

Anthropometric Reference Data for Children and Adults: U.S. Population, 1999–2002

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Abstract

This report presents national anthropometric reference data based on health examination survey results from the National Health and Nutrition Examination Survey (NHANES), 1999–2002, for all ages of the U.S. population (1,2). Weighted population means, standard errors of the means, and selected percentiles are presented for the total U.S. population by sex, race or ethnic group, and age in years or age group. Findings for some population groups are reported in a way that is comparable with results reported from National Health Examination Surveys (NHES) and NHANES conducted between 1960 and 1994 (3–9). These data add to the knowledge about trends in child growth and development and are used to monitor prevalent conditions in the U.S. population such as overweight and obesity (10–13).

Keywords: • Anthropometry • Body measures • Nutrition surveys • National Health and Nutrition Examination Survey (NHANES)

Introduction

The field of anthropometry encompasses a variety of human body measurements, such as weight, height, and size, including circumferences, lengths, breadths, and skinfold thicknesses. Anthropometry is a key component of nutrition status assessment in children and adults (14). 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.

Methods

National Health and Nutrition Examination Surveys are conducted by the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention. 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 annual survey sample is nationally representative; 2 or more years of data are required for subgroup analyses (15,16). NHANES 1999–2002 data were released in two, 2-year data sets. A combined 4-year dataset was used for this report because it provides robust sample sizes and more reliable statistical estimates. Additional 2-year data sets will be released as more data become available.

Household interview and health examination methods are used to collect NHANES data. All health examinations are conducted in mobile examination centers (MECs). The MECs provide a standardized environment for the collection of high-quality health data. The MECs are staffed by full-time personnel including health technicians and interviewers, dentists, physicians, dietary interviewers, laboratory technicians, and data managers. All NHANES health technicians complete a comprehensive body measurement training program that uses videotape, demonstration, and practice exercises with an expert examiner. Health technician performance is monitored by means of direct observation, data review, and expert examiner evaluations.

Although portions of the health examination component have varied during the survey's history, much of the



anthropometry component methodology has remained consistent over time. The use of consistent data collection methods makes it possible to examine trends in body measurements over time. NHANES data have been used to produce growth charts for growing infants and children and to produce national prevalence estimates for overweight and obesity.

The NHANES body measurement component is conducted in a dedicated room in the MEC. The room is equipped with a digital scale, wall-mounted stadiometer, bench, wall mirror, infantometer, and computer workstation. A health technician performs the anthropometry exam and is assisted by a recorder. NHANES subjects wear socks and lightweight examination gowns at the MEC.

Sample description

The NHANES 1999–2002 sample includes all ages. Adolescents aged 12–19 years, persons aged 60 years and over, Mexican Americans, black persons, low income persons, and pregnant women are oversampled to improve the precision of statistical estimates produced for these groups. Additional information pertaining to the NHANES 1999–2002 survey design, survey methodology, and public-use microdata is posted on the NHANES Web site (15).

The analytic sample for this report was based on the NHANES 1999–2002 eligible sample composed of 21,004 persons, and of these, 19,759 were examined. All examined persons are eligible for the body measurement component of the NHANES health examination. Pregnant women are excluded from weight and circumference tabulations. The estimates in this report are based on a single body measurement examination.

Anthropometry component

The *NHANES 1999–2000 Body Measurements Training and Procedures Manual* describes the protocol, equipment, and measurement procedures in detail (17). The manual also provides detailed information about equipment calibration methods, quality control, and

survey procedures. NCHS produced an anthropometry methodology videotape during NHANES III (18). Weight is measured to the nearest 0.1 kilogram; height, length, and circumference are measured to the nearest millimeter; skinfold thickness is measured to the nearest 0.1 millimeter. (For this report, weight is also reported in pounds (tables 4, 17, and 30), and height is reported in inches (tables 6, 19, and 32). Kilograms were converted to pounds by multiplying weight in kilograms by a conversion factor of 2.2. Centimeters were converted to inches by dividing height in centimeters by 2.54.)

Weight is measured using a digital floor scale. An infantometer is used to measure recumbent length of infants and young children. Standing height is measured with a wall-mounted stadiometer. Head circumference measurements are made using a plastic head circumference measurement tape. Waist circumference is measured at the lateral border of the ilium bone. Upper arm length is measured from the posterior border of the acromial process to the tip of the olecranon, and the upper-arm-length midpoint is marked. The upper arm length midpoint mark is used to measure mid-arm circumference and the triceps skinfold. Subscapular skinfold is measured on all subjects at a point medial to the inferior angle of the scapula. Weight, recumbent length, and standing height values are recorded automatically; other data are recorded using computer-assisted data entry.

In addition to weight, standing height, upper arm length, mid-arm circumference, waist circumference, and skinfold measurements, three additional measurements are taken on subjects aged 8 years and over. Upper leg length measurements are taken on seated subjects; the distance from the inguinal crease to the distal end of the femur is measured. Maximal calf circumference is also measured in a seated position; a measurement tape is positioned around the calf at the point of maximum circumference. Mid-thigh circumference is measured on standing subjects 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 (19). The reliability of the estimates was determined using the relative standard error (RSE), a calculated figure defined as the ratio of the standard error of the mean. NCHS recommends using an RSE greater than 30 percent to identify unreliable estimates (16). Percentile values that did not meet the standard of reliability or precision were replaced with asterisks in all tables.

The age categories recommended in the *NHANES 1999–2000 Analytic Guidelines*, based on the survey sample domains, were used for adults aged 20 years and over (16). The results for subjects under age 20 years are by single years (or less for the youngest children). All age categories were based on age at the time of the examination.

Results

The anthropometric measurements performed in the survey are listed in figure 1, by measurement and target age. Figure 2 lists the tables in this report by age group and sex, measurement, and unit of measurement.

Results are reported by sex and age groups in all tables; results for adults 20 years of age and over also are presented by race or ethnicity group. Results for infants, children, and teenagers through 19 years are presented in tables 1–15. Results for adults aged 20 years and over are presented in tables 16–41. The NHANES 1999–2002 findings for some population groups may be compared with the results reported from previous NHES and NHANES conducted between 1960 and 1994 (20–28).

Measurement and target ages	Table numbers
Body weight (all ages)	Tables 3 and 4 (males and females birth–19 years) Tables 16 and 17 (females 20 years and over) Tables 29 and 30 (males 20 years and over)
Recumbent length (through 47 months)	Table 2 (males and females 0–47 months)
Standing height (2 years and over)	Tables 5 and 6 (males and females 2–19 years) Tables 18 and 19 (females 20 years and over) Tables 31 and 32 (males 20 years and over)
Upper leg length (8 years and over)	Table 14 (males and females 8–19 years) Table 24 (females 20 years and over) Table 37 (males 20 years and over)
Upper arm length (2 months and over)	Table 10 (males and females 2 months–19 years) Table 22 (females 20 years and over) Table 35 (males 20 years and over)
Head circumference (0–6 months)	Table 1 (males and females 0–6 months)
Mid-upper arm circumference (2 months and over)	Table 9 (males and females 2 months–19 years) Table 21 (females 20 years and over) Table 34 (males 20 years and over)
Waist circumference (2 years and over)	Table 7 (males and females 2–19 years) Table 26 (females 20 years and over) Table 39 (males 20 years and over)
Mid-thigh circumference (8 years and over)	Table 15 (males and females 8–19 years) Table 25 (females 20 years and over) Table 38 (males 20 years and over)
Maximal calf circumference (8 years and over)	Table 13 (males and females 8–19 years) Table 23 (females 20 years and over) Table 36 (males 20 years and over)
Triceps skin fold (2 months and over)	Table 12 (males and females 2 months–19 years) Table 28 (females 20 years and over) Table 41 (males 20 years and over)
Subscapular skin fold (2 months and over)	Table 11 (males and females 2 months–19 years) Table 27 (females 20 years and over) Table 40 (males 20 years and over)
Body mass index	Table 7 (males and females 2–19 years) Table 20 (females 20 years and over) Table 33 (males 20 years and over)

Figure 1. Anthropometric measurements, target ages, and tables: United States, 1999–2002

Table number	Age group and sex	Measurement	Unit of measurement
	Infant, child, and adolescent		
	Both sexes:		
1	Birth through 6 months	Head circumference	Centimeters
2	Birth through 47 months	Recumbent length	Centimeters
3	Birth through 19 years	Weight	Kilograms
4	Birth through 19 years	Weight	Pounds
5	2–19 years	Standing height	Centimeters
6	2–19 years	Standing height	Inches
7	2–19 years	Body mass index	BMI value
8	2–19 years	Waist circumference	Centimeters
9	2 months–19 years	Mid-arm circumference	Centimeters
10	2 months–19 years	Upper arm length	Centimeters
11	2 months–19 years	Subscapular skinfold thickness	Millimeters
12	2 months–19 years	Triceps skinfold thickness	Millimeters
13	8–19 years	Maximal calf circumference	Centimeters
14	8–19 years	Upper leg length	Centimeters
15	8–19 years	Mid-thigh circumference	Centimeters
	Adult		
	Female:		
16	20 years and over	Weight	Kilograms
17	20 years and over	Weight	Pounds
18	20 years and over	Standing height	Centimeters
19	20 years and over	Standing height	Inches
20	20 years and over	Body mass index	BMI value
21	20 years and over	Mid-arm circumference	Centimeters
22	20 years and over	Upper arm length	Centimeters
23	20 years and over	Maximal calf circumference	Centimeters
24	20 years and over	Upper leg length	Centimeters
25	20 years and over	Mid-thigh circumference	Centimeters
26	20 years and over	Waist circumference	Centimeters
27	20 years and over	Subscapular skinfold thickness	Millimeters
28	20 years and over	Triceps skinfold thickness	Millimeters
	Male:		
29	20 years and over	Weight	Kilograms
30	20 years and over	Weight	Pounds
31	20 years and over	Standing height	Centimeters
32	20 years and over	Standing height	Inches
33	20 years and over	Body mass index	BMI value
34	20 years and over	Mid-arm circumference	Centimeters
35	20 years and over	Upper arm length	Centimeters
36	20 years and over	Maximal calf circumference	Centimeters
37	20 years and over	Upper leg length	Centimeters
38	20 years and over	Mid-thigh circumference	Centimeters
39	20 years and over	Waist circumference	Centimeters
40	20 years and over	Subscapular skinfold thickness	Millimeters
41	20 years and over	Triceps skinfold thickness	Millimeters

Figure 2. Data tables by age group and sex, measurement, and unit of measurement

References

- CDC. 2002a. NHANES 1999–2000 Data File Documentation. Examination File; Body Measurements Dataset. National Center for Health Statistics. 2002b. http://www.cdc.gov/nchs/about/major/nhanes/nhanes99_00.htm#Examination%20Files. 2004.
- CDC. 2002b. NHANES 2001–2002 Data File Documentation. Examination File; Body Measurements Dataset. National Center for Health Statistics. <http://www.cdc.gov/nchs/about/major/nhanes/nhanes01-02.htm#Examination%20Files>. 2004.
- National Center for Health Statistics. Plan and initial program of the Health Examination Survey. National Center for Health Statistics. *Vital Health Stat* 1(4). 1965.
- National Center for Health Statistics. Plan, operation, and response results of a program of children's examinations. National Center for Health Statistics. *Vital Health Stat* 1(5). 1967.
- National Center for Health Statistics. Plan and operation of a health examination survey of U.S. youths 12–17 years of age. National Center for Health Statistics. *Vital Health Stat* 1(8). 1969.
- CDC. Reports and manuals from the first National Health and Nutrition Examination Survey (NHANES I, 1971–75). <http://www.cdc.gov/nchs/about/major/nhanes/nh1rrm.htm>. 2004.
- CDC. Reports and manuals from the second National Health and Nutrition Examination Survey (NHANES II, 1976–80). <http://www.cdc.gov/nchs/about/major/nhanes/nh2rrm.htm>. 2004.
- CDC. Reports and manuals from the Hispanic Health and Nutrition Examination Survey (HHANES, 1982–84). <http://www.cdc.gov/nchs/about/major/nhanes/hhanesrrm.htm>. 2004.
- CDC. Reports and manuals from the third National Health and Nutrition Examination Survey (NHANES III, 1988–94). http://www.cdc.gov/nchs/about/major/nhanes/NHANESIII_Reference_Manuals.htm. 2004.
- 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.
- Kuczmariski RJ, Ogden CL, Guo SS, et al. 2000 CDC growth charts for the United States: Methods and development. National Center for Health Statistics. *Vital Health Stat* 11(246). 2002.
- Flegal KM, Ogden CL, Carroll MD. Prevalence and trends in overweight in Mexican-American adults and children. *Nutr Rev* 62(7 part 2). S144–8. 2004.
- Hedley AA, Ogden CL, Johnson CL, et al. Prevalence of overweight and obesity among U.S. children, adolescents, and adults, 1999–2002. *JAMA* 291(23). 2,847–50. 2004.
- Simko MD, Cowell C, Gilbride JA. Nutrition assessment: A comprehensive guide for planning intervention. 2nd ed. Gaithersburg, MD: Aspen Publishers. 1995.
- CDC. 2004a. Descriptive information about the National Health and Nutrition Examination Survey (NHANES). <http://www.cdc.gov/nchs/nhanes.htm>. 2004.
- CDC. 2004b. NHANES 1999–2000 Analytic Guidelines. Hyattsville, MD: National Center for Health Statistics. <http://www.cdc.gov/nchs/data/nhanes/guidelines1.pdf>. 2003.
- National Center for Health Statistics. NHANES Anthropometry Procedures Manual. Revised January 2002. http://www.cdc.gov/nchs/data/nhanes/nhanes_01_02/body_measures_year_3.pdf. 2004.
- National Center for Health Statistics. NHANES III: Anthropometric Procedures. [Videotape]. <http://www.cdc.gov/nchs/about/major/nhanes/avideo.htm>. 1996.
- Wolter KM. Introduction to variance estimation. New York: Springer-Verlag. 1990.
- Stoudt HW, Damon A, McFarland RA, 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). 1970.
- 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.
- Roberts J. Weight by height and age of adults, United States, 1960–1962. National Center for Health Statistics. *Vital Health Stat* 11(14). 1966.
- Malina RM, Hamill PVV, Lemeshow S. Selected body measurements of children 6–11 years, United States. National Center for Health Statistics. *Vital Health Stat* 11(123). 1973.
- Hamill PVV, Johnston FE, Lemeshow S. Height and weight of youths 12–17 years, United States. National Center for Health Statistics. *Vital Health Stat* 11(124). 1973.
- 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). 1981.
- 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). 1987.
- Najjar MF, Kuczmariski RJ. Anthropometric data and prevalence of overweight for Hispanics, 1982–84. National Center for Health Statistics. *Vital Health Stat* 11(239). 1989.
- CDC. Anthropometric reference data, United States, 1988–1994. <http://www.cdc.gov/nchs/about/major/nhanes/Anthropometric%20Measures.htm>. 2005.

Table 1. Number examined, mean, standard error of mean, and head circumference for infants from birth through 6 months of age for selected percentiles, by sex and age: United States, 1999–2002

Sex and age ¹	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male				Centimeters								
0–2 months	91	39.4	0.21	*	*	37.2	37.9	39.5	40.5	41.1	*	*
3–5 months	116	42.6	0.20	*	*	41.0	41.4	42.5	43.5	44.4	*	*
6–8 months	74	44.6	0.22	*	*	*	43.6	44.5	45.4	*	*	*
Female				Centimeters								
0–2 months	92	38.4	0.26	*	36.6	36.8	37.5	38.4	39.3	39.9	*	*
3–5 months	129	41.9	0.15	*	39.8	40.3	40.8	41.9	42.9	43.1	43.2	*
6–8 months	60	43.7	0.34	*	*	*	42.5	43.3	44.1	*	*	*

* Figure does not meet standard of reliability or precision.

¹Age shown is age at time of examination.

NOTE: This table reports data for infants who were between birth and 6 months of age on the day of the household interview. Examination may have occurred up to 6 weeks after the interview. Thus, a child aged 6 months at the time of the interview could have been as old as 8 months of age on the date of the examination.

Table 2. Number examined, mean, standard error of mean, and recumbent length for children from birth through 47 months of age for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male				Centimeters								
0–2 months	91	58.1	0.31	*	54.1	54.8	55.2	58.2	60.3	61.6	61.8	*
3–5 months	117	63.7	0.28	*	60.3	61.0	61.7	63.3	66.1	66.6	66.9	*
6–8 months	129	69.1	0.28	*	65.4	66.0	67.4	69.1	71.0	72.0	73.1	*
9–11 months	134	73.2	0.26	*	70.0	70.2	71.7	73.2	74.8	75.8	77.2	*
12–23 months	322	81.1	0.29	73.9	74.8	76.1	77.5	80.9	84.3	85.8	86.7	88.9
24–35 months	264	91.3	0.38	84.0	85.1	86.2	87.4	90.8	94.6	97.4	98.2	99.9
36–47 months	214	99.4	0.33	90.9	93.4	94.4	96.5	99.6	102.1	104.0	104.7	106.6
Female				Centimeters								
0–2 months	92	56.3	0.43	*	*	53.1	54.1	56.2	58.4	59.9	*	*
3–5 months	129	63.5	0.24	*	*	60.7	61.6	63.6	65.2	66.2	*	*
6–8 months	109	67.5	0.36	*	*	63.9	65.5	67.6	69.6	70.5	*	*
9–11 months	129	72.1	0.38	*	*	68.9	70.2	72.3	74.1	75.0	*	*
12–23 months	259	80.2	0.27	*	74.2	74.9	76.7	80.2	83.1	85.7	86.7	*
24–35 months	249	90.4	0.34	*	85.7	86.7	87.6	89.4	93.6	95.0	95.7	*
36–47 months	169	98.2	0.59	*	93.1	93.9	95.1	98.3	101.1	102.6	103.2	*

* Figure does not meet standard of reliability or precision.

Table 3. Number examined, mean, standard error of mean, and weight for children and adolescents from birth through 19 years of age for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male				Kilograms								
0–2 months	82	5.5	0.15	*	*	*	4.9	5.4	6.3	*	*	*
3–5 months	106	7.2	0.11	*	*	6.1	6.5	7.1	7.9	8.2	*	*
6–8 months	113	8.6	0.14	*	*	7.4	7.9	8.5	9.4	10.0	*	*
9–11 months	118	9.8	0.10	*	*	8.6	9.0	9.8	10.4	10.8	*	*
1 year	288	11.2	0.11	8.9	9.5	9.8	10.2	11.1	12.2	12.9	13.1	13.4
2 years	262	13.7	0.11	11.1	11.5	11.9	12.2	13.7	14.9	15.5	15.9	16.8
3 years	216	15.9	0.18	*	12.9	13.4	14.3	16.0	17.2	17.9	18.8	*
4 years	179	18.5	0.24	*	15.4	15.8	16.7	18.2	19.7	20.9	21.4	*
5 years	147	21.3	0.48	*	17.0	17.3	18.1	20.7	23.2	24.1	26.0	*
6 years	182	23.5	0.43	*	18.2	18.7	20.7	22.7	25.2	26.7	29.0	*
7 years	185	27.2	0.44	*	21.6	22.0	23.3	25.7	30.1	32.8	33.1	*
8 years	214	32.7	0.96	*	23.5	24.1	25.6	30.4	37.1	42.9	45.8	*
9 years	174	36.0	0.67	*	26.5	27.2	28.4	34.1	38.4	45.3	49.6	*
10 years	187	38.6	0.82	*	27.8	29.3	32.2	36.1	42.8	45.8	50.2	*
11 years	182	43.7	1.10	*	31.2	32.9	34.7	42.1	49.6	54.7	57.2	*
12 years	299	50.4	1.26	31.9	35.0	35.5	38.0	46.3	58.5	66.0	71.8	78.6
13 years	298	53.9	1.86	32.4	34.2	37.3	42.0	53.0	61.9	67.4	75.3	83.2
14 years	266	63.9	1.62	42.9	45.4	48.4	51.4	61.0	72.0	82.8	90.1	99.3
15 years	283	68.3	1.14	48.3	51.7	53.1	57.6	64.0	77.4	85.5	93.1	100.2
16 years	306	74.4	1.36	51.6	54.9	57.7	62.1	69.4	82.4	92.2	98.1	110.9
17 years	313	75.6	1.38	51.9	55.6	58.8	62.3	72.9	82.6	92.5	98.9	110.5
18 years	284	75.6	1.12	56.3	58.3	60.5	63.7	70.6	82.1	92.4	97.6	113.3
19 years	270	78.2	1.29	56.1	58.1	60.9	65.2	73.8	86.7	97.0	102.4	110.9
Female												
0–2 months	84	5.1	0.15	*	*	*	4.5	4.9	5.4	*	*	*
3–5 months	119	7.0	0.10	*	*	6.0	6.3	6.9	7.5	7.8	*	*
6–8 months	100	8.1	0.12	*	*	*	7.4	8.0	8.6	*	*	*
9–11 months	112	9.2	0.15	*	*	7.7	8.2	9.1	9.8	10.4	*	*
1 year	228	10.9	0.10	*	9.1	9.4	9.8	10.6	11.8	12.4	12.9	*
2 years	248	13.3	0.15	*	11.1	11.5	11.9	12.9	14.2	14.8	15.6	*
3 years	178	15.2	0.22	*	12.9	13.3	13.8	15.0	16.2	17.2	17.5	*
4 years	191	17.9	0.32	*	14.7	15.1	15.6	17.2	19.1	20.0	20.8	*
5 years	186	20.6	0.57	*	16.6	17.2	17.7	19.2	22.0	25.2	26.9	*
6 years	171	22.4	0.50	*	17.9	18.6	19.4	21.5	24.1	26.3	27.7	*
7 years	196	25.9	0.46	*	20.3	21.4	22.3	24.7	28.3	31.3	32.9	*
8 years	184	31.9	1.17	*	22.3	23.6	25.3	29.1	35.9	40.3	44.1	*
9 years	183	35.4	0.73	*	25.6	26.9	28.8	34.1	41.0	44.6	48.4	*
10 years	164	40.0	1.03	*	27.8	29.2	31.8	38.3	44.8	52.1	53.9	*
11 years	194	47.9	1.31	*	32.9	35.5	38.1	44.9	55.5	64.3	69.0	*
12 years	316	52.0	1.06	35.5	36.3	37.4	43.1	49.7	58.4	64.7	69.3	78.3
13 years	321	57.7	1.37	39.7	41.0	43.3	45.9	55.5	64.9	72.5	79.7	87.2
14 years	324	59.9	1.01	43.9	46.2	47.5	50.6	56.3	63.4	73.0	80.9	89.5
15 years	266	61.1	1.69	*	45.7	48.6	51.2	57.6	67.2	75.4	83.3	*
16 years	273	63.0	1.18	*	47.7	49.5	52.3	59.1	70.2	79.6	84.1	*
17 years	256	61.7	1.21	*	46.7	48.8	52.8	59.3	65.5	71.5	77.3	*
18 years	243	65.2	1.52	*	47.0	48.2	51.6	60.9	73.4	87.0	93.2	*
19 years	225	67.9	1.21	*	48.2	51.4	55.7	64.1	77.0	87.1	92.1	*

* Figure does not meet standard of reliability or precision.

NOTE: Pregnant women are excluded.

Table 4. Number examined, mean, standard error of mean, and weight for children and adolescents from birth through 19 years of age for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male				Pounds								
0–2 months	82	12.2	0.34	*	*	*	10.7	12.0	13.8	*	*	*
3–5 months	106	15.9	0.24	*	*	13.4	14.4	15.6	17.4	18.0	*	*
6–8 months	113	19.1	0.31	*	*	16.3	17.3	18.8	20.7	22.0	*	*
9–11 months	118	21.6	0.22	*	*	18.9	19.7	21.6	22.9	23.8	*	*
1 year	288	24.8	0.25	19.7	20.9	21.6	22.4	24.4	26.9	28.4	28.8	29.6
2 years	262	30.3	0.25	24.4	25.3	26.1	26.9	30.1	32.8	34.2	35.2	37.0
3 years	216	35.0	0.40	*	28.4	29.5	31.4	35.2	37.9	39.5	41.4	*
4 years	179	40.9	0.53	*	34.0	34.8	36.9	40.2	43.4	46.1	47.1	*
5 years	147	47.0	1.06	*	37.5	38.2	40.0	45.7	51.3	53.1	57.4	*
6 years	182	51.8	0.94	*	40.1	41.3	45.6	50.0	55.5	58.9	63.9	*
7 years	185	59.9	0.96	*	47.6	48.6	51.4	56.7	66.5	72.4	72.9	*
8 years	214	72.2	2.11	*	51.7	53.2	56.5	66.9	81.8	94.5	100.9	*
9 years	174	79.4	1.47	*	58.4	59.9	62.7	75.2	84.7	99.8	109.3	*
10 years	187	85.1	1.80	*	61.2	64.6	70.9	79.6	94.4	100.9	110.6	*
11 years	182	96.4	2.43	*	68.8	72.6	76.5	92.9	109.4	120.5	126.2	*
12 years	299	111.0	2.77	70.4	77.1	78.3	83.9	102.1	129.1	145.5	158.3	173.2
13 years	298	119.0	4.10	71.5	75.4	82.2	92.5	116.9	136.4	148.6	166.1	183.4
14 years	266	141.0	3.58	94.6	100.0	106.7	113.3	134.5	158.6	182.5	198.7	218.9
15 years	283	151.0	2.51	106.6	114.0	117.1	127.0	141.0	170.6	188.6	205.2	220.9
16 years	306	164.0	3.00	113.7	121.0	127.2	136.8	153.1	181.7	203.2	216.2	244.5
17 years	313	167.0	3.05	114.4	122.6	129.6	137.3	160.8	182.0	204.0	218.0	243.7
18 years	284	167.0	2.46	124.1	128.5	133.5	140.4	155.7	181.1	203.6	215.2	249.8
19 years	270	172.0	2.85	123.6	128.2	134.3	143.6	162.7	191.1	213.8	225.6	244.4
Female												
0–2 months	84	11.2	0.32	*	*	*	10.0	10.8	12.0	*	*	*
3–5 months	119	15.4	0.22	*	*	13.2	13.9	15.3	16.4	17.3	*	*
6–8 months	100	17.9	0.25	*	*	*	16.3	17.7	18.9	*	*	*
9–11 months	112	20.3	0.34	*	*	17.0	18.0	20.1	21.6	22.9	*	*
1 year	228	23.9	0.23	*	20.0	20.6	21.5	23.4	26.0	27.4	28.4	*
2 years	248	29.3	0.33	*	24.5	25.3	26.3	28.4	31.2	32.6	34.3	*
3 years	178	33.5	0.49	*	28.4	29.3	30.5	33.2	35.6	37.9	38.6	*
4 years	191	39.6	0.71	*	32.4	33.4	34.3	38.0	42.2	44.1	46.0	*
5 years	186	45.4	1.27	*	36.6	37.9	38.9	42.3	48.6	55.5	59.4	*
6 years	171	49.3	1.09	*	39.5	40.9	42.7	47.3	53.2	58.0	61.0	*
7 years	196	57.0	1.02	*	44.7	47.3	49.2	54.4	62.4	68.9	72.5	*
8 years	184	70.3	2.57	*	49.3	52.1	55.8	64.1	79.2	88.8	97.3	*
9 years	183	78.1	1.60	*	56.5	59.4	63.5	75.2	90.5	98.4	106.7	*
10 years	164	88.1	2.27	*	61.3	64.5	70.2	84.5	98.7	115.0	118.9	*
11 years	194	106.0	2.88	*	72.6	78.2	83.9	98.9	122.3	141.8	152.2	*
12 years	316	115.0	2.33	78.3	80.1	82.5	95.1	109.6	128.8	142.6	152.7	172.5
13 years	321	127.0	3.02	87.5	90.4	95.4	101.2	122.4	143.0	159.8	175.6	192.2
14 years	324	132.0	2.22	96.8	101.8	104.7	111.5	124.1	139.8	161.0	178.4	197.3
15 years	266	135.0	3.74	*	100.8	107.1	112.8	126.9	148.2	166.2	183.6	*
16 years	273	139.0	2.61	*	105.3	109.2	115.3	130.3	154.8	175.6	185.5	*
17 years	256	136.0	2.66	*	102.9	107.7	116.5	130.8	144.3	157.7	170.3	*
18 years	243	144.0	3.34	*	103.6	106.3	113.9	134.3	161.7	191.9	205.5	*
19 years	225	150.0	2.67	*	106.2	113.3	122.8	141.3	169.7	191.9	203.0	*

* Figure does not meet standard of reliability or precision.

NOTE: Pregnant women are excluded.

Table 5. Number examined, mean, standard error of mean, and standing height for children and adolescents aged 2–19 years for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male				Centimeters								
2 years	254	91.2	0.33	*	84.7	85.8	87.7	91.0	94.4	96.5	97.6	*
3 years	222	98.6	0.31	*	92.5	93.4	95.7	98.8	101.3	103.2	103.9	*
4 years	183	106.5	0.41	*	100.7	101.6	102.9	106.5	109.3	111.0	112.1	*
5 years	156	113.0	0.52	*	105.8	107.8	109.1	114.2	116.9	118.7	119.1	*
6 years	188	119.2	0.48	*	111.6	113.2	114.6	119.3	122.6	124.5	125.9	*
7 years	187	126.2	0.56	*	117.7	119.5	122.5	126.6	129.9	132.3	135.0	*
8 years	217	132.5	0.74	*	123.8	124.9	127.7	132.5	137.3	139.3	140.9	*
9 years	177	138.1	0.39	*	130.1	131.8	133.4	137.5	141.8	143.8	145.4	*
10 years	188	141.4	0.62	*	133.4	135.8	136.8	141.1	145.2	147.8	149.1	*
11 years	187	148.7	0.90	*	139.7	141.5	143.6	148.8	152.9	155.2	157.4	*
12 years	301	154.8	0.70	*	143.0	145.9	147.8	153.9	160.9	164.8	167.8	*
13 years	298	160.1	0.83	*	147.2	150.2	153.0	160.5	167.6	169.4	171.6	*
14 years	267	168.5	0.91	*	155.1	158.0	162.1	169.1	175.5	177.2	179.0	*
15 years	287	173.8	0.58	*	163.5	166.2	168.4	174.2	178.7	181.4	183.4	*
16 years	310	175.3	0.60	162.6	166.6	168.5	170.9	175.6	179.4	182.1	182.8	187.8
17 years	317	175.3	0.57	163.0	165.7	166.9	170.2	175.3	180.8	182.7	184.2	186.6
18 years	289	176.4	0.65	*	168.1	169.5	171.9	176.1	180.9	183.2	184.9	*
19 years	275	176.7	0.64	*	166.8	168.4	171.6	175.9	182.1	184.0	185.9	*
Female												
2 years	233	90.1	0.37	*	84.9	85.7	86.9	89.7	93.0	94.1	95.3	*
3 years	187	97.6	0.47	*	92.6	93.2	94.7	98.1	100.4	101.3	102.2	*
4 years	195	105.9	0.47	*	100.3	101.0	102.2	105.8	108.9	110.2	111.7	*
5 years	190	112.4	0.67	*	106.5	107.2	109.0	111.9	115.8	118.4	119.5	*
6 years	172	117.1	0.69	*	110.2	111.1	112.2	117.2	120.2	122.6	124.0	*
7 years	200	124.4	0.51	*	117.5	119.1	121.0	124.2	127.7	129.3	131.6	*
8 years	184	130.9	0.59	*	123.0	124.8	126.7	131.0	134.7	137.8	138.5	*
9 years	189	136.9	0.69	*	128.2	129.3	131.8	137.2	141.6	143.7	146.5	*
10 years	164	143.3	0.86	*	*	136.0	138.9	142.8	149.1	152.2	*	*
11 years	194	151.4	0.74	*	141.1	144.1	146.3	151.3	156.4	159.1	161.1	*
12 years	318	156.0	0.68	*	146.5	147.8	149.9	156.6	160.8	163.2	164.8	*
13 years	325	159.1	0.64	*	149.9	152.1	154.8	158.4	163.3	166.3	168.6	*
14 years	326	161.8	0.57	*	154.1	155.4	158.1	161.6	165.8	168.1	169.2	*
15 years	274	161.9	0.64	*	153.2	155.1	158.0	162.5	166.7	167.8	169.3	*
16 years	285	161.9	0.49	*	154.0	155.9	158.9	161.3	166.4	168.6	169.6	*
17 years	285	163.1	0.56	*	154.6	155.6	158.0	163.5	168.0	170.3	172.1	*
18 years	275	163.1	0.44	*	155.4	156.5	159.4	163.1	167.4	169.3	171.2	*
19 years	262	162.9	0.64	*	153.7	155.4	158.0	163.0	168.2	170.5	171.7	*

* Figure does not meet standard of reliability or precision.

Table 6. Number examined, mean, standard error of mean, and standing height for children and adolescents aged 2–19 years for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile									
				5th	10th	15th	25th	50th	75th	85th	90th	95th	
Male				Inches									
2 years	254	35.9	0.13	*	33.4	33.8	34.5	35.8	37.2	38.0	38.4	*	
3 years	222	38.8	0.12	*	36.4	36.8	37.7	38.9	39.9	40.6	40.9	*	
4 years	183	41.9	0.16	*	39.6	40.0	40.5	41.9	43.0	43.7	44.1	*	
5 years	156	44.5	0.20	*	41.7	42.4	43.0	45.0	46.0	46.7	46.9	*	
6 years	188	46.9	0.19	*	43.9	44.6	45.1	47.0	48.3	49.0	49.6	*	
7 years	187	49.7	0.22	*	46.4	47.0	48.2	49.8	51.2	52.1	53.2	*	
8 years	217	52.2	0.29	*	48.7	49.2	50.3	52.1	54.0	54.9	55.5	*	
9 years	177	54.4	0.15	*	51.2	51.9	52.5	54.1	55.8	56.6	57.3	*	
10 years	188	55.7	0.24	*	52.5	53.5	53.9	55.6	57.2	58.2	58.7	*	
11 years	187	58.5	0.36	*	55.0	55.7	56.5	58.6	60.2	61.1	62.0	*	
12 years	301	60.9	0.28	*	56.3	57.4	58.2	60.6	63.3	64.9	66.0	*	
13 years	298	63.1	0.33	*	58.0	59.1	60.2	63.2	66.0	66.7	67.6	*	
14 years	267	66.3	0.36	*	61.1	62.2	63.8	66.6	69.1	69.8	70.5	*	
15 years	287	68.4	0.23	*	64.4	65.4	66.3	68.6	70.4	71.4	72.2	*	
16 years	310	69.0	0.23		64.0	65.6	66.3	67.3	69.1	70.6	71.7	72.0	73.9
17 years	317	69.0	0.22		64.2	65.2	65.7	67.0	69.0	71.2	71.9	72.5	73.5
18 years	289	69.5	0.26	*	66.2	66.7	67.7	69.3	71.2	72.1	72.8	*	
19 years	275	69.6	0.25	*	65.7	66.3	67.6	69.3	71.7	72.4	73.2	*	
Female													
2 years	233	35.5	0.15	*	33.4	33.8	34.2	35.3	36.6	37.0	37.5	*	
3 years	187	38.4	0.18	*	36.4	36.7	37.3	38.6	39.5	39.9	40.2	*	
4 years	195	41.7	0.18	*	39.5	39.8	40.2	41.6	42.9	43.4	44.0	*	
5 years	190	44.3	0.26	*	41.9	42.2	42.9	44.0	45.6	46.6	47.1	*	
6 years	172	46.1	0.27	*	43.4	43.8	44.2	46.1	47.3	48.3	48.8	*	
7 years	200	49.0	0.20	*	46.3	46.9	47.6	48.9	50.3	50.9	51.8	*	
8 years	184	51.5	0.23	*	48.4	49.1	49.9	51.6	53.0	54.3	54.5	*	
9 years	189	53.9	0.27	*	50.5	50.9	51.9	54.0	55.8	56.6	57.7	*	
10 years	164	56.4	0.34	*	*	53.5	54.7	56.2	58.7	59.9	*	*	
11 years	194	59.6	0.29	*	55.6	56.7	57.6	59.6	61.6	62.6	63.4	*	
12 years	318	61.4	0.27	*	57.7	58.2	59.0	61.7	63.3	64.2	64.9	*	
13 years	325	62.6	0.25	*	59.0	59.9	60.9	62.3	64.3	65.5	66.4	*	
14 years	326	63.7	0.23	*	60.7	61.2	62.3	63.6	65.3	66.2	66.6	*	
15 years	274	63.8	0.25	*	60.3	61.0	62.2	64.0	65.6	66.1	66.7	*	
16 years	285	63.7	0.19	*	60.6	61.4	62.6	63.5	65.5	66.4	66.8	*	
17 years	285	64.2	0.22	*	60.9	61.3	62.2	64.4	66.1	67.1	67.8	*	
18 years	275	64.2	0.17	*	61.2	61.6	62.8	64.2	65.9	66.6	67.4	*	
19 years	262	64.1	0.25	*	60.5	61.2	62.2	64.2	66.2	67.1	67.6	*	

* Figure does not meet standard of reliability or precision.

Table 7. Number examined, mean, standard error of mean, and body mass index values for children and adolescents aged 2–19 years for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male				Body mass indices								
2 years	225	16.6	0.11	*	15.0	15.2	15.6	16.4	17.2	17.9	18.1	*
3 years	209	16.2	0.14	*	14.6	14.9	15.2	16.1	17.1	17.6	18.0	*
4 years	178	16.3	0.17	*	14.6	14.9	15.2	15.9	16.8	17.4	18.1	*
5 years	147	16.5	0.30	*	14.4	14.5	15.1	16.1	16.9	17.9	18.6	*
6 years	182	16.4	0.22	*	14.1	14.4	14.7	15.9	17.4	18.6	19.1	*
7 years	185	17.0	0.20	*	14.8	14.9	15.2	16.3	17.8	18.9	19.9	*
8 years	214	18.4	0.40	*	14.6	14.9	15.7	17.3	20.5	22.5	24.8	*
9 years	174	18.7	0.31	*	14.7	14.9	15.6	17.4	20.4	22.1	23.9	*
10 years	187	19.1	0.34	*	15.3	15.7	16.5	17.9	20.4	22.6	24.4	*
11 years	182	19.6	0.38	*	15.9	16.1	16.9	18.9	21.2	24.3	24.7	*
12 years	299	20.7	0.42	15.1	15.7	16.0	17.1	19.9	23.5	25.5	28.5	30.3
13 years	298	20.7	0.55	14.1	15.4	16.3	17.5	19.6	23.3	25.4	27.8	30.0
14 years	266	22.3	0.44	*	16.9	17.4	18.6	21.4	23.5	27.4	30.7	*
15 years	283	22.5	0.31	17.0	18.2	18.6	19.1	21.0	24.3	28.1	30.6	32.5
16 years	306	24.1	0.40	17.5	18.1	19.6	20.4	22.3	26.7	29.8	31.5	35.7
17 years	313	24.5	0.41	18.6	19.2	19.6	20.7	23.5	26.3	29.4	31.9	36.3
18 years	284	24.2	0.34	18.9	19.3	19.8	20.7	23.1	26.6	29.0	30.9	35.2
19 years	269	24.9	0.36	*	19.4	19.9	21.4	23.6	27.9	30.1	31.8	*
Female												
2 years	214	16.5	0.14	*	14.7	14.9	15.3	16.4	17.2	17.7	18.0	*
3 years	173	16.0	0.14	*	14.5	14.8	15.0	15.7	16.6	17.1	17.7	*
4 years	190	15.9	0.21	*	14.0	14.2	14.6	15.7	16.6	17.4	18.4	*
5 years	186	16.1	0.29	*	13.7	13.9	14.3	15.6	17.1	18.6	19.4	*
6 years	170	16.2	0.25	*	14.0	14.4	14.8	15.6	16.9	18.2	19.1	*
7 years	196	16.6	0.19	*	14.1	14.4	14.9	16.1	17.6	19.2	20.3	*
8 years	184	18.3	0.49	*	14.7	14.8	15.3	17.2	20.0	21.9	23.6	*
9 years	183	18.7	0.30	*	14.8	15.1	16.2	18.0	20.1	22.7	23.7	*
10 years	163	19.3	0.35	*	15.1	15.5	16.1	18.0	21.7	23.3	24.9	*
11 years	194	20.7	0.44	*	15.6	16.5	17.6	19.4	22.7	26.2	28.1	*
12 years	315	21.2	0.38	15.8	16.6	17.1	17.9	19.9	23.2	25.5	28.8	30.6
13 years	321	22.7	0.44	16.6	17.2	17.8	18.8	21.5	25.0	28.3	29.9	32.4
14 years	324	22.9	0.37	16.9	17.9	18.7	19.5	21.3	24.6	28.3	29.7	33.4
15 years	266	23.2	0.55	*	18.4	18.7	19.6	21.7	25.1	28.7	32.5	*
16 years	273	24.0	0.44	*	18.4	19.0	20.2	22.5	26.5	29.8	31.9	*
17 years	255	23.1	0.41	*	18.7	19.2	19.8	21.8	24.7	26.8	29.3	*
18 years	243	24.4	0.48	*	18.0	18.7	19.9	23.1	26.9	30.4	33.1	*
19 years	225	25.5	0.43	*	18.7	19.9	21.0	24.1	29.7	32.3	34.2	*

* Figure does not meet standard of reliability or precision.

NOTES: Pregnant women are excluded. Body mass index (BMI) is calculated as follows: BMI = weight (kilograms)/height (meters²).

Table 8. Number examined, mean, standard error of mean, and waist circumference for children and adolescents aged 2–19 years for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male				Centimeters								
2 years	215	48.0	0.30	*	44.2	44.7	45.6	48.0	50.0	50.9	51.7	*
3 years	205	50.4	0.31	*	45.2	46.2	47.8	50.1	52.5	53.7	55.4	*
4 years	172	52.5	0.42	*	47.8	48.7	49.8	51.6	53.9	55.0	57.1	*
5 years	145	55.0	0.63	*	48.7	49.6	51.0	54.2	56.8	58.8	61.5	*
6 years	183	56.0	0.59	*	49.4	50.5	51.7	54.8	58.3	61.3	63.9	*
7 years	184	59.7	0.69	*	52.7	53.1	54.0	57.8	63.7	65.8	68.0	*
8 years	214	64.4	1.30	*	53.9	54.6	56.2	61.2	69.7	75.1	79.8	*
9 years	175	66.4	0.98	*	55.0	56.2	57.5	62.0	71.6	77.0	87.0	*
10 years	185	67.7	1.06	*	56.3	57.6	60.5	64.8	74.0	79.0	81.9	*
11 years	181	70.3	1.17	*	58.5	59.5	61.1	67.4	74.7	81.6	87.7	*
12 years	299	74.3	1.21	59.1	60.4	61.5	63.3	70.6	81.6	90.5	93.6	103.3
13 years	294	73.8	1.55	58.8	60.5	61.3	64.3	70.0	81.1	87.2	92.8	99.8
14 years	266	79.3	1.18	*	64.3	66.2	70.0	75.0	84.1	93.4	100.4	*
15 years	281	80.1	0.96	*	67.3	69.1	71.4	76.4	84.8	92.3	97.9	*
16 years	307	83.4	1.08	66.4	69.0	70.7	72.8	79.3	90.4	96.2	102.1	111.3
17 years	314	84.8	1.05	67.8	70.2	71.7	73.7	81.7	91.2	99.9	102.9	111.2
18 years	285	84.6	0.83	*	71.0	72.4	75.2	81.3	91.7	98.2	102.0	*
19 years	271	86.9	1.20	*	72.1	73.9	77.6	82.0	94.1	103.1	108.7	*
Female												
2 years	205	48.3	0.49	*	43.3	44.0	45.3	47.7	50.4	51.2	52.7	*
3 years	164	50.1	0.29	*	46.4	46.7	47.3	49.5	52.4	54.1	54.8	*
4 years	185	52.2	0.49	*	47.3	48.3	49.2	50.7	54.3	55.4	59.1	*
5 years	180	54.9	0.82	*	48.7	49.4	50.7	52.4	56.6	60.6	65.7	*
6 years	167	55.2	0.74	*	48.9	50.5	51.3	53.7	57.2	60.2	63.5	*
7 years	192	58.1	0.58	*	51.4	52.1	53.4	56.3	61.1	65.4	68.9	*
8 years	181	63.4	1.29	*	53.1	53.6	55.1	60.2	69.3	74.3	77.8	*
9 years	183	65.7	0.83	*	54.9	55.6	58.7	63.4	71.4	74.9	79.8	*
10 years	164	68.0	0.92	*	55.4	56.8	58.4	65.9	74.3	81.8	84.4	*
11 years	192	72.7	0.98	*	59.7	60.2	64.4	70.1	79.7	85.7	89.6	*
12 years	311	74.6	1.10	*	63.2	63.9	66.3	71.7	79.9	86.4	92.6	*
13 years	320	78.8	1.14	61.6	64.8	65.4	68.2	76.4	87.3	95.0	99.0	103.0
14 years	322	78.8	0.97	64.2	66.9	68.3	70.4	75.1	84.7	92.6	95.7	99.5
15 years	265	78.8	1.38	*	66.8	67.5	70.9	74.5	84.1	89.8	97.8	*
16 years	273	81.4	1.17	*	68.4	69.8	72.1	79.1	88.4	93.3	99.0	*
17 years	253	79.2	1.12	*	68.2	69.5	71.8	77.0	82.5	87.4	92.5	*
18 years	244	82.1	1.14	*	67.3	69.2	71.4	77.9	90.4	98.7	102.2	*
19 years	222	84.6	0.85	*	68.9	70.4	73.7	81.5	93.5	99.3	102.4	*

* Figure does not meet standard of reliability or precision.

NOTE: Pregnant women are excluded.

Table 9. Number examined, mean, standard error of mean, and mid-arm circumference for children and adolescents aged 2 months–19 years for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile									
				5th	10th	15th	25th	50th	75th	85th	90th	95th	
Male				Centimeters									
2 months	16	*	*	*	*	*	*	*	*	*	*	*	*
3–5 months	107	14.6	0.15	*	*	13.1	13.6	14.7	15.4	16.0	*	*	*
6–8 months	119	15.2	0.14	*	*	13.9	14.1	15.0	16.1	16.3	*	*	*
9–11 months	125	15.6	0.11	*	*	14.4	14.9	15.5	16.2	16.5	*	*	*
1 year	293	16.0	0.11	13.9	14.3	14.6	15.1	15.7	16.7	17.3	17.6	18.1	*
2 years	256	16.4	0.10	*	14.8	15.0	15.4	16.3	17.3	17.7	17.9	19.9	*
3 years	215	17.0	0.13	*	15.4	15.7	16.0	16.7	17.7	18.2	18.6	19.6	*
4 years	176	17.7	0.15	*	16.0	16.2	16.5	17.5	18.3	18.7	19.2	20.2	*
5 years	150	18.3	0.21	*	16.2	16.4	16.8	17.9	19.0	20.1	20.7	21.7	*
6 years	185	18.9	0.21	*	16.3	16.8	17.3	18.4	20.2	20.9	21.4	22.4	*
7 years	185	20.1	0.23	*	17.7	17.9	18.2	19.4	21.2	22.4	23.2	24.2	*
8 years	213	21.6	0.34	*	17.6	18.1	18.8	20.8	24.2	26.0	27.1	28.1	*
9 years	174	22.4	0.26	*	18.4	18.6	19.3	21.5	23.9	26.9	27.2	28.2	*
10 years	184	23.2	0.31	*	19.0	19.8	20.8	22.4	24.5	26.1	28.1	29.1	*
11 years	182	24.2	0.34	*	19.8	20.3	21.1	24.1	26.2	28.1	29.0	30.0	*
12 years	302	25.5	0.43	19.5	20.3	20.9	21.7	24.6	28.1	30.3	32.4	34.4	*
13 years	295	26.1	0.52	19.4	20.1	21.4	22.7	25.6	29.3	30.9	32.7	34.4	*
14 years	267	28.0	0.41	*	23.2	23.6	24.6	27.0	30.2	33.3	35.6	37.6	*
15 years	283	28.7	0.31	23.0	24.4	24.8	26.0	27.6	30.9	33.5	35.0	36.4	*
16 years	308	30.7	0.35	23.8	25.6	26.4	27.5	29.6	33.2	36.2	37.8	39.8	*
17 years	314	31.1	0.34	25.1	25.9	26.5	27.8	30.9	33.2	35.4	36.2	39.0	*
18 years	285	31.4	0.28	25.7	26.5	27.1	28.2	30.6	33.6	35.4	36.9	39.2	*
19 years	272	31.8	0.31	26.3	26.5	27.3	28.5	31.6	34.7	35.7	37.0	38.9	*
Female													
0–2 months	14	*	*	*	*	*	*	*	*	*	*	*	*
3–5 months	116	14.4	0.12	*	*	13.2	13.4	14.4	15.0	15.4	*	*	*
6–8 months	100	15.1	0.13	*	*	13.8	14.2	15.1	15.8	16.3	*	*	*
9–11 months	113	15.7	0.16	*	*	14.2	14.5	15.5	16.8	17.3	*	*	*
1 year	238	15.8	0.11	*	14.2	14.6	14.9	15.7	16.5	17.0	17.3	18.3	*
2 years	242	16.3	0.10	*	14.7	15.0	15.3	16.1	16.9	17.4	17.7	18.7	*
3 years	173	16.7	0.13	*	15.0	15.5	15.9	16.6	17.2	17.9	18.3	19.3	*
4 years	187	17.5	0.21	*	15.5	15.8	16.2	17.1	18.2	18.9	19.3	20.3	*
5 years	186	18.2	0.25	*	16.0	16.3	16.7	17.5	19.3	20.7	21.4	22.4	*
6 years	169	18.7	0.24	*	16.4	16.7	17.3	18.2	19.6	20.7	21.5	22.5	*
7 years	196	19.6	0.17	*	16.9	17.6	18.0	19.2	20.7	21.7	23.3	24.3	*
8 years	180	21.7	0.48	*	18.0	18.2	18.6	20.9	23.9	25.4	26.9	27.9	*
9 years	185	22.5	0.26	*	18.6	19.2	20.0	21.9	24.4	25.6	26.9	27.9	*
10 years	163	23.5	0.37	*	19.1	19.4	20.1	22.9	25.6	27.8	28.7	29.7	*
11 years	191	25.0	0.44	*	20.0	20.5	21.9	24.0	26.9	30.2	31.8	32.8	*
12 years	313	25.5	0.33	20.0	21.0	21.7	22.6	24.7	27.5	29.5	31.0	33.4	*
13 years	322	27.0	0.38	20.8	21.8	22.5	23.3	26.4	30.0	32.2	33.5	35.9	*
14 years	327	27.2	0.30	22.0	22.8	23.4	24.3	26.2	29.2	31.6	33.1	35.5	*
15 years	269	27.6	0.48	*	23.1	23.6	24.8	26.4	29.4	32.7	34.5	36.5	*
16 years	275	28.1	0.37	*	23.0	23.5	25.0	27.5	30.4	33.0	33.5	36.5	*
17 years	255	27.9	0.33	*	23.2	24.1	25.1	27.4	29.3	31.1	32.7	34.7	*
18 years	245	28.9	0.34	*	23.1	24.0	25.1	28.2	31.0	33.8	36.1	38.1	*
19 years	223	29.5	0.37	*	24.1	25.2	26.1	28.4	32.3	35.1	36.4	38.4	*

* Figure does not meet standard of reliability or precision.

NOTE: Pregnant women are excluded.

Table 10. Number examined, mean, standard error of mean, and upper arm length for children and adolescents aged 2 months–19 years for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile									
				5th	10th	15th	25th	50th	75th	85th	90th	95th	
Male				Centimeters									
2 months	16	*	*	*	*	*	*	*	*	*	*	*	*
3–5 months	107	12.4	0.16	*	*	11.0	11.5	12.2	13.2	13.5	*	*	*
6–8 months	119	13.7	0.13	*	*	11.9	12.8	13.9	14.5	14.9	*	*	*
9–11 months	123	14.8	0.18	*	*	13.4	14.0	14.9	15.5	16.0	*	*	*
1 year	294	16.1	0.08	*	14.4	14.9	15.2	16.0	17.0	17.5	17.8	*	*
2 years	258	18.3	0.10	*	16.2	16.7	17.2	18.2	19.3	19.9	20.1	*	*
3 years	215	20.0	0.12	*	18.3	18.5	19.0	20.0	20.9	21.2	21.6	*	*
4 years	176	21.6	0.16	*	19.3	20.0	20.8	21.6	22.7	23.1	23.2	*	*
5 years	150	23.3	0.16	*	*	21.5	22.3	23.4	24.4	25.0	*	*	*
6 years	185	24.3	0.15	*	22.1	22.8	23.0	24.0	25.3	26.1	26.6	*	*
7 years	185	26.3	0.17	*	24.0	24.7	25.1	26.2	27.2	27.6	28.2	*	*
8 years	213	27.8	0.23	*	25.3	25.7	26.3	27.5	29.1	30.0	30.7	*	*
9 years	174	29.1	0.19	*	26.7	26.9	27.6	28.9	30.1	31.4	31.9	*	*
10 years	184	30.1	0.20	*	27.9	28.4	28.8	29.9	31.4	32.3	32.5	*	*
11 years	183	31.6	0.22	*	29.1	29.3	29.9	31.5	33.2	33.5	34.0	*	*
12 years	302	33.3	0.22	*	29.9	30.4	31.4	33.0	34.7	36.2	37.1	*	*
13 years	295	34.4	0.28	*	30.7	31.5	32.5	34.6	36.3	37.0	37.7	*	*
14 years	267	36.4	0.28	*	32.7	33.5	34.5	36.3	38.4	38.9	39.5	*	*
15 years	283	37.5	0.20	*	34.5	35.4	36.1	37.6	39.2	39.7	40.4	*	*
16 years	308	38.1	0.22	34.5	35.4	35.7	36.4	38.0	39.5	40.5	41.7	42.3	*
17 years	314	37.8	0.17	34.5	34.9	35.5	36.3	37.6	39.4	40.4	40.6	41.3	*
18 years	286	38.2	0.21	*	35.6	35.9	36.5	38.0	39.6	40.4	40.7	*	*
19 years	272	38.3	0.18	*	35.6	36.1	37.1	38.3	39.4	40.3	40.9	*	*
Female													
0–2 months	14	*	*	*	*	*	*	*	*	*	*	*	*
3–5 months	116	12.5	0.13	*	*	11.3	11.8	12.2	13.0	13.5	*	*	*
6–8 months	100	13.2	0.16	*	*	*	12.3	13.0	13.9	*	*	*	*
9–11 months	113	14.4	0.14	*	*	13.2	13.5	14.4	15.2	15.5	*	*	*
1 year	238	15.9	0.09	*	14.2	14.7	15.1	15.9	16.8	17.1	17.6	*	*
2 years	242	18.0	0.15	*	16.2	16.6	17.0	18.0	19.0	19.5	19.9	*	*
3 years	173	19.8	0.12	*	18.1	18.4	18.9	19.7	20.5	20.9	21.1	*	*
4 years	187	21.3	0.13	*	19.5	19.9	20.0	21.2	22.0	22.8	23.4	*	*
5 years	187	22.8	0.19	*	21.0	21.2	21.9	22.7	23.9	24.4	24.7	*	*
6 years	169	24.0	0.22	*	22.1	22.4	22.6	23.9	25.2	25.6	26.0	*	*
7 years	196	25.7	0.15	*	23.6	24.0	24.4	25.5	26.6	27.2	27.6	*	*
8 years	180	27.5	0.21	*	24.8	25.5	26.1	27.3	28.6	29.9	30.4	*	*
9 years	185	29.1	0.26	*	26.4	26.8	27.3	28.9	30.7	31.3	31.8	*	*
10 years	163	30.4	0.25	*	*	27.8	28.4	30.3	31.9	32.9	*	*	*
11 years	191	32.4	0.19	*	29.7	29.9	30.8	32.0	33.9	34.9	35.4	*	*
12 years	313	33.3	0.24	*	29.8	30.3	31.8	33.3	34.9	35.8	36.6	*	*
13 years	323	34.5	0.21	*	32.0	32.3	33.0	34.3	36.1	36.9	37.1	*	*
14 years	327	34.9	0.20	*	32.3	32.5	33.4	34.7	36.0	36.8	37.5	*	*
15 years	272	34.9	0.27	*	31.9	32.5	33.3	34.9	36.3	37.0	37.6	*	*
16 years	285	35.1	0.15	*	32.5	33.1	33.7	34.9	36.4	37.1	37.5	*	*
17 years	281	35.3	0.17	*	32.5	33.1	34.0	35.4	36.5	37.3	37.7	*	*
18 years	270	35.6	0.19	*	33.0	33.8	34.3	35.4	36.5	37.6	38.4	*	*
19 years	253	35.3	0.17	*	32.6	33.2	33.8	35.4	36.4	37.2	37.5	*	*

* Figure does not meet standard of reliability or precision.

Table 11. Number examined, mean, standard error of mean, and subscapular skinfold thickness for children and adolescents aged 2 months–19 years for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male				Millimeters								
2 months	15	*	*	*	*	*	*	*	*	*	*	*
3–5 months	104	8.1	0.32	*	*	5.7	6.4	7.7	8.8	10.0	*	*
6–8 months	111	7.6	0.25	*	*	5.8	6.2	7.4	8.7	9.2	*	*
9–11 months	119	7.7	0.16	*	*	5.9	6.5	7.4	8.5	9.1	*	*
1 year	273	7.0	0.14	*	5.1	5.3	5.7	6.7	7.7	8.4	9.0	*
2 years	235	6.4	0.14	*	4.7	4.9	5.2	6.0	7.0	7.8	8.3	*
3 years	206	6.2	0.18	*	4.4	4.5	4.9	5.7	6.6	7.7	8.4	*
4 years	170	6.0	0.19	*	4.2	4.4	4.8	5.4	6.4	7.4	8.1	*
5 years	147	6.2	0.26	*	4.3	4.5	4.7	5.5	6.6	7.7	8.4	*
6 years	182	6.6	0.32	*	4.0	4.1	4.6	5.5	6.8	8.7	10.9	*
7 years	184	7.0	0.30	*	4.2	4.5	4.9	5.9	7.3	8.4	10.3	*
8 years	209	8.9	0.65	*	4.2	4.5	4.9	6.2	11.1	12.8	18.9	*
9 years	167	8.5	0.57	*	4.3	4.5	5.0	6.1	11.2	13.3	13.6	*
10 years	180	10.3	0.72	*	4.7	4.9	5.7	7.3	12.9	16.3	21.5	*
11 years	178	10.3	0.75	*	4.7	5.1	5.4	7.7	11.4	17.2	20.6	*
12 years	289	11.1	0.60	4.7	4.9	5.2	5.7	8.4	13.9	18.9	22.5	27.0
13 years	288	10.4	0.47	4.5	4.9	5.2	6.0	7.4	12.2	17.5	21.5	25.0
14 years	256	10.3	0.49	*	5.3	5.6	6.5	8.2	11.4	15.2	18.7	*
15 years	271	10.4	0.39	*	6.1	6.4	7.0	8.0	11.1	14.9	18.4	*
16 years	290	12.1	0.52	6.2	6.9	7.3	8.1	9.9	14.2	17.7	19.8	24.1
17 years	295	12.6	0.46	6.3	6.8	7.2	7.9	10.3	16.2	19.3	22.4	25.4
18 years	267	13.5	0.55	*	7.2	7.6	8.5	11.2	17.1	19.5	21.3	*
19 years	255	14.5	0.84	*	7.9	8.4	9.3	12.0	15.7	22.2	25.8	*
Female												
0–2 months	13	*	0.60	*	*	*	*	*	*	*	*	*
3–5 months	111	8.1	0.23	*	*	6.4	6.8	7.6	8.8	10.1	*	*
6–8 months	93	8.1	0.25	*	*	*	6.6	8.0	9.2	*	*	*
9–11 months	107	8.0	0.16	*	*	6.0	6.3	7.9	9.3	10.0	*	*
1 year	223	7.1	0.14	*	5.0	5.3	5.8	6.9	8.0	8.6	9.1	*
2 years	219	6.9	0.26	*	4.6	4.9	5.2	6.3	7.7	8.1	9.1	*
3 years	159	6.4	0.14	*	4.8	5.1	5.3	6.0	6.8	7.6	8.1	*
4 years	181	7.0	0.40	*	4.4	4.7	5.1	6.0	7.5	8.8	10.6	*
5 years	177	7.3	0.47	*	4.3	4.4	4.8	5.7	7.9	9.6	13.0	*
6 years	164	7.6	0.52	*	4.5	4.6	4.9	6.1	8.2	9.4	10.6	*
7 years	186	7.7	0.44	*	4.6	4.7	5.0	5.9	8.4	11.8	13.5	*
8 years	178	10.4	0.78	*	4.9	5.1	5.7	7.4	12.5	17.8	21.8	*
9 years	175	10.8	0.60	*	5.3	5.6	6.3	8.4	13.2	15.4	19.4	*
10 years	156	11.9	0.61	*	5.0	5.5	6.3	8.4	16.5	21.5	23.3	*
11 years	175	11.6	0.69	*	5.9	6.2	6.9	9.2	14.8	17.9	19.4	*
12 years	287	12.6	0.63	*	6.3	6.9	7.6	10.0	16.1	20.1	21.7	*
13 years	296	14.1	0.64	6.0	6.6	7.3	8.4	11.8	17.9	20.8	24.3	30.8
14 years	294	14.3	0.66	6.1	7.2	7.7	8.8	12.5	17.2	22.2	24.0	28.7
15 years	244	14.4	0.66	*	7.3	7.7	9.1	11.8	17.5	22.1	26.5	*
16 years	241	15.8	0.60	*	8.2	9.3	10.3	14.3	20.1	22.3	27.3	*
17 years	229	14.6	0.56	*	8.1	8.8	10.0	13.2	18.5	21.0	22.8	*
18 years	214	16.3	0.57	*	8.9	9.6	10.9	14.1	20.1	22.9	27.2	*
19 years	189	17.4	0.72	*	8.0	9.3	11.0	16.2	22.4	25.5	27.3	*

* Figure does not meet standard of reliability or precision.

NOTE: Pregnant women are excluded.

Table 12. Number examined, mean, standard error of mean, and triceps skinfold thickness for children and adolescents aged 2 months–19 years for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile									
				5th	10th	15th	25th	50th	75th	85th	90th	95th	
Male				Millimeters									
2 months	16	*	*	*	*	*	*	*	*	*	*	*	*
3–5 months	106	11.2	0.35	*	*	8.2	9.6	11.1	12.3	13.6	*	*	*
6–8 months	117	11.3	0.28	*	*	8.9	9.7	11.1	12.4	13.5	*	*	*
9–11 months	121	10.9	0.29	*	*	8.4	9.1	10.5	12.1	13.1	*	*	*
1 year	287	10.0	0.26	*	7.2	7.7	8.2	9.5	11.2	12.2	13.0	*	*
2 years	247	9.7	0.28	*	6.9	7.1	7.8	9.1	10.9	12.3	13.8	*	*
3 years	211	9.4	0.18	*	6.3	6.8	7.5	8.9	10.4	11.9	12.4	*	*
4 years	173	9.4	0.21	*	6.5	6.8	7.2	9.0	10.8	11.8	12.1	*	*
5 years	150	9.8	0.54	*	*	6.4	7.0	8.5	10.7	12.7	*	*	*
6 years	184	9.9	0.21	*	6.0	6.2	7.1	9.0	11.7	13.3	14.4	*	*
7 years	185	10.3	0.37	*	6.2	6.7	7.4	9.1	11.3	14.4	15.0	*	*
8 years	211	12.3	0.70	*	5.7	6.3	7.3	10.7	14.3	19.4	22.2	*	*
9 years	173	13.4	0.74	*	6.9	7.0	7.7	10.5	15.0	21.4	25.8	*	*
10 years	184	14.0	0.59	*	7.3	8.1	8.7	12.6	16.3	20.4	24.0	*	*
11 years	182	13.8	0.65	*	7.1	8.0	8.6	11.6	18.2	22.3	24.7	*	*
12 years	298	14.6	0.74	*	7.0	7.6	8.9	12.1	19.0	22.8	26.1	*	*
13 years	289	13.4	0.73	*	6.6	7.1	7.8	10.5	17.9	21.6	24.3	*	*
14 years	264	13.7	0.59	*	6.8	7.1	8.0	11.0	17.9	21.0	24.3	*	*
15 years	281	12.0	0.50	*	6.1	6.5	7.1	9.3	15.2	18.8	20.8	*	*
16 years	301	13.5	0.71	*	6.0	6.8	7.8	11.2	17.1	21.9	25.3	*	*
17 years	304	12.4	0.60	5.0	5.3	5.9	6.9	10.4	15.8	20.1	23.3	27.9	*
18 years	280	12.5	0.50	*	6.1	7.0	7.8	10.4	15.7	18.8	21.9	*	*
19 years	263	12.9	0.79	*	6.1	6.6	7.4	10.0	15.4	21.7	24.9	*	*
Female													
0–2 months	14	*	*	*	*	*	*	*	*	*	*	*	*
3–5 months	116	11.4	0.25	*	*	8.5	9.4	10.9	12.9	14.1	*	*	*
6–8 months	99	11.2	0.30	*	*	*	9.4	10.8	13.0	*	*	*	*
9–11 months	109	10.5	0.35	*	*	7.6	8.2	9.9	12.0	13.3	*	*	*
1 year	230	10.1	0.26	*	6.9	7.5	8.1	9.9	11.5	12.5	14.0	*	*
2 years	236	10.1	0.22	*	7.0	7.4	8.0	9.7	11.5	12.2	13.1	*	*
3 years	169	10.0	0.18	*	7.4	7.9	8.6	9.8	11.2	11.7	12.4	*	*
4 years	183	10.3	0.38	*	7.1	7.6	7.9	9.6	11.6	13.0	14.0	*	*
5 years	185	11.0	0.45	*	6.5	6.9	7.9	10.2	13.0	15.0	15.6	*	*
6 years	169	11.1	0.58	*	6.6	7.3	8.3	10.1	12.7	13.6	15.2	*	*
7 years	195	11.5	0.42	*	7.3	7.5	7.9	10.1	13.3	16.8	18.1	*	*
8 years	180	14.3	0.72	*	8.1	8.4	9.6	12.1	17.3	22.9	24.8	*	*
9 years	184	15.4	0.52	*	8.0	9.2	9.7	13.7	19.7	21.7	23.4	*	*
10 years	163	15.5	0.58	*	8.1	8.7	9.7	12.9	19.4	23.1	25.0	*	*
11 years	189	16.7	0.70	*	9.3	10.0	11.0	14.1	20.9	24.8	27.9	*	*
12 years	306	16.7	0.60	7.6	8.9	9.8	11.5	15.3	21.0	24.3	26.6	30.2	*
13 years	310	18.0	0.65	8.1	8.9	9.2	11.8	17.0	22.5	26.7	30.9	33.4	*
14 years	314	18.7	0.67	9.0	10.3	10.9	13.6	17.0	23.2	26.2	28.2	31.5	*
15 years	258	18.3	0.79	*	10.2	11.0	12.7	17.2	22.9	26.1	27.6	*	*
16 years	264	19.6	0.57	*	11.0	11.6	14.1	18.3	25.2	28.3	29.8	*	*
17 years	244	18.9	0.57	*	11.0	11.3	13.2	18.2	23.6	25.9	28.0	*	*
18 years	234	20.3	0.58	*	11.9	12.7	13.7	19.2	24.4	28.4	31.5	*	*
19 years	214	21.0	0.72	*	10.8	11.9	13.8	20.3	27.3	30.9	32.6	*	*

* Figure does not meet standard of reliability or precision.

NOTE: Pregnant women are excluded.

Table 13. Number examined, mean, standard error of mean, and maximal calf circumference for children and adolescents aged 8–19 years for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male				Centimeters								
8 years	194	28.0	0.35	*	24.1	24.7	25.2	27.4	29.8	31.4	32.4	*
9 years	174	29.2	0.25	*	25.3	25.9	26.4	28.6	31.0	32.5	33.5	*
10 years	185	30.1	0.28	*	25.9	26.6	27.7	29.7	31.9	33.0	34.7	*
11 years	183	31.6	0.38	*	27.2	27.7	28.9	31.4	34.0	35.5	36.4	*
12 years	301	33.1	0.42	*	27.5	28.3	29.7	32.3	35.8	38.0	39.4	*
13 years	295	33.7	0.60	*	27.9	29.0	30.6	33.4	36.3	38.5	39.3	*
14 years	267	36.1	0.39	*	31.3	31.8	33.1	35.6	38.5	41.2	42.8	*
15 years	283	36.4	0.22	*	32.2	32.9	33.9	35.8	38.8	40.1	41.6	*
16 years	308	38.0	0.34	*	32.6	33.5	34.9	37.3	40.2	42.5	43.4	*
17 years	314	38.0	0.36	*	32.8	34.2	35.0	37.7	39.8	41.7	43.5	*
18 years	284	37.8	0.25	*	33.3	33.9	35.1	37.1	40.2	41.8	42.7	*
19 years	271	38.1	0.29	*	33.5	34.1	35.4	37.6	40.4	41.7	42.7	*
Female				Centimeters								
8 years	167	27.7	0.46	*	*	24.4	25.0	27.0	29.7	31.0	*	*
9 years	185	29.2	0.24	*	25.3	26.1	27.0	29.1	31.3	32.6	33.3	*
10 years	165	30.6	0.35	*	*	26.8	27.6	30.4	32.8	34.2	*	*
11 years	192	32.2	0.47	*	27.3	27.9	29.4	31.4	34.5	36.7	38.9	*
12 years	312	33.8	0.29	*	28.6	29.8	31.2	33.4	35.6	37.5	39.0	*
13 years	321	35.2	0.33	*	30.8	31.1	32.2	34.8	37.4	39.7	40.9	*
14 years	327	35.7	0.25	*	31.4	32.1	33.3	35.2	37.5	39.3	40.7	*
15 years	266	36.0	0.49	*	31.4	32.0	33.1	35.4	38.3	40.3	41.3	*
16 years	275	36.3	0.35	*	31.7	32.3	33.3	35.4	38.1	40.9	41.4	*
17 years	254	36.0	0.39	*	30.9	31.7	33.5	35.6	37.5	39.7	40.7	*
18 years	245	36.8	0.43	*	31.6	32.2	33.4	35.8	39.3	41.9	43.4	*
19 years	222	37.3	0.32	*	32.0	32.8	34.3	36.4	40.2	42.1	43.2	*

* Figure does not meet standard of reliability or precision.

NOTE: Pregnant women are excluded.

Table 14. Number examined, mean, standard error of mean and upper leg length for children and adolescents aged 8–19 years for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male				Centimeters								
8 years	194	31.5	0.30	*	28.0	28.8	30.0	31.1	32.7	34.4	35.7	*
9 years	173	33.3	0.25	*	30.0	30.6	31.5	33.4	35.2	36.0	36.4	*
10 years	183	34.4	0.24	*	31.3	31.8	32.2	34.4	36.1	37.1	37.5	*
11 years	181	36.3	0.33	*	32.5	33.3	34.7	36.3	37.7	39.0	39.8	*
12 years	299	38.4	0.30	*	34.1	34.9	35.6	38.3	40.8	42.3	43.2	*
13 years	295	40.1	0.26	*	35.4	36.3	38.3	40.4	42.0	43.2	44.0	*
14 years	266	42.0	0.34	*	38.3	38.8	39.8	42.2	44.2	45.0	46.0	*
15 years	281	43.3	0.20	*	40.1	40.5	41.5	43.4	45.0	45.9	46.5	*
16 years	306	43.5	0.28	*	40.1	40.6	41.3	43.2	45.0	46.4	47.0	*
17 years	313	43.6	0.25	*	39.9	40.3	41.4	43.9	45.6	46.4	47.1	*
18 years	282	43.7	0.20	*	40.2	40.9	41.6	43.4	45.3	46.2	47.2	*
19 years	268	43.9	0.21	*	40.1	40.8	41.8	43.7	45.8	46.5	47.5	*
Female				Centimeters								
8 years	166	31.4	0.30	*	*	29.0	29.5	30.8	33.0	34.4	*	*
9 years	182	33.5	0.33	*	29.5	30.4	31.8	33.5	35.5	36.5	37.1	*
10 years	163	34.8	0.31	*	*	32.1	33.0	34.2	36.6	38.1	*	*
11 years	191	37.3	0.23	*	33.6	33.9	35.0	37.5	39.2	40.2	40.5	*
12 years	311	38.6	0.24	*	34.9	35.4	36.5	38.7	40.3	41.3	42.9	*
13 years	320	39.4	0.21	*	35.7	36.3	37.4	39.4	41.5	42.5	42.9	*
14 years	323	40.2	0.31	*	36.7	37.3	38.1	40.1	42.0	43.2	44.0	*
15 years	267	39.8	0.21	*	36.5	36.9	38.0	39.6	41.6	42.8	43.2	*
16 years	282	39.9	0.19	*	36.7	37.3	38.1	39.5	41.5	42.7	43.3	*
17 years	279	40.1	0.23	*	37.1	37.5	38.4	40.0	41.7	42.8	43.5	*
18 years	267	40.0	0.21	*	36.8	37.5	38.2	39.9	41.7	42.6	43.3	*
19 years	251	40.1	0.28	*	36.7	37.3	38.5	39.9	41.8	42.5	43.1	*

* Figure does not meet standard of reliability or precision.

Table 15. Number examined, mean, standard error of mean, and mid-thigh circumference for children and adolescents aged 8–19 years for selected percentiles, by sex and age: United States, 1999–2002

Sex and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male				Centimeters								
8 years	194	39.0	0.65	*	32.4	33.5	34.6	38.0	41.8	46.2	47.9	*
9 years	173	40.6	0.47	*	34.3	34.7	35.9	39.4	43.0	46.0	48.7	*
10 years	182	42.0	0.52	*	35.8	36.5	38.4	40.3	45.5	47.6	49.3	*
11 years	181	43.7	0.56	*	37.4	38.4	40.0	42.9	46.9	48.7	50.1	*
12 years	299	45.8	0.70	*	37.3	38.2	40.4	43.9	49.5	53.8	55.9	*
13 years	294	46.7	0.89	*	37.8	39.9	41.3	45.8	50.5	54.9	57.1	*
14 years	265	49.8	0.62	*	41.6	43.0	45.1	48.5	53.3	57.6	58.8	*
15 years	279	50.7	0.43	*	43.4	44.6	45.8	49.6	54.7	57.5	60.7	*
16 years	306	53.5	0.50	*	45.0	46.2	48.2	52.5	57.2	60.9	63.4	*
17 years	312	53.6	0.53	*	45.1	46.5	48.6	52.5	57.1	60.8	63.8	*
18 years	283	53.0	0.52	*	45.6	46.9	48.0	52.0	56.6	60.3	62.3	*
19 years	268	53.6	0.50	*	46.3	47.0	49.1	53.0	56.4	59.7	61.9	*
Female												
8 years	164	38.7	0.78	*	32.7	33.4	34.0	37.4	41.9	44.1	47.2	*
9 years	181	40.8	0.47	*	34.7	35.6	37.1	40.2	44.1	46.4	48.5	*
10 years	163	42.3	0.55	*	35.3	35.9	38.3	41.5	45.7	47.9	50.6	*
11 years	191	44.9	0.65	*	38.6	39.1	40.3	42.9	48.3	52.4	55.5	*
12 years	311	46.6	0.50	38.0	39.0	39.8	41.5	45.4	50.0	53.1	55.2	59.9
13 years	319	48.8	0.59	38.9	40.8	41.9	43.8	48.3	52.3	55.7	59.2	62.4
14 years	323	49.8	0.49	40.0	43.2	44.2	45.8	47.9	52.6	56.1	58.6	62.2
15 years	263	50.4	0.71	*	42.8	44.3	45.9	48.9	54.1	57.4	59.9	*
16 years	273	51.1	0.56	*	43.5	44.7	46.1	49.4	55.4	57.9	59.6	*
17 years	252	50.6	0.58	*	43.4	44.5	46.2	49.5	53.7	55.7	58.3	*
18 years	243	51.5	0.61	*	43.2	43.9	45.5	49.6	55.2	59.9	62.6	*
19 years	221	52.8	0.61	*	44.2	45.5	47.5	51.1	56.5	60.0	63.1	*

* Figure does not meet standard of reliability or precision.

NOTE: Pregnant women are excluded.

Table 16. Number examined, mean, standard error of mean, and weight for females aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Kilograms								
20 years and over	4,299	74.1	0.46	49.8	53.4	56.0	60.1	70.2	83.7	93.5	100.2	110.2
20–29 years	656	71.1	0.90	47.3	51.0	54.3	57.8	67.7	81.1	89.8	96.2	106.6
30–39 years	699	74.1	0.91	50.2	53.3	55.5	59.4	68.8	83.9	95.1	103.8	112.7
40–49 years	787	76.5	1.09	51.3	54.4	56.6	60.8	72.5	87.3	96.1	102.6	117.1
50–59 years	593	76.9	1.15	52.8	56.1	58.5	62.5	73.4	86.4	97.2	103.7	113.1
60–69 years	728	76.3	0.76	51.8	56.4	59.1	63.3	73.5	85.8	94.7	102.9	110.7
70–79 years	486	71.0	0.76	49.3	53.4	56.2	60.5	69.6	80.0	87.0	91.4	96.8
80 years and over	350	63.7	1.31	45.3	46.8	49.5	53.7	62.4	71.3	77.5	79.8	91.3
Non-Hispanic white												
20 years and over	2,052	73.6	0.53	49.8	53.3	55.9	59.8	69.9	83.3	93.1	99.1	108.7
20–39 years	564	71.9	0.89	49.1	52.4	55.1	58.3	67.8	81.8	91.0	97.3	108.5
40–59 years	628	76.2	1.00	51.4	54.5	56.6	60.8	72.6	87.2	96.2	102.5	114.5
60 years and over	860	71.8	0.53	48.6	52.8	55.8	60.6	69.4	80.0	88.8	93.7	103.8
Non-Hispanic black												
20 years and over	861	82.9	0.70	53.2	58.2	60.9	66.9	79.3	94.4	105.5	112.4	126.4
20–39 years	297	81.5	1.36	52.5	55.9	59.4	63.8	76.1	93.9	105.8	113.6	128.5
40–59 years	292	85.8	1.25	56.3	60.9	64.9	69.1	80.5	97.7	106.0	112.5	129.0
60 years and over	272	80.4	1.50	51.3	57.2	60.7	66.3	79.3	91.3	101.2	108.8	114.8
Mexican American												
20 years and over	1,019	71.2	0.73	49.8	52.5	55.8	59.5	68.3	80.4	88.3	92.3	102.0
20–39 years	358	69.5	1.00	48.9	52.0	55.0	58.5	66.5	77.5	85.4	90.2	100.9
40–59 years	332	75.2	1.19	52.1	55.9	58.3	62.8	73.4	83.9	91.6	97.5	105.5
60 years and over	329	68.5	1.20	44.0	49.6	53.2	58.1	67.1	77.2	83.8	89.0	93.9

NOTE: Pregnant women are excluded.

Table 19. Number examined, mean, standard error of mean, and standing height for females aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Inches								
20 years and over	4,888	63.8	0.06	59.4	60.3	61.0	62.0	63.8	65.6	66.5	67.3	68.2
20–29 years	1,034	64.1	0.12	59.9	60.5	61.4	62.3	64.1	65.8	67.0	67.5	68.4
30–39 years	909	64.2	0.11	59.9	60.8	61.5	62.4	64.2	65.9	66.9	67.5	68.6
40–49 years	799	64.3	0.09	59.9	60.8	61.5	62.5	64.3	66.1	67.0	67.6	68.7
50–59 years	604	63.9	0.14	59.7	60.6	61.3	62.1	63.9	65.5	66.4	67.2	68.1
60–69 years	723	63.2	0.10	59.0	59.9	60.7	61.6	63.2	64.9	65.8	66.5	67.1
70–79 years	482	62.6	0.12	58.4	59.1	59.9	61.0	62.6	64.1	65.3	65.8	66.6
80 years and over	337	61.3	0.13	57.4	58.1	58.9	59.8	61.4	62.8	63.7	64.4	65.6
Non-Hispanic white												
20 years and over	2,325	64.1	0.06	59.9	61.0	61.5	62.4	64.2	65.8	66.8	67.4	68.4
20–29 years	847	64.7	0.10	60.7	61.5	62.1	63.2	64.5	66.2	67.3	67.8	68.6
40–59 years	635	64.6	0.10	60.8	61.5	62.1	63.1	64.6	66.1	67.1	67.8	68.7
60 years and over	843	62.8	0.07	58.5	59.5	60.2	61.2	62.8	64.5	65.4	66.1	66.8
Non-Hispanic black												
20 years and over	941	64.2	0.08	60.2	61.0	61.5	62.4	64.2	65.9	66.8	67.4	68.4
20–29 years	372	64.5	0.13	60.5	61.3	61.7	62.8	64.5	66.1	67.1	67.6	68.5
40–59 years	294	64.3	0.13	60.3	61.3	61.7	62.4	64.1	65.9	66.5	67.4	68.5
60 years and over	275	63.2	0.14	58.6	59.8	60.5	61.4	63.2	65.2	66.0	66.7	67.9
Mexican American												
20 years and over	1,175	62.0	0.12	57.8	58.8	59.4	60.3	61.9	63.6	64.5	65.3	66.2
20–29 years	513	62.2	0.18	58.3	59.1	59.8	60.5	62.1	63.8	64.7	65.3	66.2
40–59 years	338	61.9	0.16	57.7	58.5	59.3	60.2	61.8	63.5	64.6	65.5	66.3
60 years and over	324	60.7	0.13	56.1	57.1	57.9	59.2	60.7	62.2	63.4	64.0	64.5

Table 20. Number examined, mean, standard error of mean, and body mass index values for females aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Body mass indices								
20 years and over	4,243	28.2	0.17	19.4	20.6	21.6	23.1	26.8	32.0	35.3	37.7	41.5
20–29 years	654	26.8	0.29	18.5	19.6	20.7	22.1	25.2	30.3	33.6	35.6	39.4
30–39 years	698	27.9	0.33	19.0	20.3	21.0	22.6	26.1	31.5	36.0	38.0	42.2
40–49 years	783	28.6	0.40	19.3	20.5	21.7	23.1	26.9	32.8	36.0	38.9	42.1
50–59 years	591	29.2	0.40	20.4	21.3	22.3	23.7	27.9	33.1	36.4	38.9	42.1
60–69 years	720	29.6	0.30	20.6	22.0	23.3	24.7	28.5	33.3	36.4	38.7	42.1
70–79 years	470	28.0	0.29	19.4	21.1	22.2	24.1	27.5	31.1	34.0	35.7	37.7
80 years and over	327	26.1	0.48	18.5	19.8	21.2	22.9	25.1	28.8	30.9	32.7	37.2
Non-Hispanic white												
20 years and over	2,015	27.7	0.21	19.2	20.4	21.2	22.6	26.3	31.4	34.8	37.2	40.6
20–29 years	562	26.7	0.32	18.5	19.8	20.7	21.9	24.8	29.9	33.8	36.6	39.6
40–59 years	625	28.3	0.37	19.4	20.5	21.3	22.6	26.6	32.7	36.0	38.4	41.6
60 years and over	828	28.1	0.22	19.7	21.1	22.2	23.9	27.3	31.5	34.2	36.6	40.2
Non-Hispanic black												
20 years and over	854	31.1	0.28	20.5	22.0	23.4	25.3	29.8	35.6	39.1	42.4	46.7
20–29 years	297	30.2	0.52	19.5	21.1	22.1	23.9	28.7	34.6	38.4	42.4	46.7
40–59 years	289	32.1	0.48	21.3	23.2	24.1	26.1	30.0	36.0	39.9	43.0	47.6
60 years and over	268	31.1	0.57	20.5	23.3	24.3	26.2	30.0	35.8	39.5	41.1	43.2
Mexican American												
20 years and over	1,012	28.8	0.34	20.3	21.9	22.8	24.4	27.5	32.3	34.9	36.5	40.6
20–29 years	358	27.8	0.43	19.6	21.2	22.4	23.4	26.7	31.3	33.6	36.0	40.2
40–59 years	332	30.4	0.48	21.8	23.2	24.3	25.4	29.6	33.6	36.0	38.1	41.6
60 years and over	322	29.0	0.41	20.0	22.3	23.6	24.7	28.3	32.1	35.1	36.4	39.5

NOTES: Pregnant women are excluded. Body mass index (BMI) is calculated as follows: BMI = weight (kilograms)/height (meters²).

Table 21. Number examined, mean, standard error of mean, and mid-arm circumference for females aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Centimeters								
20 years and over	4,280	32.0	0.13	24.5	25.9	26.7	28.1	31.2	35.1	37.4	39.1	42.1
20–29 years	651	30.9	0.26	23.7	24.9	25.9	27.1	29.9	33.6	36.5	37.9	41.1
30–39 years	692	31.8	0.25	24.3	25.6	26.3	28.0	30.6	34.9	37.1	38.9	43.0
40–49 years	781	32.6	0.28	25.2	26.1	26.8	28.4	31.9	36.0	38.0	39.7	43.1
50–59 years	593	32.9	0.29	25.9	27.0	27.6	29.0	32.1	36.0	38.1	39.9	42.3
60–69 years	723	33.2	0.22	25.9	27.4	28.0	29.6	32.4	36.2	38.5	40.1	42.4
70–79 years	491	31.5	0.22	23.7	26.3	27.1	28.3	31.4	34.4	36.1	36.9	38.6
80 years and over	349	29.3	0.41	22.9	23.5	24.6	26.4	28.9	31.5	33.4	35.5	38.6
Non-Hispanic white												
20 years and over	2,043	31.7	0.16	24.4	25.8	26.5	27.9	31.0	34.8	37.1	38.7	41.0
20–39 years	556	31.0	0.24	23.9	25.2	26.1	27.2	30.0	33.7	36.2	37.6	40.9
40–59 years	623	32.4	0.28	25.1	26.1	26.9	28.3	31.7	36.1	37.9	39.4	42.3
60 years and over	864	31.6	0.15	23.7	25.9	27.0	28.2	31.2	34.6	36.7	38.3	40.4
Non-Hispanic black												
20 years and over	855	34.2	0.24	25.6	26.8	28.0	29.8	33.3	37.6	40.8	42.7	45.6
20–39 years	295	33.7	0.41	24.9	26.1	26.9	28.9	32.5	36.8	40.9	42.6	44.9
40–59 years	289	34.8	0.34	26.6	27.9	28.8	30.5	33.6	38.1	41.1	43.1	46.1
60 years and over	271	34.2	0.51	25.2	27.3	28.4	29.9	33.3	37.5	40.2	42.3	45.5
Mexican American												
20 years and over	1,014	31.9	0.19	25.3	26.4	27.5	28.6	31.3	34.5	36.6	37.8	40.1
20–39 years	356	31.2	0.26	24.9	26.0	26.8	28.2	30.6	33.4	35.3	36.9	39.1
40–59 years	330	33.3	0.32	26.3	27.7	28.6	29.7	33.0	36.2	37.5	39.0	41.7
60 years and over	328	31.9	0.32	24.8	26.5	27.4	28.5	31.5	34.6	36.6	37.9	39.7

NOTE: Pregnant women are excluded.

Table 22. Number examined, mean, standard error of mean, and upper arm length for females aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Centimeters								
20 years and over	4,838	35.9	0.07	32.3	33.0	33.5	34.3	35.8	37.3	38.0	38.6	39.5
20–29 years	1,009	35.5	0.11	31.6	32.6	33.2	34.0	35.5	37.0	37.7	38.3	39.2
30–39 years	887	35.8	0.10	32.4	33.0	33.5	34.4	35.7	37.2	38.0	38.4	39.4
40–49 years	786	36.0	0.11	32.7	33.2	33.8	34.4	36.0	37.5	38.1	38.8	39.5
50–59 years	596	36.0	0.12	32.1	33.0	33.8	34.4	36.0	37.2	38.0	38.6	39.6
60–69 years	724	35.9	0.11	32.1	33.0	33.5	34.2	35.7	37.5	38.4	39.0	40.0
70–79 years	488	36.1	0.12	32.8	33.5	33.9	34.5	36.0	37.5	38.2	38.7	39.4
80 years and over	348	35.6	0.18	32.4	33.0	33.4	34.0	35.4	36.9	37.6	38.0	38.9
Non-Hispanic white												
20 years and over	2,313	36.0	0.06	32.7	33.4	33.9	34.5	35.9	37.3	38.0	38.5	39.4
20–39 years	824	35.8	0.09	32.4	33.3	33.6	34.4	35.8	37.1	37.8	38.4	39.3
40–59 years	625	36.1	0.10	32.9	33.5	34.0	34.6	36.0	37.4	38.0	38.6	39.4
60 years and over	864	36.0	0.09	32.7	33.3	33.9	34.4	35.9	37.4	38.0	38.6	39.4
Non-Hispanic black												
20 years and over	920	36.8	0.11	32.9	33.9	34.4	35.1	36.8	38.2	39.1	39.9	40.9
20–39 years	364	36.6	0.14	32.6	33.8	34.3	35.0	36.5	38.0	38.9	39.4	40.8
40–59 years	288	36.9	0.16	33.0	33.8	34.4	35.3	36.9	38.2	39.2	39.9	40.9
60 years and over	268	37.2	0.18	33.6	34.2	34.7	35.4	37.0	38.9	39.8	40.3	41.1
Mexican American												
20 years and over	1,164	34.8	0.09	31.4	32.1	32.7	33.4	34.7	36.0	36.9	37.4	38.2
20–39 years	502	34.6	0.10	31.4	32.0	32.5	33.2	34.5	35.8	36.4	37.4	38.0
40–59 years	334	35.0	0.14	31.3	32.1	32.9	33.5	35.0	36.3	37.0	37.4	38.2
60 years and over	328	35.0	0.14	31.9	32.5	32.9	33.5	34.8	36.3	37.3	37.9	38.7

Table 23. Number examined, mean, standard error of mean, and maximal calf circumference for females aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Centimeters								
20 years and over	4,275	38.1	0.12	31.6	32.7	33.6	34.9	37.5	40.6	42.7	44.3	46.7
20–29 years	647	38.0	0.24	31.9	32.8	33.6	34.8	37.5	40.3	42.7	44.2	46.9
30–39 years	696	38.6	0.24	31.5	32.9	34.2	35.3	37.7	41.1	43.4	44.9	48.1
40–49 years	784	38.8	0.23	32.7	33.6	34.2	35.5	38.1	41.3	43.3	45.0	47.7
50–59 years	591	38.4	0.23	32.0	33.0	33.8	35.4	37.7	41.0	42.7	44.0	46.3
60–69 years	723	38.2	0.19	32.0	32.9	33.7	35.0	37.8	41.0	42.6	44.3	46.1
70–79 years	483	36.7	0.25	30.1	31.7	32.8	34.0	36.3	39.3	40.9	42.2	44.2
80 years and over	351	34.6	0.36	28.4	30.2	31.0	32.0	34.4	36.9	38.2	39.1	41.7
Non-Hispanic white												
20 years and over	2,033	38.2	0.13	31.8	32.9	33.7	35.0	37.5	40.7	42.7	44.3	46.7
20–39 years	557	38.4	0.25	31.9	33.0	34.0	35.3	37.5	40.7	43.1	44.7	47.1
40–59 years	621	38.7	0.20	32.4	33.4	34.0	35.5	38.0	41.4	43.1	44.7	47.5
60 years and over	855	37.2	0.15	30.9	32.0	32.9	34.0	36.6	39.6	41.7	43.4	45.1
Non-Hispanic black												
20 years and over	857	39.4	0.19	32.3	33.4	34.4	35.9	38.8	42.2	44.3	45.6	48.6
20–39 years	295	39.8	0.30	32.5	34.0	34.6	36.2	39.2	42.9	44.8	46.2	48.9
40–59 years	292	39.8	0.30	32.8	34.3	34.8	36.5	39.0	41.8	44.3	45.7	50.3
60 years and over	270	37.7	0.45	29.8	31.9	32.9	34.4	37.7	40.4	42.3	43.8	46.1
Mexican American												
20 years and over	1,015	36.9	0.17	30.9	32.0	32.7	34.0	36.5	39.3	41.0	42.1	44.4
20–39 years	355	37.0	0.24	31.2	32.1	32.7	34.0	36.5	39.2	41.0	42.1	44.4
40–59 years	331	37.5	0.24	31.6	32.5	33.2	34.8	37.0	39.9	41.5	42.5	44.7
60 years and over	329	35.3	0.32	28.2	29.9	31.2	32.9	35.0	37.4	39.2	40.4	42.2

NOTE: Pregnant women are excluded.

Table 24. Number examined, mean, standard error of mean, and upper leg length for females aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Centimeters								
20 years and over	4,750	38.9	0.11	33.5	34.7	35.6	36.9	39.0	40.9	42.0	42.7	44.0
20–29 years	994	40.0	0.14	34.9	36.2	37.0	38.0	40.1	41.9	42.9	43.7	44.7
30–39 years	876	39.7	0.15	34.8	36.0	36.7	37.9	39.6	41.5	42.5	43.2	44.4
40–49 years	780	39.1	0.13	33.9	35.1	36.2	37.4	39.2	41.0	42.0	42.6	43.8
50–59 years	584	38.3	0.18	32.9	34.3	34.9	36.2	38.3	40.2	41.2	42.0	43.2
60–69 years	703	37.9	0.22	32.9	34.0	34.6	35.7	37.9	39.9	41.1	41.9	43.0
70–79 years	472	37.6	0.24	31.9	33.4	34.1	35.5	37.7	39.7	40.8	41.6	42.5
80 years and over	341	37.1	0.25	*	33.1	34.0	35.1	37.0	39.0	40.0	41.0	*
Non-Hispanic white												
20 years and over	2,275	39.0	0.10	33.9	35.1	36.0	37.1	39.0	40.9	41.9	42.5	43.7
20–39 years	815	39.9	0.13	35.6	36.5	37.3	38.1	40.0	41.7	42.6	43.2	44.3
40–59 years	620	38.9	0.13	34.0	35.2	36.0	37.1	39.1	40.6	41.6	42.3	43.4
60 years and over	840	37.7	0.19	32.5	33.7	34.5	35.7	37.7	39.7	40.9	41.6	42.7
Non-Hispanic black												
20 years and over	903	40.5	0.16	34.9	36.2	37.4	38.4	40.5	42.5	43.6	44.4	45.7
20–39 years	357	41.4	0.15	36.9	37.9	38.5	39.4	41.1	43.3	44.3	45.0	46.2
40–59 years	285	40.1	0.26	34.9	35.9	37.2	38.1	40.3	42.3	43.0	43.5	44.9
60 years and over	261	39.0	0.25	33.4	34.4	35.4	36.6	39.0	41.2	41.9	42.7	43.8
Mexican American												
20 years and over	1,139	37.4	0.18	32.3	33.5	34.3	35.4	37.3	39.4	40.6	41.5	42.6
20–39 years	494	38.0	0.23	33.4	34.2	35.0	36.1	37.8	40.0	41.0	42.0	43.2
40–59 years	330	36.9	0.22	*	32.8	33.7	34.8	36.8	39.0	40.1	41.0	*
60 years and over	315	35.5	0.25	*	31.1	32.4	33.9	35.6	37.4	38.5	39.4	*

* Figure does not meet standard of reliability or precision.

Table 27. Number examined, mean, standard error of mean, and subscapular skinfold thickness for females aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Millimeters								
20 years and over	3,318	20.3	0.23	8.2	9.7	11.0	13.5	19.4	26.3	29.9	32.1	34.7
20–29 years	513	18.9	0.49	7.7	9.2	10.3	12.2	16.8	24.3	29.2	31.7	34.4
30–39 years	530	19.8	0.41	8.2	9.4	10.8	12.9	18.7	26.1	29.2	31.1	34.1
40–49 years	564	21.2	0.62	8.1	9.8	10.9	14.0	20.6	28.1	31.5	33.6	35.8
50–59 years	416	22.0	0.44	9.1	11.4	14.1	16.2	22.1	27.6	30.1	32.4	34.2
60–69 years	563	22.0	0.36	9.2	11.9	13.3	17.3	21.5	27.0	30.4	32.4	34.7
70–79 years	417	19.4	0.53	7.7	9.4	10.6	13.5	18.5	24.4	28.7	31.1	33.0
80 years and over	315	15.5	0.53	6.2	7.9	8.7	10.1	14.6	19.2	22.5	25.0	28.2
Non-Hispanic white												
20 years and over	1,696	19.5	0.28	7.9	9.2	10.4	12.9	18.4	25.3	29.2	31.5	34.3
20–39 years	464	18.3	0.43	7.5	8.9	9.9	11.8	16.4	24.1	28.3	30.2	33.5
40–59 years	485	20.8	0.58	8.2	9.6	11.0	14.1	20.0	26.6	30.4	33.0	35.6
60 years and over	747	19.3	0.29	7.6	9.2	10.5	13.1	18.8	24.3	28.4	30.5	33.1
Non-Hispanic black												
20 years and over	563	23.1	0.46	9.4	11.1	12.8	16.0	22.9	29.9	32.9	34.4	36.7
20–39 years	203	22.0	0.52	9.0	10.4	11.8	14.9	21.9	28.9	32.1	33.5	36.3
40–59 years	170	24.7	0.74	*	12.9	14.0	18.2	25.6	30.8	34.1	35.6	*
60 years and over	190	22.7	0.63	8.6	10.4	12.3	16.0	22.7	29.5	32.2	33.6	35.6
Mexican American												
20 years and over	779	21.8	0.51	10.3	12.0	13.6	16.1	21.2	26.6	30.3	32.1	34.8
20–39 years	268	21.0	0.70	9.4	11.1	12.3	15.3	20.3	26.0	29.1	31.1	34.6
40–59 years	234	23.6	0.42	*	14.4	15.7	18.1	22.6	29.8	31.6	33.1	*
60 years and over	277	21.1	0.56	9.8	12.1	13.0	15.3	20.6	25.3	29.2	32.2	35.0

* Figure does not meet standard of reliability or precision.

NOTE: Pregnant women are excluded.

Table 28. Number examined, mean, standard error of mean, and triceps skinfold thickness for females aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Millimeters								
20 years and over	3,820	23.6	0.20	11.4	13.7	15.3	18.1	23.4	28.9	31.9	33.8	36.1
20–29 years	596	22.5	0.39	10.5	12.6	14.3	16.7	22.1	27.8	30.4	32.4	35.4
30–39 years	614	23.5	0.39	10.3	12.6	14.7	16.9	23.4	29.6	32.7	34.2	36.5
40–49 years	670	24.3	0.40	12.1	14.1	15.9	18.9	24.5	29.0	32.7	34.4	36.8
50–59 years	515	24.9	0.35	13.0	15.7	17.4	19.8	24.7	30.0	32.7	34.2	36.4
60–69 years	638	25.1	0.35	14.6	16.0	17.5	19.3	25.0	30.1	33.0	35.0	36.8
70–79 years	455	22.3	0.37	11.0	13.2	14.9	17.4	21.9	26.8	29.0	31.2	33.6
80 years and over	332	19.4	0.57	8.7	10.8	12.4	14.4	18.6	23.7	26.9	28.6	31.1
Non-Hispanic white												
20 years and over	1,845	23.3	0.25	11.1	13.3	15.2	17.9	23.1	28.5	31.7	33.7	36.0
20–39 years	510	22.7	0.36	10.1	12.4	14.2	16.7	22.2	28.4	31.7	33.1	35.5
40–59 years	542	24.2	0.40	12.1	14.1	15.9	18.9	24.1	29.1	32.7	34.2	36.7
60 years and over	793	22.8	0.25	11.4	13.7	15.2	17.6	22.5	27.9	30.3	32.9	35.4
Non-Hispanic black												
20 years and over	704	24.8	0.39	10.9	14.2	15.3	18.4	25.6	30.9	33.1	34.6	36.9
20–39 years	241	23.9	0.59	10.4	12.9	14.8	16.3	24.3	30.9	33.0	34.8	36.8
40–59 years	232	26.3	0.50	12.2	15.6	18.3	21.9	26.8	31.5	33.7	35.3	36.6
60 years and over	231	23.9	0.60	9.6	12.9	15.3	18.1	24.4	29.6	31.9	33.2	37.1
Mexican American												
20 years and over	930	23.9	0.38	12.5	14.7	16.1	18.4	24.0	28.8	31.8	33.9	36.2
20–39 years	333	23.2	0.51	12.4	14.0	15.5	17.4	23.4	27.9	30.4	33.3	35.4
40–59 years	294	25.7	0.35	14.3	16.3	17.9	20.2	25.9	30.3	32.8	34.8	37.3
60 years and over	303	22.6	0.52	10.8	13.4	15.6	17.0	22.0	26.9	31.0	32.9	36.0

NOTE: Pregnant women are excluded.

Table 29. Number examined, mean, standard error of mean, and weight for males aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Kilograms								
20 years and over	4,314	86.3	0.42	60.4	65.0	68.2	73.6	83.5	96.2	104.4	110.2	121.2
20–29 years	712	83.4	0.70	56.8	62.0	64.8	69.1	80.2	93.3	101.8	108.3	121.6
30–39 years	704	86.0	0.90	59.1	64.5	67.6	73.1	83.1	94.7	103.2	109.8	126.2
40–49 years	776	89.1	0.73	63.6	67.6	71.9	76.4	85.7	98.5	107.6	112.5	124.2
50–59 years	598	88.8	0.94	63.1	67.7	71.0	76.8	86.4	99.4	106.9	110.3	119.8
60–69 years	691	88.2	0.73	63.3	66.8	71.1	76.5	86.4	98.1	106.9	112.1	118.9
70–79 years	524	82.7	0.71	60.2	64.2	67.2	72.7	81.2	92.6	97.2	101.8	108.7
80 years and over	309	76.0	0.66	58.2	61.9	64.3	67.5	74.7	82.4	88.6	91.9	100.5
Non-Hispanic white												
20 years and over	2,136	87.9	0.46	62.8	66.5	70.1	75.3	84.9	97.4	105.1	110.7	121.0
20–29 years	598	86.1	0.84	59.7	64.7	67.7	72.7	82.9	95.6	103.3	109.7	124.8
40–59 years	672	90.6	0.70	65.1	69.8	73.8	78.7	87.0	100.1	108.6	112.3	122.6
60 years and over	866	85.8	0.44	63.2	66.3	70.4	74.6	83.7	95.2	102.8	108.1	115.5
Non-Hispanic black												
20 years and over	813	86.2	0.65	58.0	63.2	66.2	71.6	82.8	96.3	106.7	114.5	124.9
20–29 years	273	86.0	1.23	58.9	63.3	67.0	70.7	80.8	96.5	106.9	115.9	125.0
40–59 years	288	86.8	1.19	58.1	63.3	66.0	72.4	85.0	96.1	107.3	114.2	124.5
60 years and over	252	84.9	1.15	56.4	61.4	64.8	71.7	82.6	96.1	103.2	112.7	121.0
Mexican American												
20 years and over	1,027	80.0	0.67	56.5	61.8	64.4	68.4	78.1	88.7	94.5	99.4	109.4
20–29 years	399	78.4	0.98	55.4	59.6	63.4	66.4	76.0	86.8	93.9	98.4	107.4
40–59 years	310	83.4	0.90	58.5	65.7	68.9	72.4	81.0	91.1	97.8	104.5	114.6
60 years and over	318	79.8	1.11	60.6	63.3	65.1	68.7	78.2	87.8	93.5	98.9	108.8

Table 30. Number examined, mean, standard error of mean, and weight for males aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Pounds								
20 years and over	4,314	190.4	0.92	133.1	143.4	150.4	162.3	184.0	212.1	230.1	243.0	267.1
20–29 years	712	183.8	1.55	125.2	136.7	142.9	152.3	176.7	205.8	224.4	238.7	268.0
30–39 years	704	189.5	1.99	130.2	142.3	149.1	161.2	183.2	208.8	227.6	242.1	278.2
40–49 years	776	196.4	1.61	140.3	149.1	158.6	168.3	188.9	217.1	237.1	247.9	273.9
50–59 years	598	195.8	2.06	139.1	149.2	156.5	169.4	190.6	219.2	235.8	243.1	264.1
60–69 years	691	194.4	1.61	139.5	147.3	156.7	168.8	190.5	216.2	235.8	247.2	262.2
70–79 years	524	182.4	1.56	132.7	141.6	148.1	160.3	179.1	204.2	214.4	224.4	239.7
80 years and over	309	167.5	1.46	128.2	136.6	141.7	148.9	164.6	181.6	195.3	202.6	221.5
Non-Hispanic white												
20 years and over	2,136	193.8	1.02	138.4	146.5	154.5	165.9	187.3	214.7	231.8	244.0	266.8
20–29 years	598	189.9	1.86	131.7	142.5	149.2	160.3	182.7	210.8	227.8	241.9	275.1
40–59 years	672	199.8	1.54	143.5	153.9	162.7	173.6	191.7	220.6	239.4	247.5	270.3
60 years and over	866	189.2	0.98	139.3	146.1	155.1	164.4	184.4	209.9	226.7	238.2	254.6
Non-Hispanic black												
20 years and over	813	190.0	1.43	127.9	139.3	146.1	157.8	182.6	212.4	235.3	252.5	275.4
20–29 years	273	189.7	2.71	129.7	139.5	147.8	155.8	178.1	212.7	235.8	255.5	275.5
40–59 years	288	191.4	2.62	128.0	139.5	145.4	159.5	187.4	211.9	236.4	251.8	274.5
60 years and over	252	187.3	2.53	124.3	135.4	142.8	158.2	182.0	211.8	227.6	248.5	266.8
Mexican American												
20 years and over	1,027	176.3	1.48	124.5	136.3	142.0	150.7	172.2	195.6	208.3	219.2	241.3
20–29 years	399	172.9	2.16	122.1	131.4	139.7	146.3	167.6	191.3	207.0	216.9	236.7
40–59 years	310	184.0	1.98	128.9	144.8	151.8	159.6	178.7	200.8	215.7	230.4	252.7
60 years and over	318	176.0	2.45	133.5	139.5	143.5	151.4	172.4	193.5	206.0	218.1	239.8

Table 31. Number examined, mean, standard error of mean, and standing height for males aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Centimeters								
20 years and over	4,341	176.0	0.14	162.9	166.2	168.2	170.9	176.0	181.0	183.7	185.6	188.4
20–29 years	724	176.7	0.29	162.8	166.8	168.9	171.5	176.7	181.4	184.3	186.8	189.5
30–39 years	717	176.4	0.26	163.2	166.9	168.5	171.3	176.0	181.9	184.4	186.2	189.1
40–49 years	784	177.2	0.33	165.4	167.9	169.5	172.1	176.9	182.1	184.5	186.0	189.0
50–59 years	601	175.8	0.32	162.7	166.0	168.2	170.8	176.0	181.2	183.6	185.4	187.6
60–69 years	702	174.8	0.33	163.7	165.3	167.2	170.1	175.1	179.5	182.2	183.7	185.8
70–79 years	519	172.7	0.44	160.1	163.2	164.8	167.5	172.9	178.1	180.3	181.7	184.1
80 years and over	294	170.7	0.44	159.6	161.7	163.9	166.1	170.5	175.3	177.8	179.4	182.1
Non-Hispanic white												
20 years and over	2,136	177.2	0.17	165.0	168.0	169.8	172.5	177.1	182.0	184.5	186.2	188.9
20–39 years	604	178.2	0.23	166.6	169.0	171.2	173.7	178.0	182.6	185.3	187.6	190.0
40–59 years	677	177.9	0.33	166.4	168.7	170.6	173.0	178.1	182.8	184.9	186.7	189.1
60 years and over	855	174.3	0.21	163.2	165.1	166.9	169.7	174.5	178.8	181.4	183.1	185.6
Non-Hispanic black												
20 years and over	826	176.9	0.18	165.2	168.0	169.5	172.1	176.6	181.4	183.7	186.2	188.4
20–39 years	278	177.8	0.38	167.1	169.0	170.7	172.9	177.4	182.2	185.6	187.0	190.0
40–59 years	293	176.8	0.38	165.1	167.7	169.6	172.6	177.2	181.5	183.1	185.0	187.3
60 years and over	255	174.2	0.46	161.9	165.2	167.1	169.4	174.0	178.9	181.3	183.1	185.8
Mexican American												
20 years and over	1,039	169.6	0.28	157.6	160.5	162.2	164.9	169.6	173.9	176.7	178.0	180.6
20–39 years	409	169.7	0.39	157.5	159.6	161.8	164.7	169.6	174.2	176.9	178.2	182.2
40–59 years	313	169.8	0.49	158.0	161.6	163.3	165.4	170.0	173.7	176.3	178.0	179.8
60 years and over	317	168.5	0.42	157.7	160.3	161.8	164.0	168.3	172.8	174.9	176.4	177.6

Table 32. Number examined, mean, standard error of mean, and standing height for males aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Inches								
20 years and over	4,341	69.3	0.05	64.1	65.4	66.2	67.3	69.3	71.3	72.3	73.1	74.2
20–29 years	724	69.6	0.11	64.1	65.7	66.5	67.5	69.6	71.4	72.6	73.5	74.6
30–39 years	717	69.5	0.10	64.2	65.7	66.3	67.4	69.3	71.6	72.6	73.3	74.4
40–49 years	784	69.7	0.13	65.1	66.1	66.7	67.7	69.6	71.7	72.6	73.2	74.4
50–59 years	601	69.2	0.13	64.0	65.4	66.2	67.2	69.3	71.4	72.3	73.0	73.9
60–69 years	702	68.8	0.13	64.4	65.1	65.8	67.0	68.9	70.7	71.7	72.3	73.1
70–79 years	519	68.0	0.17	63.0	64.3	64.9	65.9	68.1	70.1	71.0	71.5	72.5
80 years and over	294	67.2	0.17	62.8	63.7	64.5	65.4	67.1	69.0	70.0	70.6	71.7
Non-Hispanic white												
20 years and over	2,136	69.8	0.07	65.0	66.2	66.9	67.9	69.7	71.7	72.6	73.3	74.4
20–39 years	604	70.2	0.09	65.6	66.5	67.4	68.4	70.1	71.9	73.0	73.9	74.8
40–59 years	677	70.0	0.13	65.5	66.4	67.2	68.1	70.1	72.0	72.8	73.5	74.4
60 years and over	855	68.6	0.08	64.3	65.0	65.7	66.8	68.7	70.4	71.4	72.1	73.1
Non-Hispanic black												
20 years and over	826	69.6	0.07	65.1	66.2	66.7	67.8	69.5	71.4	72.3	73.3	74.2
20–39 years	278	70.0	0.15	65.8	66.5	67.2	68.1	69.8	71.7	73.1	73.6	74.8
40–59 years	293	69.6	0.15	65.0	66.0	66.8	68.0	69.8	71.5	72.1	72.8	73.7
60 years and over	255	68.6	0.18	63.8	65.0	65.8	66.7	68.5	70.4	71.4	72.1	73.1
Mexican American												
20 years and over	1,039	66.8	0.11	62.0	63.2	63.9	64.9	66.8	68.5	69.6	70.1	71.1
20–39 years	409	66.8	0.16	62.0	62.9	63.7	64.9	66.8	68.6	69.6	70.2	71.7
40–59 years	313	66.9	0.19	62.2	63.6	64.3	65.1	66.9	68.4	69.4	70.1	70.8
60 years and over	317	66.3	0.16	62.1	63.1	63.7	64.6	66.3	68.0	68.9	69.4	69.9

Table 33. Number examined, mean, standard error of mean, and body mass index values for males aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Body mass indices								
20 years and over	4,262	27.8	0.13	20.4	21.8	22.6	24.2	27.1	30.4	32.8	34.6	37.6
20–29 years	712	26.6	0.19	19.4	20.3	21.5	22.6	25.5	29.2	31.6	33.6	38.2
30–39 years	704	27.5	0.26	20.4	21.5	22.3	23.8	26.7	30.0	32.7	34.2	37.6
40–49 years	774	28.4	0.25	21.1	22.3	23.4	24.7	27.5	30.6	33.2	35.2	38.1
50–59 years	594	28.7	0.31	21.2	22.6	23.9	25.2	28.0	31.3	33.5	35.2	38.2
60–69 years	688	28.9	0.20	21.5	22.8	23.6	25.3	28.2	31.9	33.9	35.5	37.8
70–79 years	510	27.7	0.18	21.1	22.6	23.3	24.7	27.5	30.1	31.9	33.3	34.9
80 years and over	280	26.1	0.23	20.2	21.5	22.6	24.0	25.9	28.1	29.1	30.3	32.8
Non-Hispanic white												
20 years and over	2,103	28.0	0.16	20.6	21.9	22.9	24.4	27.3	30.5	32.9	34.5	37.6
20–39 years	598	27.0	0.25	19.6	21.1	21.9	23.4	26.1	29.7	32.1	33.9	37.3
40–59 years	669	28.7	0.25	21.4	22.6	23.7	25.1	27.8	31.1	33.5	35.2	38.4
60 years and over	836	28.3	0.15	21.5	22.8	23.6	24.9	27.7	31.1	33.1	34.3	36.6
Non-Hispanic black												
20 years and over	809	27.5	0.20	19.5	20.7	21.6	23.0	26.5	30.3	33.6	35.8	38.9
20–39 years	273	27.1	0.35	19.6	20.6	21.5	22.6	26.0	29.8	33.6	35.7	39.7
40–59 years	288	27.7	0.37	19.4	20.7	21.5	23.3	26.7	30.6	33.3	35.3	38.2
60 years and over	248	28.0	0.28	19.3	20.9	22.3	24.1	27.6	31.3	33.9	36.1	37.8
Mexican American												
20 years and over	1,018	27.7	0.22	20.8	22.0	23.0	24.3	27.2	30.1	32.0	33.7	37.0
20–39 years	399	27.1	0.27	20.3	21.4	22.4	23.8	26.6	29.7	31.5	32.8	36.1
40–59 years	309	28.9	0.28	21.9	23.6	24.2	25.8	28.1	30.8	32.8	34.8	38.5
60 years and over	310	28.1	0.34	21.4	22.9	23.6	24.9	27.5	30.3	32.9	34.2	36.7

NOTE: Body mass index (BMI) is calculated as follows: BMI = weight (kilograms)/height (meters²).**Table 34. Number examined, mean, standard error of mean, and mid-arm circumference for males aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002**

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Centimeters								
20 years and over	4,295	33.9	0.08	27.5	28.8	29.7	30.9	33.5	36.2	37.9	39.1	41.2
20–29 years	710	33.4	0.16	26.8	28.2	29.1	30.2	32.9	36.0	37.8	39.0	41.7
30–39 years	698	34.3	0.18	27.9	29.2	30.2	31.5	33.9	36.7	38.5	39.9	41.7
40–49 years	770	34.6	0.15	28.4	29.7	30.2	31.8	34.3	36.9	38.3	39.5	41.6
50–59 years	592	34.3	0.19	27.9	29.7	30.4	31.7	34.1	36.5	38.0	39.0	40.8
60–69 years	694	33.8	0.16	27.9	28.9	29.8	31.2	33.3	36.1	37.7	38.8	40.1
70–79 years	518	32.1	0.14	26.4	28.0	28.9	29.8	32.0	34.2	35.5	36.2	38.6
80 years and over	313	30.3	0.18	25.6	26.7	27.1	28.1	30.0	32.1	33.3	34.1	35.5
Non-Hispanic white												
20 years and over	2,131	34.0	0.10	27.7	29.1	29.9	31.1	33.7	36.3	37.9	39.0	41.1
20–39 years	595	34.0	0.19	27.4	28.6	29.5	31.1	33.7	36.5	38.1	39.1	41.5
40–59 years	672	34.6	0.14	28.6	29.9	30.5	32.1	34.5	36.8	38.0	39.2	41.4
60 years and over	864	32.8	0.13	27.1	28.3	29.1	30.1	32.4	35.1	36.7	37.9	39.7
Non-Hispanic black												
20 years and over	803	34.4	0.18	27.1	28.4	29.4	30.9	34.1	37.4	39.4	41.0	43.0
20–39 years	268	34.6	0.29	27.3	28.7	29.6	30.8	33.9	37.7	40.3	41.3	43.3
40–59 years	284	34.6	0.28	27.4	28.3	29.4	31.1	34.5	37.6	39.2	40.7	42.7
60 years and over	251	33.4	0.20	25.1	27.2	28.5	30.2	33.4	36.1	38.3	39.6	42.1
Mexican American												
20 years and over	1,025	33.2	0.16	27.2	28.6	29.3	30.6	32.9	35.1	36.7	38.0	40.0
20–39 years	396	33.0	0.22	27.0	28.4	29.2	30.5	32.6	35.0	36.4	37.7	40.0
40–59 years	306	33.9	0.21	27.7	29.2	30.4	31.6	33.6	35.7	37.4	38.4	40.6
60 years and over	323	32.1	0.23	27.0	27.9	28.4	29.5	31.6	34.2	35.7	36.8	38.0

Table 35. Number examined, mean, standard error of mean, and upper arm length for males aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Centimeters								
20 years and over	4,296	38.9	0.07	35.1	36.0	36.5	37.4	38.9	40.4	41.2	41.9	42.6
20–29 years	710	38.6	0.10	34.9	35.8	36.3	37.1	38.5	40.0	40.9	41.4	42.4
30–39 years	698	38.7	0.12	34.8	35.7	36.2	37.0	38.5	40.2	41.0	41.6	42.6
40–49 years	770	39.1	0.12	35.2	36.4	36.9	37.7	39.0	40.6	41.4	41.9	42.9
50–59 years	593	39.2	0.09	35.5	36.4	37.0	37.9	39.2	40.5	41.4	42.0	42.5
60–69 years	694	39.2	0.14	35.5	36.3	37.0	37.7	39.1	40.6	41.5	42.0	42.8
70–79 years	518	39.0	0.13	35.0	35.8	36.5	37.4	39.0	40.6	41.4	41.9	42.5
80 years and over	313	38.9	0.16	35.3	35.9	36.4	37.3	38.8	40.4	41.4	41.9	43.0
Non-Hispanic white												
20 years and over	2,131	39.2	0.06	35.6	36.4	37.0	37.7	39.1	40.6	41.4	42.0	42.8
20–39 years	595	38.9	0.08	35.4	36.1	36.5	37.4	38.8	40.3	41.1	41.8	42.6
40–59 years	672	39.4	0.08	35.7	36.7	37.3	38.0	39.4	40.9	41.5	42.0	42.9
60 years and over	864	39.3	0.09	35.6	36.4	37.0	37.7	39.1	40.7	41.5	42.0	42.7
Non-Hispanic black												
20 years and over	803	39.5	0.08	35.9	36.6	37.0	37.9	39.5	40.9	41.8	42.4	43.5
20–39 years	268	39.5	0.11	36.1	36.8	37.2	37.9	39.5	40.7	41.7	42.3	43.4
40–59 years	284	39.5	0.15	35.8	36.5	36.9	37.8	39.4	40.9	41.8	42.4	43.7
60 years and over	251	39.6	0.17	35.9	36.7	37.1	37.9	39.5	41.0	41.9	42.6	43.5
Mexican American												
20 years and over	1,026	37.5	0.10	33.5	34.5	35.1	35.9	37.5	38.9	39.8	40.4	41.1
20–39 years	396	37.4	0.13	33.2	34.3	34.9	35.7	37.4	38.8	39.6	40.3	41.3
40–59 years	307	37.8	0.17	34.0	35.3	35.6	36.3	37.9	39.0	39.8	40.4	40.9
60 years and over	323	37.8	0.16	34.4	35.1	35.5	36.2	37.9	39.2	39.9	40.6	41.4

Table 36. Number examined, mean, standard error of mean, and maximal calf circumference for males aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Centimeters								
20 years and over	4,287	39.1	0.08	33.0	34.2	35.1	36.4	38.7	41.4	43.0	44.0	45.9
20–29 years	707	39.0	0.15	32.6	33.8	34.7	35.8	38.4	41.6	43.0	44.4	46.9
30–39 years	697	39.5	0.19	33.5	34.4	35.5	36.8	39.0	41.5	43.1	44.4	46.4
40–49 years	773	39.8	0.17	34.2	35.3	36.1	37.3	39.4	42.1	43.6	44.6	46.6
50–59 years	589	39.4	0.19	33.3	34.4	36.0	37.1	39.2	41.5	43.3	43.9	45.7
60–69 years	689	38.8	0.16	32.8	34.2	35.1	36.5	38.6	41.0	42.2	43.4	45.1
70–79 years	522	37.3	0.16	32.0	33.0	34.0	35.1	37.2	39.3	40.5	41.4	43.1
80 years and over	310	35.7	0.17	31.2	31.8	32.5	33.5	35.5	37.7	38.8	39.8	41.1
Non-Hispanic white												
20 years and over	2,127	39.4	0.10	33.3	34.5	35.5	36.8	39.1	41.6	43.1	44.2	46.0
20–39 years	594	39.5	0.18	33.4	34.4	35.4	36.5	39.2	41.9	43.1	44.5	46.4
40–59 years	670	40.1	0.14	34.4	35.8	36.6	37.6	39.6	42.2	43.6	44.6	46.5
60 years and over	863	38.1	0.11	32.5	33.4	34.3	35.5	37.8	40.3	41.5	42.5	44.0
Non-Hispanic black												
20 years and over	803	38.9	0.15	32.3	33.4	34.4	35.9	38.5	41.5	43.1	44.4	46.9
20–39 years	268	39.4	0.22	33.0	34.0	34.9	36.4	38.7	41.6	43.4	45.3	47.1
40–59 years	285	38.8	0.25	32.2	33.5	34.3	36.0	38.6	41.7	43.1	44.2	46.2
60 years and over	250	37.5	0.20	30.7	32.4	33.1	34.6	37.1	40.2	41.5	42.5	44.7
Mexican American												
20 years and over	1,021	37.8	0.14	32.5	33.3	34.2	35.3	37.5	39.7	41.1	42.3	44.1
20–39 years	394	37.7	0.21	32.4	33.2	34.1	35.3	37.3	39.7	41.0	42.2	44.0
40–59 years	306	38.3	0.18	33.0	34.0	34.8	35.7	37.9	40.0	41.8	43.0	44.6
60 years and over	321	36.4	0.27	31.3	32.4	32.9	34.1	36.2	38.3	39.6	40.5	42.2

Table 37. Number examined, mean, standard error of mean, and upper leg length for males aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Centimeters								
20 years and over	4,244	42.6	0.09	37.4	38.5	39.4	40.5	42.6	44.7	45.8	46.5	47.9
20–29 years	702	43.7	0.16	38.2	39.7	40.4	41.6	43.5	45.6	46.6	47.4	48.7
30–39 years	695	43.1	0.13	38.3	39.3	40.0	41.0	43.0	45.0	46.1	46.7	47.9
40–49 years	764	42.9	0.13	37.8	38.9	39.9	40.9	42.8	44.9	45.9	46.6	47.6
50–59 years	586	42.2	0.16	37.4	38.3	39.0	40.3	42.1	44.0	45.2	46.0	47.3
60–69 years	685	41.6	0.16	36.5	37.5	38.2	39.5	41.3	43.6	44.5	45.4	46.9
70–79 years	509	41.0	0.19	35.6	37.0	37.6	38.9	41.0	43.0	44.1	44.7	46.2
80 years and over	303	40.5	0.23	35.5	36.7	37.4	38.7	40.3	42.4	43.9	44.5	45.6
Non-Hispanic white												
20 years and over	2,108	42.7	0.09	37.6	38.8	39.7	40.7	42.6	44.7	45.8	46.6	47.8
20–39 years	594	43.6	0.13	39.1	40.1	40.9	41.7	43.5	45.5	46.4	47.1	48.1
40–59 years	665	42.7	0.13	37.8	39.0	39.9	40.8	42.6	44.6	45.6	46.5	47.6
60 years and over	849	41.3	0.14	36.4	37.3	38.2	39.3	41.1	43.2	44.4	45.1	46.4
Non-Hispanic black												
20 years and over	792	44.3	0.15	39.0	40.4	41.1	42.2	44.3	46.2	47.4	48.0	49.1
20–39 years	265	45.2	0.15	*	41.9	42.5	43.2	45.1	47.1	48.0	48.8	*
40–59 years	281	43.9	0.24	*	39.9	40.8	42.0	44.1	46.0	46.6	47.3	*
60 years and over	246	42.6	0.34	*	38.3	39.1	40.4	42.5	44.8	45.9	46.8	*
Mexican American												
20 years and over	1,014	41.0	0.16	36.0	37.0	37.7	38.9	40.9	43.0	44.2	45.2	46.0
20–39 years	393	41.2	0.17	36.2	37.2	38.0	39.1	41.1	43.2	44.5	45.5	46.2
40–59 years	304	40.8	0.27	*	36.8	37.5	38.7	40.8	43.0	44.2	44.9	*
60 years and over	317	40.0	0.32	*	36.4	37.0	38.1	40.0	41.9	42.9	43.5	*

* Figure does not meet standard of reliability or precision.

Table 38. Number examined, mean, standard error of mean, and mid-thigh circumference for males 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Centimeters								
20 years and over	4,224	53.6	0.14	44.5	46.5	47.7	49.4	52.9	56.9	59.3	61.1	64.2
20–29 years	703	54.8	0.25	45.4	46.7	48.1	50.1	54.1	58.6	61.3	62.8	67.4
30–39 years	693	54.6	0.29	45.6	47.7	48.6	50.3	53.8	57.8	60.0	62.2	66.5
40–49 years	763	54.4	0.22	46.5	47.8	49.0	51.0	53.8	57.0	59.3	61.2	64.5
50–59 years	585	53.2	0.33	44.2	46.5	47.9	49.5	52.8	56.8	58.7	60.1	62.3
60–69 years	681	52.0	0.22	43.6	45.5	46.7	48.2	51.7	55.0	56.9	58.9	61.2
70–79 years	502	49.7	0.18	42.3	44.2	45.3	46.6	49.2	52.6	54.5	55.9	57.2
80 years and over	297	47.3	0.22	40.9	42.2	43.3	44.5	47.1	49.5	51.1	52.2	55.4
Non-Hispanic white												
20 years and over	2,100	53.6	0.15	44.7	46.7	47.9	49.6	53.0	56.9	59.1	60.8	63.5
20–39 years	593	54.9	0.27	45.7	47.6	48.6	50.5	54.2	58.4	60.7	62.5	66.1
40–59 years	665	54.2	0.20	46.2	47.9	48.8	50.5	53.6	57.1	59.0	60.6	63.4
60 years and over	842	50.7	0.14	43.0	44.4	45.6	47.2	50.2	53.6	55.7	56.9	59.4
Non-Hispanic black												
20 years and over	790	55.1	0.27	44.3	46.4	48.1	50.1	54.4	59.3	62.0	64.5	68.5
20–39 years	265	56.6	0.37	46.2	48.1	49.0	51.3	55.4	60.7	64.0	66.9	70.1
40–59 years	281	54.5	0.43	43.8	46.2	47.4	49.6	54.1	58.8	61.3	63.0	66.6
60 years and over	244	52.2	0.47	40.3	43.7	45.2	47.8	52.0	56.2	58.8	60.4	64.4
Mexican American												
20 years and over	1,007	52.5	0.20	44.4	46.2	47.3	48.9	52.0	55.4	57.4	58.9	61.5
20–39 years	393	52.9	0.30	44.9	46.4	47.9	49.3	52.3	55.6	57.9	59.4	61.9
40–59 years	303	52.5	0.23	45.3	46.6	47.3	49.0	52.1	55.0	57.1	58.5	61.4
60 years and over	311	49.3	0.42	41.9	43.3	44.0	46.0	48.8	52.3	54.2	55.7	58.4

Table 39. Number examined, mean, standard error of mean, and waist circumference for males aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Centimeters								
20 years and over	4,249	99.0	0.33	77.0	81.0	84.0	88.8	97.7	107.3	113.5	117.6	125.0
20–29 years	707	92.5	0.59	72.2	75.7	77.7	81.2	90.0	100.0	106.5	113.2	122.0
30–39 years	697	96.4	0.72	75.8	79.2	81.7	86.8	94.8	103.9	109.6	113.7	124.0
40–49 years	769	100.4	0.56	80.7	85.3	86.6	90.5	98.1	107.8	114.4	117.9	127.4
50–59 years	589	102.7	0.69	81.7	86.2	89.4	93.7	101.9	110.5	116.2	120.4	125.1
60–69 years	683	105.2	0.56	85.3	89.9	91.4	96.0	104.1	113.7	119.0	122.4	129.0
70–79 years	505	103.5	0.60	84.9	88.5	91.9	95.7	102.8	110.9	115.9	117.6	122.2
80 years and over	299	100.3	0.64	83.6	88.1	90.2	93.7	99.7	106.4	110.2	112.9	119.1
Non-Hispanic white												
20 years and over	2,104	100.4	0.37	78.8	82.3	86.2	90.6	99.2	108.8	114.2	118.0	126.3
20–39 years	592	95.4	0.69	75.6	78.5	80.5	84.3	93.6	102.9	109.0	113.3	123.6
40–59 years	669	102.5	0.57	81.7	86.6	89.1	93.0	100.6	110.2	116.0	119.1	127.4
60 years and over	843	104.9	0.38	86.8	90.7	92.5	96.3	104.0	112.8	117.2	120.5	125.8
Non-Hispanic black												
20 years and over	796	94.7	0.52	71.7	75.1	77.5	82.6	92.9	104.3	111.5	116.6	124.5
20–39 years	268	90.9	0.95	70.4	72.1	75.4	78.3	87.4	98.9	107.1	114.9	121.1
40–59 years	284	96.6	0.85	73.9	76.9	81.3	84.9	95.5	106.1	112.1	117.4	125.8
60 years and over	244	101.4	0.89	75.7	80.6	86.1	91.4	100.7	109.6	115.6	122.9	129.1
Mexican American												
20 years and over	1,014	96.3	0.57	76.4	80.1	82.9	87.3	95.5	104.1	108.4	112.0	119.0
20–39 years	397	93.9	0.72	75.1	77.8	80.2	84.7	92.5	101.8	106.4	109.4	115.6
40–59 years	304	100.1	0.61	81.9	85.7	88.5	92.4	98.6	106.2	110.1	115.4	121.0
60 years and over	313	102.1	0.78	85.2	87.5	91.3	93.5	101.5	108.2	113.5	116.0	121.8

Table 40. Number examined, mean, standard error of mean, and subscapular skinfold thickness for males aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Millimeters								
20 years and over	3,618	18.5	0.20	8.3	9.5	10.7	12.7	17.9	23.2	26.2	28.3	31.0
20–29 years	637	16.6	0.36	7.9	8.6	9.2	10.6	14.8	21.1	24.9	26.9	30.9
30–39 years	588	18.1	0.35	8.0	9.0	10.1	12.0	17.7	23.2	25.9	28.3	30.4
40–49 years	647	19.1	0.36	8.8	10.1	11.4	13.3	18.5	23.4	26.7	28.7	31.6
50–59 years	467	19.7	0.41	8.8	10.9	12.0	14.7	19.1	24.1	27.3	28.9	31.3
60–69 years	562	20.1	0.40	9.9	11.7	12.8	15.4	20.1	24.4	27.2	28.4	30.5
70–79 years	435	19.0	0.32	9.4	11.1	12.1	14.1	18.7	23.0	26.0	27.4	29.9
80 years and over	282	16.7	0.50	8.5	10.0	10.9	12.1	16.3	20.1	22.2	24.2	26.7
Non-Hispanic white												
20 years and over	1,815	18.6	0.22	8.4	9.8	11.0	12.8	18.0	23.2	26.2	28.1	31.0
20–39 years	526	17.2	0.34	7.9	8.7	9.5	11.2	16.0	22.1	25.2	27.5	30.3
40–59 years	553	19.5	0.35	9.2	10.9	11.9	13.9	18.8	23.8	27.2	29.0	31.6
60 years and over	736	19.2	0.26	10.0	11.4	12.2	14.4	19.0	23.5	26.1	27.5	29.4
Non-Hispanic black												
20 years and over	643	17.5	0.31	7.2	8.2	9.0	10.6	15.5	23.3	27.1	29.2	32.1
20–39 years	226	16.6	0.41	7.2	8.2	8.9	9.9	14.0	22.2	26.1	29.2	31.2
40–59 years	229	18.0	0.59	7.2	8.1	9.2	11.4	17.1	23.5	27.2	28.6	31.9
60 years and over	188	19.4	0.60	6.6	8.0	9.4	12.3	19.3	25.8	29.1	30.4	33.1
Mexican American												
20 years and over	883	19.1	0.32	8.8	10.3	11.4	14.0	18.5	23.4	26.1	28.3	31.1
20–39 years	345	18.7	0.39	8.4	9.6	10.8	13.2	17.8	23.4	26.1	28.5	31.0
40–59 years	254	19.7	0.47	9.1	11.8	13.2	15.6	19.1	23.1	26.2	28.1	31.2
60 years and over	284	19.4	0.45	10.2	11.6	13.1	15.0	18.6	23.6	26.1	27.9	30.5

Table 41. Number examined, mean, standard error of mean, and triceps skinfold thickness for males aged 20 years and over for selected percentiles, by race or ethnicity and age: United States, 1999–2002

Race or ethnicity and age	Number of examined persons	Mean	Standard error of mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race or ethnicity groups				Millimeters								
20 years and over	4,148	14.3	0.11	5.9	7.0	7.9	9.5	12.9	17.4	21.1	23.6	27.8
20–29 years	683	13.8	0.28	5.1	6.2	7.0	8.1	12.4	17.3	21.7	23.9	28.1
30–39 years	670	13.8	0.28	5.4	6.4	7.2	8.9	12.1	17.3	20.8	24.0	28.5
40–49 years	738	13.9	0.19	6.1	7.1	8.7	9.9	12.6	16.5	20.0	22.4	25.2
50–59 years	569	15.3	0.34	6.7	7.7	8.4	10.1	13.8	18.9	22.3	24.8	30.0
60–69 years	671	15.5	0.33	7.6	8.4	9.2	10.6	13.8	19.2	22.1	24.7	28.9
70–79 years	508	14.2	0.22	6.9	8.3	9.1	10.3	13.1	16.6	20.0	21.4	24.5
80 years and over	309	13.6	0.42	6.7	7.9	8.7	9.4	12.4	16.2	18.1	20.6	24.5
Non-Hispanic white												
20 years and over	2,064	14.6	0.15	6.3	7.3	8.3	9.9	13.2	17.9	21.5	23.9	27.9
20–39 years	574	14.1	0.29	5.4	6.5	7.2	8.6	12.5	17.4	21.8	24.3	28.5
40–59 years	648	14.9	0.22	6.9	8.2	9.0	10.4	13.4	17.9	21.6	23.6	27.1
60 years and over	842	15.0	0.23	7.4	8.5	9.2	10.6	13.5	18.2	21.2	23.1	27.8
Non-Hispanic black												
20 years and over	762	13.3	0.25	4.7	5.5	6.2	7.5	11.6	16.7	20.6	23.4	28.4
20–39 years	252	12.7	0.36	4.6	5.3	6.1	7.4	11.1	15.7	19.3	22.1	27.1
40–59 years	267	13.5	0.40	4.8	5.4	6.0	7.2	11.8	17.1	21.3	24.0	30.3
60 years and over	243	14.5	0.43	5.0	6.5	8.0	9.4	12.6	18.2	21.8	25.5	28.4
Mexican American												
20 years and over	994	13.2	0.31	5.8	6.9	7.8	9.1	11.9	15.7	19.2	21.2	25.1
20–39 years	383	13.3	0.38	5.6	6.7	7.5	9.0	12.0	15.8	20.0	22.0	25.1
40–59 years	294	12.9	0.42	5.8	7.2	8.0	9.4	11.5	15.3	18.0	19.8	24.5
60 years and over	317	13.3	0.33	6.6	7.6	8.3	9.4	12.0	16.0	18.6	20.2	24.3

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