.1	6.7	9.4	13.7	17.6	19.0	*
10 years	168	12.1	0.44	*	5.7	6.1	7.4	10.1	16.1	19.1	20.2	*
11 years	158	13.5	0.61	*	6.3	6.8	8.0	11.5	17.9	21.0	23.2	*
12 years	225	12.4	0.61	*	6.1	6.9	7.9	10.6	15.3	19.0	20.6	*
13 years	268	14.6	0.65	6.0	7.1	7.7	8.7	12.7	18.3	23.9	26.3	28.9
14 years	240	14.0	0.72	6.9	7.6	8.1	9.0	11.7	16.3	20.8	24.1	29.8
15 years	220	15.7	0.49	*	7.9	8.6	9.9	13.9	20.2	22.8	24.4	*
16 years	226	14.8	0.52	*	8.1	8.6	9.3	12.9	17.5	20.7	24.9	*
17 years	213	16.2	0.56	*	8.3	9.0	10.5	14.2	19.6	24.6	27.3	*
18 years	226	16.7	0.62	*	8.4	9.3	10.8	15.0	20.9	24.2	25.8	*
19 years	192	18.2	0.78	*	8.5	9.0	10.7	16.5	24.4	25.9	28.1	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.

NOTE: Pregnant females were excluded.

**Table 28. Subscapular skinfold thickness in millimeters for females 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Millimeters												
20 years and over . . . . .	3,186	20.8	0.24	8.4	10.0	11.3	13.9	20.3	26.8	30.4	32.6	35.1
20–29 years . . . . .	526	18.3	0.49	7.6	8.9	10.0	11.7	16.3	24.1	27.3	30.5	33.9
30–39 years . . . . .	492	21.1	0.50	9.2	10.6	11.8	14.3	20.2	27.4	30.9	32.2	35.3
40–49 years . . . . .	521	22.2	0.46	9.1	10.7	12.3	15.2	22.7	28.5	31.8	33.9	35.6
50–59 years . . . . .	405	22.6	0.41	8.8	11.6	13.0	16.5	22.6	28.9	31.7	34.1	36.2
60–69 years . . . . .	534	22.3	0.41	9.1	10.9	13.5	16.7	21.8	28.0	32.0	33.0	34.9
70–79 years . . . . .	375	19.3	0.54	7.4	9.3	10.5	13.8	19.3	23.9	27.0	29.5	32.4
80 years and over . . . . .	333	16.1	0.36	6.9	8.1	8.8	10.4	14.4	21.3	24.4	25.4	28.2
Non-Hispanic white												
20 years and over . . . . .	1,804	20.1	0.26	8.1	9.6	10.8	13.2	19.4	25.8	29.9	31.7	34.8
20–39 years . . . . .	516	18.8	0.45	7.8	9.2	10.3	12.1	16.8	24.4	28.5	31.0	33.8
40–59 years . . . . .	513	21.7	0.39	8.7	10.4	12.1	14.8	21.9	28.3	30.9	33.3	35.6
60 years and over . . . . .	775	19.4	0.37	7.6	9.2	10.2	12.9	19.3	24.8	27.8	30.2	33.0
Non-Hispanic black												
20 years and over . . . . .	571	24.0	0.54	9.5	12.0	13.4	17.5	24.3	30.8	33.8	34.6	36.8
20–39 years . . . . .	210	22.4	0.81	*	10.7	12.0	15.0	22.4	29.4	32.5	34.0	*
40–59 years . . . . .	182	26.1	0.66	*	15.1	17.0	20.6	26.5	32.6	34.2	35.3	*
60 years and over . . . . .	179	24.0	0.71	*	12.6	13.9	17.6	23.6	30.2	32.5	35.1	*
Mexican American												
20 years and over . . . . .	569	23.2	0.59	10.9	13.6	14.6	17.2	23.2	28.2	31.2	33.5	35.7
20–39 years . . . . .	200	23.0	0.89	*	11.9	13.9	16.3	23.2	28.7	31.9	34.0	*
40–59 years . . . . .	145	24.1	0.50	*	15.1	16.2	18.8	24.0	28.3	31.1	33.2	*
60 years and over . . . . .	224	21.6	0.50	*	13.2	14.1	17.1	20.6	25.7	29.4	31.2	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

NOTE: Pregnant females were excluded.

**Table 29. Subscapular skinfold thickness in millimeters for males 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups												
Millimeters												
20 years and over . . . . .	3,529	19.3	0.17	8.9	10.2	11.5	13.9	18.6	24.1	26.9	29.1	32.1
20–29 years . . . . .	688	16.8	0.34	7.8	8.8	9.4	11.1	15.7	20.9	23.9	26.0	29.6
30–39 years . . . . .	583	19.1	0.31	8.8	10.3	11.9	13.2	18.5	24.0	26.7	28.2	31.1
40–49 years . . . . .	576	20.7	0.34	9.4	11.1	12.8	15.6	20.2	25.7	28.7	30.3	32.4
50–59 years . . . . .	442	20.2	0.40	9.4	11.3	12.9	14.9	19.9	24.9	27.4	29.7	32.4
60–69 years . . . . .	493	21.1	0.38	10.9	12.1	14.2	16.4	20.5	24.9	27.9	30.4	34.4
70–79 years . . . . .	455	19.8	0.32	9.9	12.1	13.2	15.5	18.9	23.5	26.7	29.2	32.6
80 years and over . . . . .	292	17.0	0.36	8.3	9.2	10.4	11.9	16.4	20.7	23.1	25.7	27.1
Non-Hispanic white												
20 years and over . . . . .	1,900	19.1	0.18	8.9	10.1	11.4	13.7	18.4	23.9	26.6	28.7	32.0
20–39 years . . . . .	575	17.3	0.35	8.0	9.0	9.8	11.8	16.3	21.4	24.8	26.8	29.5
40–59 years . . . . .	554	20.5	0.32	9.5	11.2	12.9	15.1	20.1	25.2	28.0	30.0	32.6
60 years and over . . . . .	771	19.8	0.23	10.1	11.5	12.7	15.2	19.2	23.4	26.7	28.7	32.1
Non-Hispanic black												
20 years and over . . . . .	664	19.3	0.35	8.0	9.1	10.2	12.8	18.6	24.8	28.4	30.9	33.8
20–39 years . . . . .	271	18.5	0.51	7.9	8.6	10.0	11.9	17.2	23.8	26.8	29.2	34.0
40–59 years . . . . .	204	19.6	0.60	8.4	9.2	10.4	13.4	18.9	25.8	28.7	30.7	33.0
60 years and over . . . . .	189	21.1	0.49	7.1	8.7	12.1	15.3	21.0	26.1	30.4	32.8	35.7
Mexican American												
20 years and over . . . . .	720	19.7	0.50	9.7	10.8	12.5	14.9	19.4	23.8	26.3	28.2	31.4
20–39 years . . . . .	301	19.4	0.67	*	10.4	12.0	14.1	19.2	23.7	26.4	28.2	*
40–59 years . . . . .	194	20.2	0.48	*	12.2	13.6	16.3	20.1	24.2	26.3	27.9	*
60 years and over . . . . .	225	19.6	0.62	*	10.4	12.5	15.2	19.0	22.9	25.8	29.3	*

\* Figure does not meet standards of reliability or precision.



**Table 30. Triceps skinfold thickness in millimeters for children and adolescents aged 2 months–19 years by sex and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Millimeters												
2 months	11	*	*	*	*	*	*	*	*	*	*	*
3–5 months	128	11.0	0.25	*	8.4	8.7	9.0	10.5	12.0	13.9	14.5	*
6–8 months	128	10.6	0.26	*	7.3	8.0	8.9	10.1	12.3	13.0	13.4	*
9–11 months	122	10.2	0.30	*	*	7.7	8.1	9.7	11.9	12.9	*	*
1 year	336	9.8	0.19	6.4	7.2	7.4	8.0	9.4	11.0	12.0	12.5	14.3
2 years	260	9.6	0.13	6.3	6.8	7.2	8.0	9.5	11.1	12.0	12.7	13.2
3 years	195	9.3	0.21	*	6.4	6.9	7.3	9.0	10.7	11.4	12.0	*
4 years	199	9.1	0.26	*	6.2	6.5	7.0	8.3	10.4	11.5	12.3	*
5 years	197	10.0	0.32	*	6.1	6.5	7.2	8.7	11.0	12.9	15.8	*
6 years	173	9.8	0.25	*	6.0	6.3	7.1	8.9	11.9	13.0	14.6	*
7 years	176	10.5	0.53	*	6.2	6.6	7.4	8.9	12.1	13.7	15.4	*
8 years	146	11.7	0.69	*	6.2	6.4	7.2	10.0	14.5	17.7	20.6	*
9 years	173	12.6	0.51	*	6.4	6.9	7.6	11.4	16.2	19.3	20.3	*
10 years	169	14.4	0.54	*	7.4	8.1	8.8	12.2	18.9	21.2	24.1	*
11 years	147	15.3	0.93	*	7.6	8.0	9.3	13.1	19.3	24.2	26.6	*
12 years	265	15.4	0.56	6.1	7.4	8.4	9.5	12.9	20.4	23.4	26.5	28.9
13 years	277	14.6	0.58	6.3	6.8	7.4	8.2	12.3	18.7	23.9	26.2	28.7
14 years	253	13.4	0.62	*	6.4	6.8	7.8	10.4	17.7	22.6	24.9	*
15 years	263	12.6	0.45	6.4	6.7	7.3	8.0	9.9	15.4	19.2	22.4	26.4
16 years	290	13.6	0.47	5.8	6.2	6.8	7.4	9.9	19.1	24.5	26.3	29.1
17 years	259	12.7	0.56	5.2	6.0	6.5	7.3	10.1	17.2	19.8	22.4	26.4
18 years	266	13.1	0.88	5.4	6.2	6.5	7.2	9.9	17.8	20.8	24.7	28.7
19 years	254	13.6	0.72	*	5.9	6.9	7.9	11.0	16.2	22.9	26.6	*
Female												
2 months	9	*	*	*	*	*	*	*	*	*	*	*
3–5 months	91	10.8	0.31	*	*	8.0	8.9	10.6	11.9	13.4	*	*
6–8 months	120	11.1	0.30	*	*	7.6	8.8	11.3	12.8	13.9	*	*
9–11 months	118	10.8	0.24	*	*	8.0	8.9	10.9	12.3	12.9	*	*
1 year	316	10.1	0.19	6.5	7.2	7.5	8.3	9.7	11.4	12.7	13.2	14.6
2 years	299	10.5	0.21	6.3	7.0	7.7	8.4	10.1	12.4	13.2	14.2	15.3
3 years	174	10.2	0.28	*	6.7	7.0	7.6	9.4	11.9	13.2	14.8	*
4 years	220	10.6	0.23	*	7.1	7.4	8.2	10.3	12.1	13.2	14.2	*
5 years	194	10.7	0.32	*	7.2	7.6	8.4	9.9	12.1	13.3	14.9	*
6 years	188	10.8	0.30	*	6.2	6.9	8.0	10.0	12.9	14.7	15.1	*
7 years	153	12.7	0.38	*	7.7	8.0	8.8	11.0	15.0	18.4	19.8	*
8 years	176	12.6	0.48	*	7.4	7.8	8.7	11.0	15.3	17.7	20.1	*
9 years	182	15.5	0.59	*	8.4	9.2	10.7	14.1	18.4	22.2	24.6	*
10 years	176	16.4	0.60	*	8.3	9.6	11.3	15.1	19.9	22.8	26.6	*
11 years	167	17.6	0.72	*	8.8	9.3	11.2	16.0	22.9	26.0	28.5	*
12 years	231	16.0	0.52	*	8.9	9.2	11.1	14.6	19.8	22.8	25.5	*
13 years	274	18.8	0.49	9.2	10.2	10.8	12.9	18.3	23.2	26.0	29.2	32.1
14 years	252	18.3	0.84	*	10.1	11.1	12.9	16.2	23.9	26.4	27.6	*
15 years	226	19.7	0.65	*	11.0	11.9	13.8	18.5	23.8	26.4	30.0	*
16 years	236	18.8	0.72	*	10.5	11.2	13.2	17.1	23.3	27.0	29.3	*
17 years	227	20.3	0.56	*	11.3	13.1	14.6	18.7	25.1	28.0	29.7	*
18 years	246	21.0	0.76	*	11.1	12.8	14.8	20.1	26.2	29.9	33.2	*
19 years	208	20.5	0.80	*	11.2	12.3	14.2	19.9	25.2	27.1	29.5	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.

NOTE: Pregnant females were excluded.

**Table 31. Triceps skinfold thickness in millimeters for females 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Millimeters												
20 years and over . . . . .	3,552	24.1	0.22	11.6	13.9	15.5	18.3	24.0	29.9	32.4	34.2	36.4
20–29 years . . . . .	599	21.8	0.44	10.4	11.9	13.2	15.5	21.1	27.3	30.3	32.4	34.7
30–39 years . . . . .	538	24.3	0.54	12.1	14.7	15.8	18.2	23.9	30.2	32.9	35.3	37.4
40–49 years . . . . .	617	25.1	0.44	12.1	14.1	15.9	19.5	25.6	30.9	33.6	35.2	36.9
50–59 years . . . . .	477	25.6	0.36	13.3	16.1	17.5	20.5	25.9	31.0	33.2	34.9	36.5
60–69 years . . . . .	570	25.3	0.42	13.4	16.6	18.1	20.3	25.4	30.2	32.8	34.2	36.0
70–79 years . . . . .	408	23.2	0.41	11.2	14.2	15.7	17.9	22.9	28.7	31.1	32.7	36.0
80 years and over . . . . .	343	20.2	0.41	10.1	11.3	12.7	14.7	19.0	25.0	28.5	30.1	32.7
Non-Hispanic white												
20 years and over . . . . .	1,909	23.9	0.26	11.6	13.7	15.3	18.0	23.8	29.8	32.3	34.0	36.1
20–39 years . . . . .	540	22.8	0.50	11.1	13.1	14.1	16.8	22.1	28.5	31.6	33.2	36.4
40–59 years . . . . .	565	25.1	0.40	12.3	14.7	16.3	19.8	25.5	31.0	33.1	34.4	36.7
60 years and over . . . . .	804	23.5	0.34	11.2	13.9	15.6	18.0	23.5	28.8	31.8	32.9	35.2
Non-Hispanic black												
20 years and over . . . . .	686	25.4	0.37	10.6	14.1	16.0	19.5	25.9	31.6	34.5	35.9	37.3
20–39 years . . . . .	242	24.1	0.61	10.1	12.4	14.4	18.1	24.2	30.0	33.1	35.0	37.2
40–59 years . . . . .	231	27.1	0.45	10.6	16.1	18.2	22.0	28.0	33.8	35.7	36.8	38.2
60 years and over . . . . .	213	24.9	0.44	11.2	14.4	16.3	18.9	25.1	30.8	33.1	34.7	36.2
Mexican American												
20 years and over . . . . .	676	24.9	0.53	13.3	15.9	17.2	19.9	24.3	30.1	32.6	34.6	36.3
20–39 years . . . . .	244	24.6	0.62	13.0	14.8	16.8	19.2	23.5	30.2	32.5	34.7	36.3
40–59 years . . . . .	196	26.0	0.64	*	17.0	18.6	21.2	26.1	30.1	33.5	34.9	*
60 years and over . . . . .	236	23.0	0.35	*	14.4	15.6	18.9	22.2	27.3	30.4	32.3	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

NOTE: Pregnant females were excluded.

**Table 32. Triceps skinfold thickness in millimeters for males 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Millimeters												
20 years and over . . . . .	4,152	15.0	0.19	6.1	7.3	8.3	10.1	13.8	18.8	21.9	24.2	28.1
20–29 years . . . . .	755	14.3	0.35	5.0	6.2	7.1	8.8	12.7	18.9	21.7	25.4	29.4
30–39 years . . . . .	690	14.7	0.28	5.8	7.1	8.2	10.0	13.6	18.3	21.4	23.4	27.0
40–49 years . . . . .	705	15.3	0.35	6.6	7.6	8.7	10.4	13.9	19.2	22.3	24.1	27.9
50–59 years . . . . .	542	15.1	0.41	6.2	7.4	8.9	10.8	14.1	18.5	21.5	23.2	26.7
60–69 years . . . . .	618	16.1	0.43	7.3	8.3	9.4	11.2	14.9	19.7	22.5	25.2	30.3
70–79 years . . . . .	520	15.6	0.33	7.1	8.7	9.5	11.0	14.0	19.2	22.5	25.0	29.1
80 years and over . . . . .	322	13.9	0.26	6.8	7.6	8.3	9.7	12.7	16.2	19.8	21.6	24.4
Non-Hispanic white												
20 years and over . . . . .	2,177	15.2	0.21	6.1	7.4	8.6	10.3	13.9	19.1	22.1	24.4	28.5
20–39 years . . . . .	639	14.5	0.33	5.4	6.4	7.5	9.2	13.1	18.7	21.4	24.0	28.5
40–59 years . . . . .	651	15.5	0.38	6.4	7.6	9.1	10.9	14.1	19.3	22.5	24.3	28.0
60 years and over . . . . .	887	15.8	0.31	7.3	8.6	9.4	11.1	14.4	19.1	22.4	24.9	29.7
Non-Hispanic black												
20 years and over . . . . .	838	14.3	0.22	4.9	6.1	7.0	8.7	12.8	18.4	21.8	24.1	28.1
20–39 years . . . . .	318	14.4	0.39	4.7	5.3	6.3	8.4	12.8	18.9	22.4	24.8	30.8
40–59 years . . . . .	274	13.7	0.36	5.4	6.5	7.1	8.7	12.2	17.4	20.3	22.0	24.7
60 years and over . . . . .	246	15.5	0.42	4.8	6.9	7.9	10.0	14.0	20.4	24.0	26.2	29.9
Mexican American												
20 years and over . . . . .	848	14.2	0.40	6.2	7.4	8.5	9.8	13.0	17.1	20.1	22.9	26.3
20–39 years . . . . .	348	14.8	0.59	6.0	7.2	8.5	10.0	13.4	18.0	21.8	24.4	27.3
40–59 years . . . . .	238	13.3	0.33	*	7.7	8.2	9.1	12.0	15.9	18.0	19.7	*
60 years and over . . . . .	262	13.7	0.45	*	8.1	8.6	9.7	12.5	16.0	19.6	21.1	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

**Table 33. Maximal calf circumference in centimeters for children and adolescents aged 8–19 years by sex and age, by mean, standard error of the mean, and selected percentiles: United States, 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Centimeters												
8 years . . . . .	139	28.0	0.30	*	*	25.2	25.9	27.5	29.6	31.3	*	*
9 years . . . . .	172	28.6	0.30	*	25.4	25.9	26.5	28.1	30.3	31.7	32.9	*
10 years . . . . .	171	30.4	0.33	*	25.9	26.5	27.5	29.9	32.8	34.6	35.5	*
11 years . . . . .	153	32.0	0.51	*	27.6	28.0	28.7	31.7	34.3	36.0	36.9	*
12 years . . . . .	270	33.1	0.38	*	28.2	28.8	29.9	32.5	35.7	37.0	38.9	*
13 years . . . . .	282	34.9	0.36	*	29.8	30.4	31.6	34.4	37.2	39.1	40.1	*
14 years . . . . .	256	36.1	0.42	*	31.3	32.1	33.4	35.5	37.8	40.0	41.5	*
15 years . . . . .	266	37.1	0.34	*	32.3	32.8	34.1	36.8	39.1	41.0	42.4	*
16 years . . . . .	303	38.2	0.37	*	33.0	33.6	34.9	36.9	40.9	42.7	43.3	*
17 years . . . . .	273	37.9	0.36	*	33.1	33.8	34.9	37.2	40.4	42.7	43.6	*
18 years . . . . .	275	38.2	0.38	*	33.4	34.2	35.2	37.8	40.3	41.9	43.6	*
19 years . . . . .	263	38.8	0.36	*	33.6	34.8	35.8	38.1	41.4	43.5	44.6	*
Female												
8 years . . . . .	172	27.6	0.34	*	24.1	24.5	25.6	27.2	28.8	30.1	31.5	*
9 years . . . . .	182	29.7	0.38	*	25.5	26.4	27.1	28.7	31.4	33.8	34.3	*
10 years . . . . .	182	31.4	0.37	*	27.0	27.8	28.8	30.6	33.7	35.9	36.5	*
11 years . . . . .	172	33.1	0.41	*	27.6	28.5	29.8	32.9	36.0	37.1	38.4	*
12 years . . . . .	243	34.0	0.42	*	29.1	30.0	31.4	33.3	36.3	37.6	39.9	*
13 years . . . . .	289	35.4	0.30	*	30.5	31.0	32.5	34.7	37.5	39.2	42.5	*
14 years . . . . .	266	35.5	0.48	*	31.0	31.5	32.7	34.8	37.6	40.0	40.9	*
15 years . . . . .	236	35.9	0.27	*	31.9	32.7	33.8	35.6	37.6	39.1	40.5	*
16 years . . . . .	246	36.3	0.21	*	32.0	32.5	33.9	36.1	38.1	39.0	40.6	*
17 years . . . . .	245	37.3	0.41	*	32.7	33.5	34.4	36.4	39.7	40.9	42.3	*
18 years . . . . .	269	37.4	0.53	*	32.2	33.3	34.5	36.5	39.5	42.3	43.2	*
19 years . . . . .	233	37.4	0.42	*	32.9	33.4	34.5	36.5	39.6	41.2	44.1	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.

NOTE: Pregnant females were excluded.

**Table 34. Maximal calf circumference in centimeters for females 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,133	38.3	0.13	31.8	33.0	33.8	35.0	37.5	40.9	43.0	44.7	47.1
20–29 years . . . . .	676	37.8	0.25	31.5	32.4	33.1	34.5	37.1	40.2	41.9	43.7	46.6
30–39 years . . . . .	648	38.7	0.23	32.2	33.6	34.1	35.3	38.0	41.2	43.4	45.3	47.2
40–49 years . . . . .	765	39.2	0.27	32.8	33.8	34.6	35.7	38.5	42.1	44.2	45.6	47.8
50–59 years . . . . .	578	38.7	0.24	32.3	33.4	34.3	35.5	37.7	41.3	43.1	44.3	47.4
60–69 years . . . . .	673	38.5	0.30	31.5	32.6	33.6	35.2	37.6	41.1	43.1	44.6	47.2
70–79 years . . . . .	437	36.8	0.27	31.1	32.1	32.9	33.9	36.2	39.0	40.6	42.0	44.7
80 years and over . . . . .	356	35.5	0.19	29.8	30.8	31.7	33.1	35.4	37.7	38.7	39.8	41.4
Non-Hispanic white												
20 years and over . . . . .	2,124	38.4	0.14	32.1	33.1	34.0	35.1	37.6	40.9	43.1	44.8	47.2
20–39 years . . . . .	595	38.4	0.23	32.2	33.0	33.9	35.0	37.7	40.5	42.8	44.6	47.1
40–59 years . . . . .	660	39.1	0.21	32.9	34.0	34.6	35.7	38.2	41.9	43.8	45.5	47.8
60 years and over . . . . .	869	37.5	0.17	31.2	32.3	33.1	34.4	36.8	39.8	41.5	43.1	45.6
Non-Hispanic black												
20 years and over . . . . .	912	39.6	0.17	32.1	33.6	34.9	36.1	39.1	42.5	44.6	46.2	48.6
20–39 years . . . . .	317	39.9	0.27	32.4	34.1	35.1	36.1	39.2	42.9	45.5	46.8	48.8
40–59 years . . . . .	341	39.9	0.25	32.6	34.1	35.3	36.5	39.5	42.6	44.5	45.2	48.6
60 years and over . . . . .	254	38.4	0.31	31.1	32.2	33.2	35.0	37.8	41.8	43.4	44.9	47.7
Mexican American												
20 years and over . . . . .	789	37.3	0.23	31.2	32.3	33.1	34.4	36.6	39.7	41.5	42.9	45.1
20–39 years . . . . .	293	37.4	0.30	31.2	32.2	33.1	34.3	36.6	39.9	41.7	43.0	45.1
40–59 years . . . . .	228	37.9	0.31	31.9	33.1	33.9	35.0	37.1	40.1	41.7	43.4	46.3
60 years and over . . . . .	268	35.6	0.21	30.1	30.9	31.6	33.0	35.2	37.7	39.0	40.4	42.4

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

NOTE: Pregnant females were excluded.

**Table 35. Maximal calf circumference in centimeters for males 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,303	39.5	0.09	33.6	34.7	35.6	36.9	39.2	41.9	43.4	44.4	46.4
20–29 years . . . . .	779	39.4	0.19	33.5	34.7	35.4	36.7	38.7	41.3	43.4	45.1	47.3
30–39 years . . . . .	714	39.8	0.17	34.1	34.9	35.8	36.9	39.5	42.2	43.5	44.5	46.5
40–49 years . . . . .	748	40.3	0.16	34.7	35.9	36.5	37.8	40.0	42.7	44.2	44.9	46.7
50–59 years . . . . .	568	39.8	0.20	33.7	34.9	35.9	37.2	39.6	42.0	43.4	44.6	46.0
60–69 years . . . . .	648	39.2	0.18	33.4	34.5	35.7	36.9	39.1	41.7	42.8	43.6	44.8
70–79 years . . . . .	530	38.0	0.22	32.3	33.7	34.2	35.5	37.7	40.2	41.3	42.5	44.2
80 years and over . . . . .	316	36.1	0.16	31.1	32.3	32.8	34.0	36.0	38.0	39.3	40.0	41.0
Non-Hispanic white												
20 years and over . . . . .	2,245	39.8	0.11	33.9	35.0	35.9	37.1	39.4	42.1	43.5	44.5	46.6
20–39 years . . . . .	648	39.8	0.17	34.2	35.1	35.9	37.0	39.4	42.0	43.6	44.8	47.4
40–59 years . . . . .	691	40.4	0.19	34.4	35.9	36.7	38.0	40.1	42.6	44.2	44.9	46.6
60 years and over . . . . .	906	38.6	0.14	32.7	33.8	34.6	36.1	38.3	40.8	42.2	43.1	44.5
Non-Hispanic black												
20 years and over . . . . .	900	39.7	0.18	33.5	34.6	35.5	36.7	39.4	42.1	44.0	45.5	47.2
20–39 years . . . . .	348	40.2	0.27	33.8	35.0	35.9	37.0	39.7	42.6	45.0	46.4	48.0
40–59 years . . . . .	299	39.8	0.23	33.5	35.1	36.0	37.1	39.5	41.8	43.8	44.6	46.8
60 years and over . . . . .	253	38.0	0.23	32.1	33.7	34.4	35.3	37.8	40.4	41.6	42.9	44.6
Mexican American												
20 years and over . . . . .	865	37.9	0.18	32.7	33.5	34.5	35.6	37.7	39.9	41.2	42.2	43.4
20–39 years . . . . .	355	38.1	0.26	33.0	33.6	34.6	35.6	37.8	40.0	41.8	42.7	44.2
40–59 years . . . . .	240	37.9	0.20	32.5	34.3	34.9	35.8	37.9	39.6	40.7	41.6	42.6
60 years and over . . . . .	270	36.5	0.25	30.8	32.0	32.7	34.3	36.3	38.7	39.8	40.6	42.4

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

**Table 36. Upper leg length in centimeters for children and adolescents aged 8–19 years by sex and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Centimeters												
8 years . . . . .	138	30.8	0.27	*	*	28.2	29.0	31.0	32.7	33.2	*	*
9 years . . . . .	172	32.9	0.26	*	29.4	30.1	31.2	32.6	34.5	35.7	36.0	*
10 years . . . . .	169	34.6	0.33	*	30.5	31.4	32.6	34.2	36.7	37.7	38.6	*
11 years . . . . .	153	36.4	0.40	*	*	33.1	33.8	36.1	38.4	39.7	*	*
12 years . . . . .	268	38.0	0.24	*	33.7	34.5	35.5	38.1	40.1	40.7	41.7	*
13 years . . . . .	282	40.1	0.30	*	35.9	36.9	37.9	39.9	42.1	43.3	44.0	*
14 years . . . . .	255	41.7	0.27	*	37.5	38.0	38.9	41.7	44.0	44.9	45.9	*
15 years . . . . .	265	43.1	0.26	*	39.4	40.0	41.1	42.9	44.8	45.9	46.6	*
16 years . . . . .	301	43.3	0.24	*	40.0	40.6	41.2	43.2	44.9	45.9	46.6	*
17 years . . . . .	271	43.8	0.24	*	39.8	40.7	42.1	43.7	45.5	46.7	47.2	*
18 years . . . . .	274	43.6	0.23	*	40.0	40.4	41.2	43.6	45.4	46.7	47.4	*
19 years . . . . .	261	43.8	0.37	*	39.5	40.2	41.2	44.0	46.0	47.3	48.3	*
Female												
8 years . . . . .	171	31.0	0.30	*	*	28.0	29.0	30.7	32.7	33.7	*	*
9 years . . . . .	182	33.5	0.35	*	30.0	30.5	31.4	33.2	35.1	36.6	37.2	*
10 years . . . . .	182	34.7	0.29	*	31.3	31.9	32.6	34.5	35.9	37.5	38.4	*
11 years . . . . .	171	37.0	0.27	*	*	33.9	34.8	37.1	38.8	39.9	*	*
12 years . . . . .	242	38.4	0.28	*	34.5	35.0	36.3	38.2	40.7	41.9	42.2	*
13 years . . . . .	287	38.9	0.27	*	35.5	36.4	37.1	38.9	40.8	41.6	42.0	*
14 years . . . . .	266	39.3	0.30	*	35.8	36.5	37.2	39.3	40.8	42.1	43.4	*
15 years . . . . .	243	39.5	0.25	*	36.4	37.0	37.5	39.4	41.1	42.1	42.8	*
16 years . . . . .	251	39.5	0.22	*	36.0	36.6	37.7	39.2	41.2	42.1	43.2	*
17 years . . . . .	265	39.5	0.19	*	36.1	36.6	37.5	39.6	41.1	42.1	42.9	*
18 years . . . . .	299	39.7	0.26	*	36.1	36.7	37.8	39.9	41.5	42.6	43.3	*
19 years . . . . .	260	39.6	0.27	*	35.8	36.7	37.7	39.2	41.7	43.0	43.6	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.

**Table 37. Upper leg length in centimeters for females 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,593	38.0	0.14	32.6	33.9	34.7	36.0	38.1	40.2	41.2	41.9	43.0
20–29 years . . . . .	1,010	39.2	0.15	34.5	35.7	36.2	37.2	39.2	41.0	41.8	42.7	43.9
30–39 years . . . . .	808	39.0	0.19	33.6	35.1	35.9	36.8	39.1	40.9	41.9	42.7	43.9
40–49 years . . . . .	762	38.3	0.16	33.0	34.5	35.3	36.4	38.4	40.3	41.2	41.9	42.4
50–59 years . . . . .	567	37.4	0.23	32.1	33.3	34.1	35.3	37.4	39.6	40.7	41.5	42.8
60–69 years . . . . .	665	37.0	0.22	31.4	32.9	33.6	34.9	37.0	39.1	40.2	40.9	42.0
70–79 years . . . . .	433	36.3	0.16	30.9	32.0	32.9	34.5	36.5	38.4	39.6	40.3	41.0
80 years and over . . . . .	348	35.8	0.22	30.6	31.9	32.9	34.0	35.8	37.7	39.0	39.7	41.2
Non-Hispanic white												
20 years and over . . . . .	2,346	38.1	0.14	33.0	34.2	35.0	36.2	38.2	40.2	41.1	41.8	42.7
20–39 years . . . . .	830	39.4	0.15	35.0	36.0	36.5	37.6	39.5	40.9	41.8	42.5	43.6
40–59 years . . . . .	654	38.0	0.17	33.1	34.4	35.1	36.3	38.0	39.9	41.1	41.7	42.4
60 years and over . . . . .	862	36.6	0.19	31.5	32.7	33.5	34.7	36.7	38.6	39.7	40.5	41.6
Non-Hispanic black												
20 years and over . . . . .	963	39.6	0.19	33.2	35.0	35.9	37.4	39.9	41.9	43.2	44.1	45.2
20–39 years . . . . .	385	40.9	0.27	35.3	36.5	37.4	38.6	41.0	43.0	44.1	44.9	46.1
40–59 years . . . . .	333	39.2	0.25	32.8	34.5	35.7	37.1	39.6	41.2	42.4	43.6	44.5
60 years and over . . . . .	245	37.4	0.24	*	32.3	33.6	35.2	37.5	39.9	41.1	41.8	*
Mexican American												
20 years and over . . . . .	926	36.3	0.21	31.0	32.4	33.0	34.4	36.3	38.2	39.5	40.1	41.3
20–39 years . . . . .	434	37.1	0.24	32.5	33.5	34.2	35.4	36.9	38.7	39.9	40.8	41.4
40–59 years . . . . .	229	35.8	0.25	*	31.9	32.6	33.6	35.9	37.8	38.9	39.6	*
60 years and over . . . . .	263	33.6	0.35	*	29.1	30.4	31.6	33.7	35.7	36.8	37.5	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.



**Table 38. Upper leg length in centimeters for males 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,272	42.2	0.13	36.5	37.9	38.7	40.0	42.1	44.4	45.6	46.5	47.7
20–29 years . . . . .	776	43.4	0.17	38.3	39.4	40.3	41.3	43.3	45.5	46.7	47.5	48.3
30–39 years . . . . .	708	42.7	0.20	37.4	38.5	39.5	40.5	42.7	44.8	45.9	47.0	48.5
40–49 years . . . . .	742	42.4	0.18	37.2	38.4	39.1	40.1	42.4	44.5	45.8	46.6	47.5
50–59 years . . . . .	563	41.8	0.18	36.5	38.0	38.5	39.7	41.8	44.0	45.1	45.7	46.9
60–69 years . . . . .	643	40.9	0.19	35.0	36.5	37.3	38.5	40.9	43.1	44.3	45.2	46.3
70–79 years . . . . .	529	40.5	0.21	35.0	36.1	37.3	38.3	40.2	42.7	43.8	45.0	46.0
80 years and over . . . . .	311	39.6	0.24	34.3	35.5	36.2	37.7	39.9	41.4	42.4	43.3	44.9
Non-Hispanic white												
20 years and over . . . . .	2,231	42.3	0.16	36.8	38.2	39.0	40.2	42.3	44.5	45.6	46.5	47.6
20–39 years . . . . .	648	43.4	0.20	38.5	40.0	40.6	41.4	43.2	45.1	46.4	47.3	48.4
40–59 years . . . . .	687	42.3	0.18	37.2	38.4	39.1	40.2	42.2	44.4	45.5	46.5	47.2
60 years and over . . . . .	896	40.7	0.17	35.1	36.4	37.4	38.4	40.5	42.9	44.0	45.0	46.2
Non-Hispanic black												
20 years and over . . . . .	892	43.8	0.17	38.2	39.5	40.3	41.4	43.8	46.0	47.2	47.9	49.5
20–39 years . . . . .	344	44.8	0.19	39.9	40.8	41.4	42.6	44.9	46.9	47.9	49.0	50.0
40–59 years . . . . .	296	43.4	0.24	38.3	39.3	40.0	41.1	43.4	45.3	46.9	47.5	48.8
60 years and over . . . . .	252	41.6	0.22	35.0	37.0	38.0	39.7	41.6	43.7	44.8	45.6	47.2
Mexican American												
20 years and over . . . . .	856	40.6	0.21	35.4	36.4	37.1	38.2	40.3	42.6	43.9	44.9	46.1
20–39 years . . . . .	350	40.9	0.25	*	36.8	37.6	38.6	40.6	42.9	44.4	45.5	*
40–59 years . . . . .	236	40.3	0.25	*	36.2	37.0	38.0	40.2	42.3	43.2	44.1	*
60 years and over . . . . .	270	38.8	0.43	*	34.5	35.0	36.5	38.9	41.2	42.4	43.1	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

**Table 39. Mid-thigh circumference in centimeters for children and adolescents aged 8–19 years by sex and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Sex and age <sup>1</sup>	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
Centimeters												
8 years . . . . .	138	38.3	0.54	*	*	33.6	34.2	37.5	41.2	43.0	*	*
9 years . . . . .	170	39.9	0.83	*	33.1	33.9	35.0	38.7	42.7	45.1	46.9	*
10 years . . . . .	169	42.2	0.46	*	35.5	36.4	37.7	40.9	46.0	48.7	50.6	*
11 years . . . . .	153	44.1	0.82	*	*	37.2	38.4	42.3	48.7	51.6	*	*
12 years . . . . .	266	46.0	0.65	*	38.0	39.1	40.7	45.2	50.1	52.8	56.1	*
13 years . . . . .	281	47.9	0.60	*	40.1	41.1	42.3	46.6	51.5	54.9	57.2	*
14 years . . . . .	254	49.3	0.77	*	41.7	42.9	44.2	48.8	51.6	54.7	58.4	*
15 years . . . . .	264	51.4	0.59	*	43.4	44.5	46.6	50.1	56.0	57.7	59.1	*
16 years . . . . .	302	53.5	0.58	*	45.6	46.1	47.0	51.4	60.0	62.3	64.2	*
17 years . . . . .	270	53.3	0.63	*	45.5	46.6	47.8	52.0	56.9	60.0	63.8	*
18 years . . . . .	271	53.6	0.75	*	45.0	45.9	48.1	52.7	57.3	60.5	63.0	*
19 years . . . . .	261	54.8	0.66	*	45.9	47.4	49.4	53.8	59.3	62.1	65.3	*
Female												
8 years . . . . .	171	38.2	0.64	*	32.1	32.8	34.6	36.9	40.4	42.8	44.6	*
9 years . . . . .	182	40.8	0.57	*	34.6	35.5	36.8	40.1	44.2	46.9	49.3	*
10 years . . . . .	181	43.1	0.59	*	36.0	37.1	38.4	41.7	46.3	49.3	51.1	*
11 years . . . . .	170	45.7	0.69	*	37.0	38.4	40.1	45.5	50.1	51.6	54.2	*
12 years . . . . .	243	46.5	0.59	*	38.1	39.6	42.1	45.5	49.4	54.0	56.4	*
13 years . . . . .	287	48.4	0.48	*	40.0	41.3	43.5	47.2	51.6	56.1	58.0	*
14 years . . . . .	265	49.0	0.78	*	41.4	42.4	44.2	47.3	52.8	56.7	58.6	*
15 years . . . . .	236	49.7	0.49	*	42.4	43.5	45.0	49.0	53.2	56.0	58.5	*
16 years . . . . .	245	50.0	0.41	*	43.5	44.6	46.1	48.9	52.4	54.9	57.3	*
17 years . . . . .	240	51.9	0.65	*	43.8	45.3	46.7	49.9	55.5	58.7	60.1	*
18 years . . . . .	266	52.1	0.94	*	43.5	44.6	46.2	50.0	55.9	61.0	63.2	*
19 years . . . . .	231	52.3	0.74	*	44.3	45.3	47.9	50.9	54.6	60.0	62.8	*

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Age shown is age at time of examination.

NOTE: Pregnant females were excluded.

**Table 40. Mid-thigh circumference in centimeters for females 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,065	52.9	0.21	42.4	44.2	45.4	47.4	51.6	57.2	60.4	63.2	67.4
20–29 years . . . . .	667	52.9	0.44	42.2	44.1	45.1	47.3	51.5	57.0	59.9	63.2	69.1
30–39 years . . . . .	641	54.2	0.41	44.0	45.3	46.5	48.2	52.8	59.2	62.2	65.5	68.8
40–49 years . . . . .	756	54.4	0.40	43.7	45.6	46.9	48.7	53.0	58.8	62.6	64.8	70.2
50–59 years . . . . .	566	53.2	0.43	43.1	44.8	46.1	47.9	51.8	57.5	60.4	62.7	66.0
60–69 years . . . . .	660	52.2	0.40	41.8	43.6	45.1	47.1	51.3	56.0	58.9	61.9	65.8
70–79 years . . . . .	433	49.6	0.36	40.2	41.8	43.4	44.8	48.6	53.6	56.4	57.7	62.0
80 years and over . . . . .	342	47.5	0.27	38.2	40.0	41.3	43.5	47.2	51.3	53.5	55.0	56.8
Non-Hispanic white												
20 years and over . . . . .	2,093	52.5	0.22	42.4	44.2	45.5	47.4	51.3	56.7	59.5	62.2	66.2
20–39 years . . . . .	586	53.2	0.41	43.1	44.7	45.9	47.6	51.7	57.5	60.5	63.2	67.5
40–59 years . . . . .	650	53.6	0.35	43.6	45.4	46.7	48.3	52.1	57.8	60.9	63.3	67.5
60 years and over . . . . .	857	50.2	0.24	40.1	42.3	43.9	45.5	49.3	54.3	56.5	58.0	62.3
Non-Hispanic black												
20 years and over . . . . .	888	58.0	0.33	44.7	47.5	49.2	52.1	57.0	62.8	66.2	69.4	74.3
20–39 years . . . . .	313	58.8	0.55	45.5	48.1	49.9	52.1	57.9	64.3	67.5	70.8	75.0
40–59 years . . . . .	334	58.3	0.45	45.5	47.8	50.4	52.8	57.3	62.8	65.8	68.7	74.9
60 years and over . . . . .	241	55.3	0.59	42.3	44.5	46.5	49.4	55.2	60.8	63.4	64.5	70.6
Mexican American												
20 years and over . . . . .	776	52.0	0.43	42.4	44.0	45.3	47.0	50.8	55.9	58.8	60.7	64.9
20–39 years . . . . .	288	52.4	0.54	42.5	44.2	45.4	47.7	50.9	56.6	59.3	61.1	64.8
40–59 years . . . . .	225	52.5	0.63	*	45.1	46.1	47.3	51.4	55.4	59.4	61.2	*
60 years and over . . . . .	263	48.5	0.39	40.1	40.9	42.2	44.2	47.6	52.1	54.5	56.9	58.4

\* Figure does not meet standards of reliability or precision.

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

NOTE: Pregnant women were excluded.

**Table 41. Mid-thigh circumference in centimeters for males 20 years of age and older by race and ethnicity and age, by mean, standard error of the mean, and selected percentiles: United States 2003–2006**

Race and ethnicity and age	Number examined	Mean	Standard error	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
Centimeters												
20 years and over . . . . .	4,255	53.8	0.14	44.4	46.5	47.8	49.8	53.3	57.2	59.7	61.4	64.6
20–29 years . . . . .	777	55.1	0.35	45.4	47.1	48.5	50.8	54.0	58.4	61.7	64.2	68.6
30–39 years . . . . .	706	55.1	0.27	46.7	48.1	49.2	51.0	54.3	58.7	60.9	62.5	65.0
40–49 years . . . . .	741	55.0	0.25	46.8	48.0	49.4	51.1	54.5	58.2	60.5	62.0	65.0
50–59 years . . . . .	561	53.2	0.29	44.4	46.8	48.1	49.7	52.8	56.2	58.2	59.6	63.1
60–69 years . . . . .	643	51.9	0.29	43.7	45.4	46.3	48.4	51.7	55.1	56.9	57.9	60.9
70–79 years . . . . .	526	50.0	0.27	42.7	44.4	45.1	46.4	49.9	52.8	54.6	56.0	58.5
80 years and over . . . . .	301	46.6	0.20	39.5	41.0	42.3	43.6	46.2	49.7	51.2	52.6	54.2
Non-Hispanic white												
20 years and over . . . . .	2,221	53.7	0.15	44.5	46.5	47.8	49.9	53.4	57.1	59.6	61.0	63.9
20–39 years . . . . .	648	55.1	0.31	46.1	47.8	49.0	51.0	54.2	58.4	61.0	62.9	66.5
40–59 years . . . . .	686	54.3	0.27	45.9	47.8	48.7	50.8	54.0	57.6	59.6	61.0	63.7
60 years and over . . . . .	887	50.6	0.18	42.4	44.3	45.2	46.6	50.8	53.9	55.7	57.1	59.8
Non-Hispanic black												
20 years and over . . . . .	886	56.1	0.37	45.4	47.4	49.0	50.9	55.4	59.9	63.5	65.2	69.0
20–39 years . . . . .	343	58.1	0.53	46.8	49.0	50.6	52.6	57.1	62.4	65.1	68.3	73.1
40–59 years . . . . .	294	55.5	0.46	45.0	47.6	49.0	50.6	55.0	59.1	61.7	64.4	66.2
60 years and over . . . . .	249	51.9	0.36	43.3	44.9	45.9	47.8	51.6	55.6	58.0	59.0	61.1
Mexican American												
20 years and over . . . . .	856	52.6	0.27	44.4	46.3	47.4	49.2	52.1	55.5	57.5	59.7	62.4
20–39 years . . . . .	350	53.7	0.44	45.6	47.3	48.3	50.0	53.0	56.4	59.4	60.6	63.4
40–59 years . . . . .	236	51.5	0.28	44.4	46.1	47.2	48.6	51.4	54.1	55.7	56.5	59.4
60 years and over . . . . .	270	49.0	0.32	40.3	42.8	43.7	45.5	48.5	52.1	54.3	55.4	56.9

<sup>1</sup>Persons of other races and unknown race and ethnicity are included.

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**Suggested citation**

McDowell MA, Fryar CD, Ogden CL, Flegal KM. Anthropometric reference data for children and adults: United States, 2003–2006. National health statistics reports; no 10. Hyattsville, MD: National Center for Health Statistics. 2008.

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DHHS Publication No. (PHS) 2009–1250  
CS121840  
T32709 (10/2008)