

SAFER • HEALTHIER • PEOPLE™

CDC

Monitoring the

Nation's Health

Vital and Health Statistics

Series 11, Number 249

April 2009

# Anthropometric Reference Data for Children and Adults: United States, 1988–1994



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Centers for Disease Control and Prevention  
National Center for Health Statistics

#### Copyright information

All material appearing in this report is in the public domain and may be reproduced or copied without permission; citation as to source, however, is appreciated.

---

#### Suggested citation

McDowell MA, Fryar CD, Ogden CL. Anthropometric reference data for children and adults: United States, 1988–1994. National Center for Health Statistics. Vital Health Stat 11(249). 2009.

---

#### Library of Congress Cataloging-in-Publication Data

McDowell, Margaret A.

Anthropometric reference data for children and adults: United States, 1988–1994 / by Margaret A. McDowell, Cheryl D. Fryar, Cynthia L. Ogden.

p. ; cm. -- (Vital and health statistics. Series 11 ; no. 249) (DHHS publication ; no. (PHS) 2009-1699)

Includes bibliographical references.

ISBN 0-8406-0631-1

1. Anthropometry--United States. 2. Health surveys--United States. 3. Nutrition surveys--United States. I. Fryar, Cheryl D. II. Ogden, Cynthia L. III. National Center for Health Statistics (U.S.) IV. National Health and Nutrition Examination Survey (U.S.) V. Title. VI. Series: Vital and health statistics. Series 11, Data from the national health survey; no. 249. VII. Series: DHHS Publication ; no. (PHS) 2009-1699.

[DNLM: 1. Body Weights and Measures--statistics & numerical data--United States. 2. Anthropometry--methods--United States. 3. Nutrition Surveys--United States. W2 A N148vk no.249 2009]

GN58.U5M33 2009

614.4'273--dc22

2009003861

---

For sale by the U.S. Government Printing Office  
Superintendent of Documents  
Mail Stop: SSOP  
Washington, DC 20402-9328  
Printed on acid-free paper.

# Vital and Health Statistics

---

Series 11, Number 249

## Anthropometric Reference Data for Children and Adults: United States, 1988–1994

Data From the Third  
National Health and Nutrition  
Examination Survey (NHANES III)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Centers for Disease Control and Prevention  
National Center for Health Statistics

Hyattsville, Maryland  
April 2009  
DHHS Publication No. (PHS) 2009-1699

## **National Center for Health Statistics**

Edward J. Sondik, Ph.D., *Director*

Jennifer H. Madans, Ph.D., *Acting Co-Deputy Director*

Michael H. Sadagursky, *Acting Co-Deputy Director*

Jennifer H. Madans, Ph.D., *Associate Director for Science*

Jennifer H. Madans, Ph.D., *Acting Associate Director for Planning, Budget, and Legislation*

Michael H. Sadagursky, *Associate Director for Management and Operations*

Lawrence H. Cox, Ph.D., *Associate Director for Research and Methodology*

Linda B. Torian, *Acting Director for Information Technology*

Linda B. Torian, *Acting Director for Information Services*

Linda T. Bilheimer, Ph.D., *Associate Director for Analysis and Epidemiology*

Charles J. Rothwell, M.S., *Director for Vital Statistics*

Jane E. Sisk, Ph.D., *Director for Health Care Statistics*

Jane F. Gentleman, Ph.D., *Director for Health Interview Statistics*

Clifford L. Johnson, M.S.P.H., *Director for Health and Nutrition Examination Surveys*

## **Division of Health and Nutrition Examination Surveys**

Clifford L. Johnson, M.S.P.H., *Director*

Rosemarie Hirsch, M.D., M.P.H., *Chief, Analysis Branch*

George Zipf, M.S., *Chief, Operations Branch*

Vicki L. Burt, Sc.M., R.N., *Chief, Planning Branch*

Jerry Del Rosso, B.S.E.E., *Chief, Informatics Branch*

# Contents

---

Abstract .....	1
Introduction .....	1
Methods .....	1
Sample Description .....	2
Anthropometry Examination Component.....	2
Statistical Analysis.....	3
Results .....	3
References .....	3

## Text Table

A. List of detailed anthropometry data tables provided in this report, based on data from the Third National Health and Nutrition Examination Survey (NHANES III), 1988–1994 .....	4
--	---

## Detailed Tables

1. Weight in pounds for persons aged 3 months to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994 .....	6
2. Weight in pounds for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994 .....	7
3. Weight in pounds for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994 .....	8
4. Weight in kilograms for persons aged 3 months to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994.....	9
5. Weight in kilograms for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994 .....	10
6. Weight in kilograms for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994 .....	11
7. Body mass index for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994.....	12
8. Body mass index for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994 .....	13
9. Body mass index for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994 .....	14
10. Height in inches for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994.....	15
11. Height in inches for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994 .....	16
12. Height in inches for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994 .....	17
13. Height in centimeters for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994 .....	18





**Objective**

This report presents national anthropometric reference data for the U.S. population aged 3 months and older in 1988–1994.

**Methods**

Data in this report are from the Third National Health and Nutrition Examination Survey (NHANES III), which was conducted on a complex, stratified, multistage probability sample of the civilian, noninstitutionalized U.S. population. A total of 31,241 persons were examined. The anthropometric measurements taken included weight, height, recumbent length, circumferences, limb lengths, joint breadths, and skinfold thicknesses. Body mass index values were computed from measured height and weight values.

**Results**

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

**Conclusions**

These data add to the knowledge about trends in child growth and development and are useful in monitoring overweight and obesity in the U.S. population.

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

# Anthropometric Reference Data for Children and Adults: United States, 1988–1994

by Margaret A. McDowell, Ph.D., M.P.H., R.D.; Cheryl D. Fryar, M.S.P.H.; and Cynthia L. Ogden, Ph.D., Division of Health and Nutrition Examination Surveys

## Introduction

The field of anthropometry encompasses human body measurements such as weight, height, and size, including skinfold thicknesses, circumferences, lengths, and breadths. Such measurements are a key component of nutritional status assessment in children and adults (1). Anthropometric data for children reflect general health status, dietary adequacy, and growth and development over time. In adults, body measurement data are used to evaluate health and dietary status, disease risk, and body composition changes that occur over the adult lifespan. This report provides anthropometric reference data for U.S. children and adults aged 3 months and older in 1988–1994.

## Methods

The National Health and Nutrition Examination Surveys (NHANES) are conducted by the Centers for Disease Control and Prevention's National Center for Health Statistics (NCHS). NHANES data are the primary source of body measurement and related health and nutrition data for the civilian, noninstitutionalized U.S. population. The surveys were conducted periodically from 1960 to 1994 (2). Data from the third survey (NHANES III), conducted from 1988 to 1994, were used for this report.

The NHANES data consist of household interview data and health

examination data. During NHANES III, the majority of the health examinations were conducted in mobile examination centers (MECs); however, individuals aged 2–11 months or aged 20 years and older who were unable to come to the MECs had the option of having an abbreviated health examination in their homes that included a subset of the anthropometric measurements. This report is based on anthropometric data from both the MEC- and home-examined samples.

The anthropometry examinations in the MECs and in respondents' homes were performed by NHANES health technicians (3) who had completed a comprehensive anthropometry training program that utilized videotape, demonstration, and practice exercises with an expert examiner. A recorder assisted the health technician during the examination. Health technician and recorder performance was monitored by direct observation, data review, and expert examiner evaluations (3). Examinations in the MEC were conducted in a room equipped with a digital floor scale, a wall-mounted stadiometer, a bench, a wall mirror, an infantometer, a computer workstation, and specialized measurement devices. Survey participants were asked to wear socks and disposable examination gowns. The recorder assisted the examining technician with positioning and performed all data entry tasks. In respondents' homes, the health technicians used portable equipment to perform the anthropometry measurements, and participants wore lightweight clothing during the



examination. Because similar data collection methods were used in previous NHANES, trends in anthropometric measurements over time can be examined in the U.S. population.

## Sample Description

NHANES is a complex, multistage probability sample of the noninstitutionalized U.S. population. The NHANES III sample included participants aged 2 months and older. Infants and children aged 2 months to 6 years, adults aged 60 years and older, Mexican American persons, and black persons were oversampled to improve the precision of the statistical estimates for these population subgroups (4). Additional information on the NHANES III survey design and methodology, along with public-use data, is available elsewhere (5).

The analytic sample for this report was based on 31,241 examined persons aged 3 months and older. Of these, 30,750 persons were examined in MECs and 491 were examined in their homes. Seventy infants aged 2 months were excluded from the analyses because of the small sample size for this group. Pregnant females were excluded from the tabulations of weight; body mass index (BMI); skinfold thickness; waist, limb, and buttocks circumference; and wrist breadth.

## Anthropometry Examination Component

The *NHANES III Body Measurements (Anthropometry)* manual (3) and the “NHANES III Anthropometric Procedures” video (6) describe the anthropometry protocol, equipment, and quality control methods. Brief descriptions of the anthropometric measurements are given below. Weight was measured to the nearest 0.1 kg. Height, length, breadth, and circumference were measured to the nearest 1.0 mm. All skinfold thickness measurements were to the nearest 0.1 mm.

## NHANES III body measurements

- *Weight* was measured by using a digital floor scale.
- *Recumbent length* for infants and young children was measured with an infantometer.
- *Standing and sitting heights* were measured with a wall-mounted stadiometer; respondents were seated on a wooden box for sitting height measurements.
- *Knee height* was measured with a large sliding caliper.
- *Head circumference* measurements were made by using a plastic head-circumference measurement tape.
- *Upper arm and upper leg lengths* were measured with a steel tape measure. The upper arm length midpoint was marked, and the mid-upper arm circumference was also measured.
- *Triceps, subscapular, suprailiac, and thigh skinfold thicknesses*, which are used to gauge fat tissue distribution, were measured with a skinfold caliper.
- *Waist, thigh, and buttocks circumferences*, which serve as indices of body fat distribution and lower-body fatness (buttocks measurement), were measured with a tape measure.
- *Biacromial and biiliac breadths*, two indices of frame size, were measured with a large sliding caliper.
- *Elbow and wrist breadths*, which are indicators of skeletal mass and frame size, were measured with a small sliding caliper.
- *BMI* was calculated by taking the measured weight (in kilograms) and dividing it by the measured height (in meters squared).

In the MEC, weight, recumbent length, and standing height values were recorded automatically; no manual data keying was required to capture the values. The other body measurement data were input manually by the recorder, using computer-assisted data entry. With the exception of the skinfold

thickness measurements, all anthropometry results were based on a single body measurement examination.

## Skinfold thickness measurements

Two or more skinfold thickness measurements were made at each of four anatomic sites. Independent measurements were taken at each site by two technicians. If the difference between the first two measurements was within a prespecified tolerance limit, no further measurements were taken at that site. The first measurement represented the base measurement, and the tolerance limits increased by 2 mm for every 10 mm of measured thickness, as follows. If the base was greater than zero and less than or equal to 10 mm, the tolerance was 2 mm; if the base was greater than 10 mm and less than or equal to 20 mm, the tolerance was 4 mm; if the base was greater than 20 mm and less than or equal to 30 mm, the tolerance was 6 mm; if the base was greater than 30 mm and less than or equal to 40 mm, the tolerance was 8 mm; and if the base was greater than 40 mm, the tolerance was 10 mm.

If the difference between the two measurements at a given site exceeded the tolerance limit, each technician repeated and recorded a second measurement, for a total of four measurements at that skinfold site. When a third and fourth measurement were taken, the third measurement represented the base.

A summary skinfold value was computed for each site, as follows. If data were available for third and fourth measurements and the difference between those measurements was within the specified tolerance limit, then the summary value was the mean of the third and fourth measurements. In all other cases, the summary value was the mean of all available skinfold measurements at that site. A single skinfold thickness value was reported for each anatomic site in the final analytic data set, and this value was used to produce the skinfold thickness tabulations for this report.

## Statistical Analysis

Population means, standard errors of the means, and percentiles were weighted by using either the final MEC sample weights or the combined final MEC+home examination sample weights, to produce national estimates. The combined MEC+home examination sample weights were used for tabulations of weight, height, recumbent length, mid-upper arm circumference, triceps skinfold, and head circumference. The sample weights incorporate the differential probabilities of selection and include adjustments for oversampling of selected populations, noncoverage, and nonresponse. Standard errors were estimated by Taylor series linearization in SUDAAN because the survey had a complex sample design (7). During the tabulation of variance estimates, a smoothing process was applied by using an average design effect model, as described by Kovar and Johnson (8).

The reliability of the estimates was evaluated on the basis of relative standard error (RSE)—calculated as the standard error divided by the estimate and multiplied by 100—and on a minimum sample size criterion. An estimate with an RSE greater than 30% was considered unreliable (4). The recommended minimum sample sizes were based on a combination of the average design effects and specified proportions (or percentiles) (4). The average design effects reflect the impact of the complex sample design on variance estimates and were calculated as the ratio of the variance of a statistic accounting for the complex sample design to the variance of the same statistic based on a hypothetical simple random sample of the same size. Average design effects were calculated for each anthropometry variable by sex for children and adolescents and by sex and race and ethnicity for adults aged 20 years and older. The minimum sample sizes for a specified design effect and percentile were obtained from published tables (4).

## Results

Tables 1–64, which are described in Table A, give the number of examined persons, mean, standard error of the mean, and selected percentiles by sex and age in the United States in 1988–1994 for selected anthropometric measurements. Percentile estimates that did not meet the standards for either RSE or minimum sample size are replaced with asterisks. The age categories used for adults aged 20 years and older were based on the survey sample domains recommended in the NHANES III analytic guidelines (4). The results for participants younger than 20 years are given by single years of age or, in the case of infants younger than 1 year, by single months of age. Results for children are reported by sex and age, and results for adults aged 20 years and older are reported by sex, race or ethnic group, and age. Results from previous surveys for most anthropometric measurements have been reported for National Health Examination Surveys (NHES) and NHANES that were conducted from 1960 to 1984 (9–30).

## References

1. Simko MD, Cowell C, Gilbride JA. Nutrition assessment: A comprehensive guide for planning intervention. 2nd ed. Gaithersburg, MD: Aspen Publishers. 1995.
2. National Center for Health Statistics. National Health and Nutrition Examination Survey: Data sets and related documentation. Available from: <http://www.cdc.gov/nchs/about/major/nhanes/data/link.htm>. Accessed June 2008.
3. National Center for Health Statistics. Third National Health and Nutrition Examination Survey (NHANES III, 1988–94): Reference manuals. Available from: <http://www.cdc.gov/nchs/about/major/nhanes/nh3rrm.htm#refman>. Accessed June 2008.
4. National Center for Health Statistics. Third National Health and Nutrition Examination Survey (NHANES III, 1988–94): Analytic and reporting guidelines. Appendix B. Joint policy on variance estimation and statistical reporting standards on NHANES III and CSFII reports: HNIS/NCHS Analytic Working Group recommendations (1993). 1996. Available from: <http://www.cdc.gov/nchs/data/nhanes/nhanes3/nh3gui.pdf>.
5. National Center for Health Statistics. NHANES III data files, documentation, and SAS code. Series 11, data file 1A. Interview and exam components. 1997. Available from: <http://www.cdc.gov/nchs/about/major/nhanes/nh3data.htm#NHANES%20III%20Series%2011,%20No.%201a>.
6. National Center for Health Statistics. Third National Health and Nutrition Examination Survey: NHANES III anthropometric procedures [video]. Available upon request from National Center for Health Statistics, Hyattsville, MD and from: [http://www.cdc.gov/nchs/products/elec\\_prods/subject/video.htm](http://www.cdc.gov/nchs/products/elec_prods/subject/video.htm).
7. Wolter KM. Introduction to variance estimation. New York, NY: Springer-Verlag. 1990.
8. Kovar MG, Johnson C. Design effects from the Mexican American portion of the Hispanic Health and Nutrition Examination Survey: A strategy for analysts. In: Proceedings of the Survey Research Methods Section, American Statistical Association (ASA). Washington, DC: ASA, 396–9. 1986.
9. Stoudt HW, Damon A, McFarland R. Weight, height, and selected body dimensions of adults: United States, 1960–1962. Vital Health Stat 11(8). 1965. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_008.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_008.pdf).
10. Roberts J. Weight by height and age of adults: United States, 1960–1962. Vital Health Stat 11(14). 1966. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_014acc.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_014acc.pdf).
11. Stoudt HW, Damon A, McFarland R, Roberts J. Skinfolds, body girths, biacromial diameter, and selected anthropometric indices of adults: United States, 1960–1962. Vital Health Stat 11(35). 1970. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_035acc.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_035acc.pdf).

**Table A. List of detailed anthropometry data tables provided in this report, based on data from the Third National Health and Nutrition Examination Survey (NHANES III), 1988–1994**

Table number	Measurement	Sex and age group
1	Weight (lb)	Males and females aged 3 months to 19 years
2	Weight (lb)	Males aged 20 years and older
3	Weight (lb)	Females aged 20 years and older
4	Weight (kg)	Males and females aged 3 months to 19 years
5	Weight (kg)	Males aged 20 years and older
6	Weight (kg)	Females aged 20 years and older
7	Body mass index <sup>1</sup>	Males and females aged 2 to 19 years
8	Body mass index <sup>1</sup>	Males aged 20 years and older
9	Body mass index <sup>1</sup>	Females aged 20 years and older
10	Height (in)	Males and females aged 2 to 19 years
11	Height (in)	Males aged 20 years and older
12	Height (in)	Females aged 20 years and older
13	Height (cm)	Males and females aged 2 to 19 years
14	Height (cm)	Males aged 20 years and older
15	Height (cm)	Females aged 20 years and older
16	Recumbent length (cm)	Males and females aged 3 months to 3 years
17	Sitting height (cm)	Males and females aged 2 to 19 years
18	Sitting height (cm)	Males aged 20 years and older
19	Sitting height (cm)	Females aged 20 years and older
20	Upper arm length (cm)	Males and females aged 3 months to 19 years
21	Upper arm length (cm)	Males aged 20 years and older
22	Upper arm length (cm)	Females aged 20 years and older
23	Upper leg length (cm)	Males and females aged 2 to 19 years
24	Upper leg length (cm)	Males aged 20 years and older
25	Upper leg length (cm)	Females aged 20 years and older
26	Knee height (cm)	Males aged 60 years and older
27	Knee height (cm)	Females aged 60 years and older
28	Triceps skinfold thickness (mm)	Males and females aged 3 months to 19 years
29	Triceps skinfold thickness (mm)	Males aged 20 years and older
30	Triceps skinfold thickness (mm)	Females aged 20 years and older
31	Subscapular skinfold thickness (mm)	Males and females aged 3 months to 19 years
32	Subscapular skinfold thickness (mm)	Males aged 20 years and older
33	Subscapular skinfold thickness (mm)	Females aged 20 years and older
34	Suprailiac skinfold thickness (mm)	Males and females aged 2 to 19 years
35	Suprailiac skinfold thickness (mm)	Males aged 20 years and older
36	Suprailiac skinfold thickness (mm)	Females aged 20 years and older
37	Thigh skinfold thickness (mm)	Males and females aged 2 to 19 years
38	Thigh skinfold thickness (mm)	Males aged 20 years and older
39	Thigh skinfold thickness (mm)	Females aged 20 years and older
40	Head circumference (cm)	Males and females aged 3 months to 7 years
41	Mid-upper arm circumference (cm)	Males and females aged 3 months to 19 years
42	Mid-upper arm circumference (cm)	Males aged 20 years and older
43	Mid-upper arm circumference (cm)	Females aged 20 years and older
44	Thigh circumference (cm)	Males and females aged 2 to 19 years
45	Thigh circumference (cm)	Males aged 20 years and older
46	Thigh circumference (cm)	Females aged 20 years and older
47	Waist circumference (cm)	Males and females aged 2 to 19 years
48	Waist circumference (cm)	Males aged 20 years and older
49	Waist circumference (cm)	Females aged 20 years and older
50	Wrist breadth (cm)	Males and females aged 2 to 19 years
51	Wrist breadth (cm)	Males aged 20 years and older
52	Wrist breadth (cm)	Females aged 20 years and older
53	Biacromial breadth (cm)	Males and females aged 3 to 19 years
54	Biacromial breadth (cm)	Males aged 20 years and older
55	Biacromial breadth (cm)	Females aged 20 years and older
56	Biiliac breadth (cm)	Males and females aged 2 to 19 years
57	Biiliac breadth (cm)	Males aged 20 years and older
58	Biiliac breadth (cm)	Females aged 20 years and older
59	Buttocks circumference (cm)	Males and females aged 2 to 19 years
60	Buttocks circumference (cm)	Males aged 20 years and older
61	Buttocks circumference (cm)	Females aged 20 years and older
62	Elbow breadth (cm)	Males and females aged 2 to 19 years
63	Elbow breadth (cm)	Males aged 20 years and older
64	Elbow breadth (cm)	Females aged 20 years and older

<sup>1</sup>Weight in kilograms divided by height in meters squared.

12. Hamill PVV, Johnston FE, Grams W. Height and weight of children: United States. *Vital Health Stat* 11(104). 1970. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_104acc.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_104acc.pdf).
13. Hamill PVV, Johnston FE, Lemeshow S. Height and weight of children: Socioeconomic status United States. *Vital Health Stat* 11(119). 1972. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_119acc.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_119acc.pdf).
14. Johnston FE, Hamill PVV, Lemeshow S. Skinfold thickness of children 6–11 years: United States. *Vital Health Stat* 11(120). 1972. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_120acc.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_120acc.pdf).
15. Malina RM, Hamill PVV, Lemeshow S. Selected body measurements of children 6–11 years: United States. *Vital Health Stat* 11(123). 1973. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_123acc.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_123acc.pdf).
16. Hamill PVV, Johnston FE, Lemeshow S. Height and weight of youths 12–17 years: United States. *Vital Health Stat* 11(124). 1973. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_124.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_124.pdf).
17. Hamill PVV, Johnston FE, Lemeshow S. Body weight, stature, and sitting height: White and Negro youths 12–17 years: United States. *Vital Health Stat* 11(126). 1973. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_126.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_126.pdf).
18. Johnston FE, Hamill PVV, Lemeshow S. Skinfold thickness of youths 12–17 years: United States. *Vital Health Stat* 11(132). 1974. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_132.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_132.pdf).
19. Malina RM, Hamill PVV, Lemeshow S. Body dimensions and proportions, white and Negro children 6–11 years: United States. *Vital Health Stat* 11(143). 1974. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_143acc.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_143acc.pdf).
20. Hamill PVV, Drizd TA, Johnson CL, Reed RB, Roche AF. NCHS growth curves for children, birth–18 years: United States. *Vital Health Stat* 11(165). 1977. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_165.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_165.pdf).
21. Abraham S, Johnson CL, Najjar MF. Weight by height and age for adults 18–74 years: United States, 1971–74. *Vital Health Stat* 11(208). 1979. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_208.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_208.pdf).
22. Abraham S, Johnson CL, Najjar MF. Weight and height of adults 18–74 years of age: United States, 1971–74. *Vital Health Stat* 11(211). 1979. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_211.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_211.pdf).
23. 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. *Vital Health Stat* 11(219). 1981. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_219.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_219.pdf).
24. Fulwood R, Abraham S, Johnson C. Height and weight of adults ages 18–74 years by socioeconomic and geographic variables: United States. *Vital Health Stat* 11(224). 1981. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_224.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_224.pdf).
25. Abraham S, Carroll MD, Najjar MF, Fulwood R. Obese and overweight adults in the United States. *Vital Health Stat* 11(230). 1983. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_230acc.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_230acc.pdf).
26. Najjar MF, Rowland M. Anthropometric reference data and prevalence of overweight: United States, 1976–80. *Vital Health Stat* 11(238). 1987. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_238.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_238.pdf).
27. Najjar MF, Kuczarski RJ. Anthropometric data and prevalence of overweight for Hispanics: 1982–84. *Vital Health Stat* 11(239). 1989. Available from: [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_239.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_239.pdf).
28. Ogden CL, Carroll MD, Flegal KM. Epidemiologic trends in overweight and obesity. *Endocrinol Metab Clin North Am* 32(4):741–60, vii. 2003.
29. Ogden CL, Troiano RP, Briefel RR, Kuczarski RJ, Flegal KM, Johnson CL. Prevalence of overweight among preschool children in the United States, 1971 through 1994. *Pediatrics* 99(4):e1. 1997.
30. Kuczarski RJ, Flegal KM, Campbell SM, Johnson CL. Increasing prevalence of overweight among US adults. The National Health and Nutrition Examination Surveys, 1960 to 1991. *JAMA* 272(3):205–11. 1994.

**Table 1. Weight in pounds for persons aged 3 months to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
3–5 months . . . . .	290	16.1	0.21	*	13.9	14.3	14.7	16.1	17.3	18.0	18.8	*
6–8 months . . . . .	320	19.3	0.24	*	16.3	16.8	17.5	19.1	20.8	22.0	22.8	*
9–11 months . . . . .	277	21.1	0.23	*	18.2	18.6	19.4	21.1	22.6	23.3	24.0	*
1 year . . . . .	663	25.4	0.23	20.5	21.2	21.9	23.2	25.3	27.2	28.3	29.7	31.2
2 years . . . . .	645	29.9	0.24	24.9	25.9	26.6	27.5	29.7	31.8	33.1	34.7	35.9
3 years . . . . .	516	34.7	0.45	28.2	29.2	30.1	31.7	34.0	37.3	38.5	39.5	41.1
4 years . . . . .	549	38.8	0.41	31.6	33.1	33.9	35.2	38.2	41.5	43.3	45.2	48.0
5 years . . . . .	497	44.1	0.55	34.8	36.2	37.8	39.5	43.8	47.6	50.1	52.0	56.3
6 years . . . . .	283	51.1	1.25	*	40.3	41.4	43.3	48.2	54.5	59.4	65.3	*
7 years . . . . .	269	57.8	1.24	*	46.3	47.2	49.8	56.0	65.5	68.5	69.6	*
8 years . . . . .	266	66.5	1.82	*	51.0	52.7	55.1	61.4	72.9	81.7	93.0	*
9 years . . . . .	281	75.7	1.92	*	57.6	59.6	61.8	70.4	88.1	97.1	99.7	*
10 years . . . . .	297	82.1	1.92	*	61.3	62.7	69.6	79.5	91.1	107.0	109.0	*
11 years . . . . .	281	93.5	2.60	*	70.2	73.5	77.1	87.3	102.2	118.5	123.6	*
12 years . . . . .	203	108.0	3.15	*	*	83.4	90.1	105.7	123.1	132.2	*	*
13 years . . . . .	187	118.9	3.79	*	*	90.5	98.2	115.2	134.4	145.7	*	*
14 years . . . . .	188	141.0	6.00	*	*	110.9	118.7	133.4	147.1	163.4	*	*
15 years . . . . .	187	147.2	4.47	*	*	114.3	121.1	139.8	170.4	184.0	*	*
16 years . . . . .	194	151.2	4.90	*	*	120.2	128.9	145.0	163.1	172.6	*	*
17 years . . . . .	196	160.3	3.85	*	*	132.1	137.7	153.9	173.7	186.5	*	*
18 years . . . . .	176	156.9	4.59	*	*	126.7	132.3	148.6	170.2	192.1	*	*
19 years . . . . .	168	160.6	4.00	*	*	133.2	139.8	157.1	169.0	191.1	*	*
Female												
3–5 months . . . . .	308	14.8	0.20	*	12.4	12.9	13.3	14.6	16.2	16.9	17.4	*
6–8 months . . . . .	264	17.9	0.28	*	*	15.8	16.4	17.4	19.0	19.9	*	*
9–11 months . . . . .	315	19.8	0.21	*	17.1	17.5	18.0	19.6	21.2	22.2	22.9	*
1 year . . . . .	647	23.9	0.21	19.6	20.1	20.8	21.7	23.4	25.9	27.3	28.2	29.4
2 years . . . . .	624	29.0	0.27	23.7	24.5	25.0	26.3	28.7	31.2	32.7	33.9	35.8
3 years . . . . .	587	33.9	0.35	27.3	28.7	29.5	30.8	33.3	36.1	38.1	39.1	41.9
4 years . . . . .	537	39.3	0.59	*	31.9	33.1	34.8	38.1	41.8	44.1	45.4	*
5 years . . . . .	554	44.3	0.59	*	35.2	36.4	38.6	43.3	47.7	51.8	54.1	*
6 years . . . . .	272	49.7	1.22	*	*	40.7	42.4	46.2	53.4	60.4	*	*
7 years . . . . .	274	58.1	1.51	*	*	45.1	47.3	52.7	67.1	71.5	*	*
8 years . . . . .	248	65.7	1.77	*	*	51.5	53.8	62.7	72.8	77.8	*	*
9 years . . . . .	280	75.6	2.27	*	54.8	57.6	61.6	69.5	82.0	97.7	104.2	*
10 years . . . . .	258	83.4	2.31	*	*	64.1	66.9	79.1	96.0	108.1	*	*
11 years . . . . .	275	97.1	2.37	*	*	73.1	79.9	95.0	110.1	120.2	*	*
12 years . . . . .	236	107.8	2.86	*	*	80.0	91.0	102.5	123.3	132.8	*	*
13 years . . . . .	220	122.8	3.36	*	*	93.5	100.3	117.9	141.9	153.8	*	*
14 years . . . . .	218	128.6	3.20	*	*	104.2	110.3	118.9	148.1	155.4	*	*
15 years . . . . .	191	127.8	2.75	*	*	104.9	112.1	121.9	139.0	154.6	*	*
16 years . . . . .	208	134.9	3.93	*	*	111.6	115.6	123.8	145.9	157.1	*	*
17 years . . . . .	201	137.3	3.40	*	*	112.2	117.0	134.0	149.0	164.1	*	*
18 years . . . . .	175	134.7	4.13	*	*	*	112.3	127.7	149.5	*	*	*
19 years . . . . .	177	138.9	4.31	*	*	*	117.7	133.5	145.0	*	*	*

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

NOTE: Pregnant women are excluded.

**Table 2. Weight in pounds for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,942	180.7	0.83	131.3	140.1	145.5	155.9	175.9	199.2	214.3	226.1	243.8
20–29 years . . . . .	1,630	172.1	1.37	126.9	134.0	138.7	147.5	164.9	187.6	205.2	217.7	236.8
30–39 years . . . . .	1,481	182.5	1.49	136.1	142.1	148.1	158.2	175.9	200.9	217.4	226.4	247.9
40–49 years . . . . .	1,226	187.3	1.67	135.4	145.1	150.9	163.6	180.7	206.5	223.3	232.5	256.4
50–59 years . . . . .	855	189.2	1.76	139.6	150.1	158.4	166.7	184.7	206.8	221.6	231.5	251.3
60–69 years . . . . .	1,175	182.8	1.44	134.5	141.9	148.8	160.1	181.1	203.3	216.4	224.4	236.2
70–79 years . . . . .	875	173.6	1.57	128.7	136.3	141.2	151.4	171.3	191.2	205.7	211.4	227.1
80 years and older . . . . .	700	157.8	1.63	114.3	123.5	128.5	140.1	155.8	173.1	185.2	193.4	204.7
Non-Hispanic white												
20 years and older . . . . .	3,287	183.1	0.97	135.1	142.9	149.1	159.1	178.0	201.9	216.5	227.2	245.6
20–29 years . . . . .	393	173.7	1.99	130.6	137.3	142.8	149.6	166.2	188.5	206.2	219.5	234.6
30–39 years . . . . .	454	185.6	1.96	138.7	145.3	152.2	162.1	179.6	204.5	220.4	226.6	250.9
40–49 years . . . . .	428	189.5	2.04	139.9	148.6	155.0	166.2	181.9	206.8	224.6	233.1	259.4
50–59 years . . . . .	418	191.5	1.80	145.3	155.1	161.7	169.5	187.3	209.5	224.6	232.9	252.8
60–69 years . . . . .	510	185.4	1.56	137.6	143.7	151.9	163.6	183.9	205.3	217.4	225.7	236.7
70–79 years . . . . .	524	175.1	1.45	132.0	139.0	144.1	153.6	172.5	192.6	206.0	211.6	227.3
80 years and older . . . . .	560	159.0	1.31	114.6	124.6	131.7	141.2	157.1	173.8	185.7	193.5	205.3
Non-Hispanic black												
20 years and older . . . . .	2,113	181.5	1.09	129.3	136.7	143.0	153.0	176.0	201.1	217.7	231.1	255.1
20–29 years . . . . .	488	181.6	2.14	130.1	136.2	140.7	151.9	173.9	197.5	219.6	238.6	269.1
30–39 years . . . . .	497	182.4	2.00	131.7	141.1	146.4	153.1	176.6	199.4	215.7	230.0	261.6
40–49 years . . . . .	370	185.4	2.11	131.7	139.9	145.6	156.3	179.1	207.7	222.2	234.7	254.1
50–59 years . . . . .	217	186.0	3.09	128.9	135.2	144.8	158.4	182.3	207.8	223.6	232.4	265.9
60–69 years . . . . .	295	176.9	2.25	124.2	133.6	141.3	152.6	172.0	199.1	216.4	226.1	241.1
70–79 years . . . . .	187	169.9	2.63	*	130.1	132.1	144.0	167.7	190.6	202.1	213.1	*
80 years and older . . . . .	59	155.4	4.48	*	*	*	133.1	157.9	173.4	*	*	*
Mexican American												
20 years and older . . . . .	2,256	170.5	1.01	125.8	134.4	139.9	148.1	166.4	188.1	202.6	212.2	228.3
20–29 years . . . . .	674	162.3	1.46	123.4	129.1	134.9	141.7	157.5	175.9	191.6	201.0	220.1
30–39 years . . . . .	474	173.0	1.83	126.8	136.7	143.1	153.0	169.3	189.9	204.1	210.2	234.5
40–49 years . . . . .	381	181.4	2.13	139.5	144.4	149.9	160.2	175.1	202.5	214.3	223.5	240.8
50–59 years . . . . .	178	182.2	3.08	*	144.6	150.2	158.5	179.2	199.4	213.4	221.2	*
60–69 years . . . . .	337	172.3	1.91	134.8	139.2	142.2	150.2	170.1	191.6	202.2	213.1	223.5
70–79 years . . . . .	149	160.7	2.89	*	126.9	131.9	139.9	164.5	178.7	186.8	193.6	*
80 years and older . . . . .	63	145.7	3.56	*	*	*	129.6	146.8	154.5	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 3. Weight in pounds for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,764	152.3	0.81	105.5	112.0	117.1	125.5	144.4	171.3	190.5	202.7	225.6
20–29 years . . . . .	1,665	141.7	1.25	102.9	108.0	111.2	118.3	133.2	157.3	175.2	188.9	216.5
30–39 years . . . . .	1,775	154.2	1.46	106.2	112.5	117.4	125.4	144.0	172.7	195.7	211.9	232.9
40–49 years . . . . .	1,368	157.4	1.58	109.2	116.9	122.6	130.0	150.6	175.6	193.8	209.4	230.3
50–59 years . . . . .	1,006	163.7	1.85	114.0	120.2	125.7	135.1	157.2	185.8	201.6	213.3	239.9
60–69 years . . . . .	1,172	155.9	1.57	109.0	115.6	121.9	130.3	151.4	174.7	191.1	202.2	220.7
70–79 years . . . . .	988	148.2	1.66	100.5	110.5	116.3	125.0	142.4	166.8	180.6	189.5	213.8
80 years and older . . . . .	790	133.2	1.50	92.0	100.0	105.4	114.1	131.4	149.4	159.1	168.7	186.3
Non-Hispanic white												
20 years and older . . . . .	3,758	150.7	0.91	105.6	112.1	117.0	125.0	143.0	169.3	187.5	200.2	221.2
20–29 years . . . . .	452	140.1	1.92	102.9	108.7	111.2	118.1	130.4	153.0	171.1	185.6	218.8
30–39 years . . . . .	579	151.4	2.06	105.4	112.1	116.6	123.6	141.6	170.0	192.6	207.5	227.7
40–49 years . . . . .	477	155.1	2.10	109.7	117.2	122.8	129.2	147.7	172.1	191.6	202.7	227.1
50–59 years . . . . .	484	163.5	2.17	115.0	120.6	125.8	135.2	157.1	185.4	200.2	211.2	239.8
60–69 years . . . . .	501	155.4	1.91	110.0	115.9	122.1	130.9	151.5	172.7	190.9	201.2	219.5
70–79 years . . . . .	644	147.0	1.64	100.8	111.1	116.3	124.4	141.6	164.5	178.1	187.3	206.2
80 years and older . . . . .	621	132.9	1.39	92.1	100.1	105.5	114.2	131.3	149.1	158.9	167.1	185.9
Non-Hispanic black												
20 years and older . . . . .	2,495	168.2	1.07	110.7	118.9	125.6	137.4	161.1	191.1	211.8	226.8	250.8
20–29 years . . . . .	563	155.6	1.83	106.7	112.1	118.1	128.0	146.9	177.4	193.1	208.1	224.0
30–39 years . . . . .	626	169.0	2.03	114.8	120.7	127.0	136.6	159.9	192.1	215.1	230.7	251.7
40–49 years . . . . .	456	180.2	2.53	116.5	124.0	134.4	146.4	171.7	204.7	227.5	245.7	276.4
50–59 years . . . . .	275	177.6	2.94	112.6	123.8	137.4	148.1	174.4	203.7	220.2	236.0	250.2
60–69 years . . . . .	300	173.4	2.84	114.0	125.6	135.2	145.0	168.1	193.3	209.1	219.9	253.1
70–79 years . . . . .	182	166.0	3.45	*	124.1	127.5	138.1	159.7	185.2	205.4	228.6	*
80 years and older . . . . .	93	138.7	3.65	*	*	111.0	117.0	136.1	151.0	176.5	*	*
Mexican American												
20 years and older . . . . .	2,135	151.6	1.12	105.6	112.9	118.3	127.1	145.4	171.2	185.9	196.6	217.1
20–29 years . . . . .	575	142.5	1.68	101.4	105.7	110.5	119.0	136.9	157.3	177.6	188.3	205.7
30–39 years . . . . .	493	154.6	2.05	107.1	114.6	120.1	129.9	145.7	174.2	191.2	208.0	229.6
40–49 years . . . . .	367	163.0	2.13	117.1	125.4	130.9	139.7	157.8	180.0	194.0	204.6	225.9
50–59 years . . . . .	193	156.0	2.64	*	121.5	123.2	134.8	153.8	175.7	182.7	192.2	*
60–69 years . . . . .	321	154.4	2.19	114.5	118.6	125.1	133.2	148.3	171.1	181.1	193.4	214.2
70–79 years . . . . .	127	140.2	3.04	*	*	113.7	121.7	135.5	153.2	163.8	*	*
80 years and older . . . . .	59	118.4	3.83	*	*	*	96.7	116.0	135.2	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

NOTE: Pregnant women are excluded.

**Table 4. Weight in kilograms for persons aged 3 months to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
3–5 months . . . . .	290	7.4	0.10	*	6.3	6.5	6.7	7.3	7.9	8.2	8.6	*
6–8 months . . . . .	320	8.8	0.11	*	7.4	7.7	8.0	8.7	9.5	10.0	10.4	*
9–11 months . . . . .	277	9.6	0.11	*	8.3	8.5	8.8	9.6	10.3	10.6	10.9	*
1 year . . . . .	663	11.6	0.10	9.3	9.7	10.0	10.6	11.5	12.4	12.9	13.5	14.2
2 years . . . . .	645	13.6	0.11	11.3	11.8	12.1	12.5	13.5	14.5	15.1	15.8	16.3
3 years . . . . .	516	15.8	0.20	12.8	13.3	13.7	14.4	15.5	17.0	17.5	18.0	18.7
4 years . . . . .	549	17.7	0.18	14.4	15.1	15.4	16.0	17.4	18.9	19.7	20.6	21.8
5 years . . . . .	497	20.1	0.25	15.8	16.5	17.2	18.0	19.9	21.7	22.8	23.7	25.6
6 years . . . . .	283	23.3	0.57	*	18.3	18.8	19.7	21.9	24.8	27.0	29.7	*
7 years . . . . .	269	26.3	0.56	*	21.1	21.5	22.7	25.5	29.8	31.2	31.6	*
8 years . . . . .	266	30.2	0.83	*	23.2	24.0	25.1	27.9	33.2	37.2	42.3	*
9 years . . . . .	281	34.4	0.87	*	26.2	27.1	28.1	32.0	40.1	44.2	45.3	*
10 years . . . . .	297	37.3	0.87	*	27.9	28.5	31.7	36.1	41.4	48.7	49.6	*
11 years . . . . .	281	42.5	1.18	*	31.9	33.4	35.0	39.7	46.5	53.8	56.2	*
12 years . . . . .	203	49.1	1.43	*	*	37.9	41.0	48.1	56.0	60.1	*	*
13 years . . . . .	187	54.0	1.72	*	*	41.2	44.7	52.4	61.1	66.2	*	*
14 years . . . . .	188	64.1	2.73	*	*	50.4	54.0	60.7	66.8	74.3	*	*
15 years . . . . .	187	66.9	2.03	*	*	52.0	55.0	63.6	77.4	83.6	*	*
16 years . . . . .	194	68.8	2.23	*	*	54.7	58.6	65.9	74.2	78.4	*	*
17 years . . . . .	196	72.9	1.75	*	*	60.0	62.6	70.1	79.0	84.8	*	*
18 years . . . . .	176	71.3	2.09	*	*	57.6	60.2	67.6	77.3	87.3	*	*
19 years . . . . .	168	73.0	1.82	*	*	60.6	63.6	71.4	76.9	86.9	*	*
Female												
3–5 months . . . . .	308	6.8	0.09	*	5.7	5.9	6.1	6.7	7.4	7.7	7.9	*
6–8 months . . . . .	264	8.2	0.13	*	*	7.2	7.5	7.9	8.7	9.1	*	*
9–11 months . . . . .	315	9.0	0.10	*	7.8	8.0	8.2	8.9	9.7	10.1	10.4	*
1 year . . . . .	647	10.9	0.09	8.9	9.2	9.5	9.9	10.7	11.8	12.4	12.8	13.4
2 years . . . . .	624	13.2	0.12	10.8	11.2	11.4	12.0	13.1	14.2	14.9	15.4	16.3
3 years . . . . .	587	15.4	0.16	12.4	13.1	13.4	14.0	15.2	16.4	17.3	17.8	19.1
4 years . . . . .	537	17.9	0.27	*	14.5	15.1	15.8	17.3	19.0	20.1	20.7	*
5 years . . . . .	554	20.2	0.27	*	16.0	16.6	17.6	19.7	21.7	23.6	24.6	*
6 years . . . . .	272	22.6	0.55	*	*	18.5	19.3	21.0	24.3	27.5	*	*
7 years . . . . .	274	26.4	0.69	*	*	20.5	21.5	24.0	30.5	32.6	*	*
8 years . . . . .	248	29.9	0.80	*	*	23.4	24.5	28.5	33.1	35.4	*	*
9 years . . . . .	280	34.4	1.03	*	24.9	26.2	28.0	31.6	37.3	44.4	47.4	*
10 years . . . . .	258	37.9	1.05	*	*	29.1	30.4	36.0	43.6	49.2	*	*
11 years . . . . .	275	44.2	1.08	*	*	33.2	36.3	43.2	50.1	54.7	*	*
12 years . . . . .	236	49.0	1.30	*	*	36.3	41.4	46.6	56.1	60.4	*	*
13 years . . . . .	220	55.8	1.53	*	*	42.6	45.6	53.6	64.6	70.0	*	*
14 years . . . . .	218	58.5	1.45	*	*	47.4	50.2	54.1	67.3	70.6	*	*
15 years . . . . .	191	58.1	1.25	*	*	47.7	50.9	55.4	63.1	70.3	*	*
16 years . . . . .	208	61.3	1.79	*	*	50.7	52.5	56.3	66.3	71.6	*	*
17 years . . . . .	201	62.4	1.55	*	*	51.0	53.2	61.0	67.8	74.6	*	*
18 years . . . . .	175	61.2	1.88	*	*	*	51.1	58.1	68.0	*	*	*
19 years . . . . .	177	63.2	1.96	*	*	*	53.5	60.7	66.0	*	*	*

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

NOTE: Pregnant women are excluded.



**Table 5. Weight in kilograms for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,942	82.1	0.38	59.7	63.7	66.1	70.9	80.0	90.6	97.5	102.8	110.8
20–29 years . . . . .	1,630	78.3	0.62	57.7	60.9	63.1	67.1	75.0	85.3	93.2	99.1	107.7
30–39 years . . . . .	1,481	83.0	0.68	61.8	64.6	67.4	72.0	79.9	91.3	98.8	102.9	112.7
40–49 years . . . . .	1,226	85.1	0.76	61.5	66.0	68.6	74.4	82.2	93.9	101.6	105.7	116.6
50–59 years . . . . .	855	86.0	0.80	63.4	68.2	72.0	75.7	84.1	94.0	100.7	105.3	114.3
60–69 years . . . . .	1,175	83.1	0.65	61.1	64.5	67.7	72.8	82.4	92.5	98.4	102.0	107.3
70–79 years . . . . .	875	79.0	0.71	58.5	62.0	64.2	68.8	77.9	87.0	93.5	96.1	103.3
80 years and older . . . . .	700	71.8	0.74	52.0	56.2	58.4	63.6	70.8	78.7	84.1	88.0	93.1
Non-Hispanic white												
20 years and older . . . . .	3,287	83.2	0.44	61.4	65.0	67.8	72.3	81.0	91.8	98.4	103.3	111.7
20–29 years . . . . .	393	79.0	0.90	59.4	62.4	65.0	68.0	75.6	85.6	93.7	99.7	106.7
30–39 years . . . . .	454	84.4	0.89	63.0	66.0	69.2	73.7	81.6	93.0	100.2	103.1	114.1
40–49 years . . . . .	428	86.2	0.93	63.6	67.5	70.5	75.6	82.7	94.1	102.0	106.0	117.8
50–59 years . . . . .	418	87.1	0.82	66.0	70.5	73.6	77.0	85.1	95.3	102.1	105.9	114.9
60–69 years . . . . .	510	84.3	0.71	62.6	65.3	69.0	74.4	83.6	93.3	98.8	102.6	107.6
70–79 years . . . . .	524	79.6	0.66	60.1	63.2	65.5	69.8	78.5	87.6	93.6	96.2	103.3
80 years and older . . . . .	560	72.3	0.59	52.1	56.6	59.8	64.1	71.5	79.0	84.5	88.0	93.3
Non-Hispanic black												
20 years and older . . . . .	2,113	82.5	0.49	58.8	62.2	65.1	69.6	80.0	91.4	99.1	105.0	115.9
20–29 years . . . . .	488	82.6	0.97	59.2	61.9	64.0	69.1	79.1	89.7	99.8	108.5	122.3
30–39 years . . . . .	497	82.9	0.91	59.9	64.2	66.6	69.6	80.3	90.6	98.1	104.5	119.0
40–49 years . . . . .	370	84.3	0.96	59.8	63.6	66.2	71.0	81.4	94.4	101.1	106.7	115.5
50–59 years . . . . .	217	84.6	1.41	58.6	61.4	65.8	72.1	82.9	94.5	101.6	105.6	121.0
60–69 years . . . . .	295	80.4	1.02	56.5	60.7	64.3	69.4	78.3	90.5	98.3	102.8	109.5
70–79 years . . . . .	187	77.2	1.19	*	59.2	60.0	65.5	76.2	86.6	91.9	96.8	*
80 years and older . . . . .	59	70.7	2.04	*	*	*	60.5	71.8	78.8	*	*	*
Mexican American												
20 years and older . . . . .	2,256	77.5	0.46	57.2	61.1	63.6	67.3	75.6	85.5	92.1	96.5	103.8
20–29 years . . . . .	674	73.8	0.66	56.1	58.7	61.3	64.5	71.6	80.0	87.1	91.4	100.0
30–39 years . . . . .	474	78.7	0.83	57.7	62.1	65.0	69.6	77.0	86.3	92.8	95.6	106.6
40–49 years . . . . .	381	82.5	0.97	63.3	65.6	68.1	72.8	79.6	92.0	97.4	101.5	109.5
50–59 years . . . . .	178	82.8	1.40	*	65.8	68.2	72.0	81.5	90.6	97.1	100.6	*
60–69 years . . . . .	337	78.3	0.87	61.3	63.3	64.6	68.3	77.3	87.1	92.0	96.9	101.6
70–79 years . . . . .	149	73.1	1.31	*	57.7	59.9	63.6	74.7	81.2	84.9	88.0	*
80 years and older . . . . .	63	66.3	1.62	*	*	*	58.9	66.8	70.2	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 6. Weight in kilograms for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,764	69.2	0.37	47.9	50.9	53.2	57.1	65.6	77.9	86.6	92.1	102.5
20–29 years . . . . .	1,665	64.5	0.57	46.8	49.1	50.6	53.8	60.6	71.5	79.6	85.9	98.5
30–39 years . . . . .	1,775	70.1	0.66	48.3	51.2	53.3	57.0	65.5	78.6	89.0	96.3	105.9
40–49 years . . . . .	1,368	71.6	0.72	49.7	53.1	55.8	59.1	68.5	79.9	88.2	95.2	104.7
50–59 years . . . . .	1,006	74.4	0.84	51.8	54.7	57.2	61.4	71.5	84.5	91.6	97.0	109.1
60–69 years . . . . .	1,172	70.9	0.71	49.6	52.6	55.4	59.3	68.8	79.5	86.9	92.0	100.4
70–79 years . . . . .	988	67.4	0.75	45.7	50.3	52.9	56.8	64.7	75.9	82.1	86.1	97.1
80 years and older . . . . .	790	60.5	0.68	41.8	45.4	47.9	51.9	59.7	67.9	72.3	76.6	84.7
Non-Hispanic white												
20 years and older . . . . .	3,758	68.5	0.41	48.1	50.9	53.2	56.8	65.0	77.0	85.3	91.1	100.6
20–29 years . . . . .	452	63.7	0.87	46.8	49.4	50.6	53.7	59.3	69.5	77.8	84.4	99.5
30–39 years . . . . .	579	68.9	0.94	47.9	50.9	53.0	56.2	64.3	77.2	87.6	94.4	103.6
40–49 years . . . . .	477	70.5	0.96	49.9	53.3	55.8	58.7	67.1	78.3	87.2	92.1	103.3
50–59 years . . . . .	484	74.3	0.99	52.3	54.8	57.2	61.5	71.4	84.3	91.1	96.1	109.0
60–69 years . . . . .	501	70.7	0.87	50.0	52.7	55.5	59.5	68.9	78.6	86.8	91.5	99.8
70–79 years . . . . .	644	66.8	0.74	45.8	50.5	52.9	56.6	64.4	74.8	81.1	85.2	93.7
80 years and older . . . . .	621	60.4	0.63	41.8	45.5	47.9	51.9	59.7	67.8	72.2	76.1	84.6
Non-Hispanic black												
20 years and older . . . . .	2,495	76.5	0.49	50.3	54.1	57.1	62.5	73.2	86.9	96.3	103.2	114.0
20–29 years . . . . .	563	70.8	0.83	48.6	51.0	53.7	58.2	66.8	80.7	87.8	94.5	101.9
30–39 years . . . . .	626	76.8	0.92	52.2	54.9	57.8	62.2	72.7	87.3	97.8	104.9	114.3
40–49 years . . . . .	456	81.9	1.15	53.0	56.4	61.1	66.5	78.1	93.1	103.5	111.6	125.7
50–59 years . . . . .	275	80.8	1.34	51.2	56.3	62.5	67.4	79.3	92.6	100.1	107.4	113.7
60–69 years . . . . .	300	78.8	1.29	51.9	57.1	61.5	66.0	76.4	87.9	95.1	100.1	115.1
70–79 years . . . . .	182	75.5	1.57	*	56.4	58.0	62.8	72.6	84.2	93.3	103.9	*
80 years and older . . . . .	93	63.1	1.66	*	*	50.4	53.2	61.8	68.6	80.2	*	*
Mexican American												
20 years and older . . . . .	2,135	68.9	0.51	48.1	51.3	53.8	57.8	66.1	77.8	84.5	89.4	98.7
20–29 years . . . . .	575	64.8	0.76	46.1	48.1	50.2	54.1	62.2	71.5	80.7	85.5	93.6
30–39 years . . . . .	493	70.3	0.93	48.7	52.1	54.6	59.0	66.2	79.2	87.0	94.5	104.4
40–49 years . . . . .	367	74.1	0.97	53.2	57.0	59.5	63.5	71.8	81.8	88.1	93.0	102.7
50–59 years . . . . .	193	70.9	1.20	*	55.2	56.1	61.3	70.0	80.0	83.1	87.3	*
60–69 years . . . . .	321	70.2	0.99	52.1	53.9	56.8	60.6	67.5	77.8	82.3	87.9	97.5
70–79 years . . . . .	127	63.7	1.38	*	*	51.7	55.3	61.6	69.6	74.5	*	*
80 years and older . . . . .	59	53.8	1.74	*	*	*	44.0	52.7	61.4	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

NOTE: Pregnant women are excluded.

**Table 7. Body mass index for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years . . . . .	588	16.5	0.09	14.7	15.0	15.3	15.6	16.3	17.2	17.7	18.1	18.6
3 years . . . . .	512	16.1	0.16	14.1	14.4	14.7	15.1	15.9	16.7	17.2	17.7	18.5
4 years . . . . .	547	15.9	0.10	13.9	14.4	14.6	15.0	15.8	16.5	17.1	17.3	18.0
5 years . . . . .	495	15.9	0.13	13.7	14.3	14.5	14.8	15.5	16.4	17.1	17.3	18.5
6 years . . . . .	282	16.3	0.26	*	14.1	14.3	14.8	15.7	16.4	17.8	19.9	*
7 years . . . . .	269	16.5	0.24	*	14.4	14.7	15.1	15.8	17.3	18.5	19.0	*
8 years . . . . .	266	17.3	0.34	*	14.5	14.9	15.3	16.3	18.6	19.9	22.1	*
9 years . . . . .	279	18.0	0.33	*	15.0	15.2	15.7	17.0	19.8	21.5	22.9	*
10 years . . . . .	297	18.4	0.30	*	15.2	15.5	16.0	17.7	20.2	22.0	22.8	*
11 years . . . . .	280	19.4	0.40	*	15.7	16.0	16.4	18.3	21.0	23.3	24.8	*
12 years . . . . .	203	20.1	0.44	*	*	16.7	17.9	19.0	21.8	23.0	*	*
13 years . . . . .	187	20.5	0.49	*	*	16.9	18.0	19.5	22.5	24.8	*	*
14 years . . . . .	188	22.3	0.84	*	*	17.7	18.8	20.8	23.6	24.6	*	*
15 years . . . . .	187	22.3	0.56	*	*	18.7	19.5	20.9	24.3	25.4	*	*
16 years . . . . .	194	22.3	0.56	*	*	19.0	19.4	21.2	23.4	26.3	*	*
17 years . . . . .	196	23.4	0.53	*	*	19.8	25.0	21.8	25.2	28.5	*	*
18 years . . . . .	176	22.6	0.56	*	*	19.2	19.4	21.8	24.6	26.8	*	*
19 years . . . . .	168	23.7	0.53	*	*	20.4	20.8	22.7	25.1	27.2	*	*
Female												
2 years . . . . .	562	16.4	0.13	14.4	14.9	15.1	15.6	16.2	17.2	17.7	17.9	18.7
3 years . . . . .	582	15.9	0.14	13.7	14.2	14.5	14.9	15.8	16.6	17.2	17.6	18.4
4 years . . . . .	533	16.0	0.21	*	14.1	14.4	14.8	15.7	16.6	17.2	18.2	*
5 years . . . . .	554	15.9	0.17	*	13.9	14.1	14.6	15.4	16.8	17.6	18.9	*
6 years . . . . .	272	16.1	0.32	*	*	14.1	14.7	15.3	16.7	18.1	*	*
7 years . . . . .	274	16.9	0.35	*	*	14.3	14.7	15.8	18.5	20.0	*	*
8 years . . . . .	247	17.3	0.42	*	*	14.7	15.2	16.6	18.4	20.2	*	*
9 years . . . . .	280	18.2	0.47	*	14.5	14.8	15.6	16.6	19.6	21.8	24.2	*
10 years . . . . .	258	18.4	0.46	*	*	14.9	15.5	17.3	20.1	22.3	*	*
11 years . . . . .	275	19.4	0.45	*	*	15.8	16.5	18.5	21.5	23.7	*	*
12 years . . . . .	236	20.2	0.57	*	*	16.0	16.9	19.4	22.0	24.2	*	*
13 years . . . . .	220	21.8	0.63	*	*	17.3	18.5	20.5	23.8	27.5	*	*
14 years . . . . .	218	22.4	0.59	*	*	18.4	19.4	21.1	24.5	26.2	*	*
15 years . . . . .	191	21.9	0.53	*	*	18.4	19.1	21.0	23.3	26.2	*	*
16 years . . . . .	208	23.0	0.72	*	*	19.7	20.1	21.2	24.8	26.9	*	*
17 years . . . . .	201	23.3	0.66	*	*	19.3	20.2	22.2	25.2	27.2	*	*
18 years . . . . .	175	22.9	0.74	*	*	*	19.3	21.8	24.5	*	*	*
19 years . . . . .	177	23.7	0.89	*	*	*	19.9	22.4	25.3	*	*	*

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

NOTES: Pregnant women are excluded. Body mass index is weight in kilograms divided by height in meters squared.

**Table 8. Body mass index for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,941	26.6	0.11	20.3	21.3	22.1	23.4	25.9	29.0	30.9	32.4	35.1
20–29 years . . . . .	1,630	25.2	0.17	19.4	20.3	20.9	22.0	24.3	27.4	29.3	30.8	33.6
30–39 years . . . . .	1,481	26.5	0.18	20.5	21.6	22.2	23.5	25.8	28.4	30.6	32.1	35.5
40–49 years . . . . .	1,226	27.3	0.22	21.2	22.2	22.7	24.1	26.4	29.6	32.0	33.4	36.2
50–59 years . . . . .	855	27.8	0.23	21.4	22.6	23.5	24.7	27.2	30.7	32.1	33.5	35.8
60–69 years . . . . .	1,175	27.3	0.18	20.6	21.9	23.1	24.4	27.1	30.0	31.7	32.8	34.2
70–79 years . . . . .	875	26.7	0.21	20.4	21.5	22.3	23.8	26.1	29.3	30.7	31.7	34.9
80 years and older . . . . .	699	25.0	0.22	18.5	19.8	21.1	22.4	25.0	27.1	28.7	29.5	31.7
Non-Hispanic white												
20 years and older . . . . .	3,286	26.7	0.15	20.4	21.5	22.3	23.6	25.9	29.0	30.9	32.4	35.1
20–29 years . . . . .	393	25.0	0.27	19.4	20.4	20.9	21.9	24.2	27.0	29.1	30.6	33.6
30–39 years . . . . .	454	26.6	0.25	20.7	21.6	22.5	23.6	26.0	28.4	30.6	32.1	35.1
40–49 years . . . . .	428	27.4	0.28	21.5	22.4	22.7	24.2	26.4	29.5	32.0	33.3	36.5
50–59 years . . . . .	418	27.9	0.25	21.6	22.6	23.6	24.7	27.1	30.8	32.3	33.7	36.7
60–69 years . . . . .	510	27.5	0.21	20.7	21.9	23.3	24.7	27.3	30.0	31.7	32.7	33.9
70–79 years . . . . .	524	26.8	0.20	20.6	21.7	22.6	24.0	26.2	29.3	30.7	32.0	35.0
80 years and older . . . . .	559	25.0	0.18	18.6	19.9	21.1	22.7	25.1	27.1	28.7	29.5	31.7
Non-Hispanic black												
20 years and older . . . . .	2,113	26.5	0.16	19.5	20.6	21.5	22.9	25.8	29.1	31.2	33.1	36.2
20–29 years . . . . .	488	26.2	0.28	19.7	20.6	21.3	22.4	25.0	28.8	30.9	33.0	37.0
30–39 years . . . . .	497	26.4	0.27	19.4	20.5	21.5	22.7	25.4	28.8	31.2	33.3	36.7
40–49 years . . . . .	370	26.9	0.27	19.7	21.0	22.0	23.7	26.4	29.7	31.5	33.4	35.3
50–59 years . . . . .	217	27.4	0.42	19.3	20.6	21.8	23.9	27.1	29.7	31.5	33.5	38.3
60–69 years . . . . .	295	26.7	0.31	18.5	20.4	22.0	23.2	26.4	30.0	31.8	33.1	35.2
70–79 years . . . . .	187	25.9	0.38	*	20.0	20.9	22.4	25.4	28.8	31.1	31.5	*
80 years and older . . . . .	59	24.9	0.78	*	*	*	21.5	24.7	27.7	*	*	*
Mexican American												
20 years and older . . . . .	2,256	26.8	0.15	20.5	21.7	22.4	23.8	26.4	29.3	31.1	32.7	34.8
20–29 years . . . . .	674	25.5	0.20	20.1	20.8	21.6	22.6	24.9	27.7	29.6	30.5	33.1
30–39 years . . . . .	474	27.0	0.25	20.6	21.8	22.8	24.3	26.7	28.9	30.6	32.1	35.3
40–49 years . . . . .	381	28.5	0.28	22.6	23.9	24.3	25.3	27.8	31.5	33.3	34.2	36.3
50–59 years . . . . .	178	28.8	0.41	*	23.6	24.1	25.7	28.5	31.1	33.5	34.1	*
60–69 years . . . . .	337	27.6	0.27	21.7	22.7	23.3	24.7	27.4	30.1	32.2	32.9	34.1
70–79 years . . . . .	149	26.5	0.40	*	20.9	22.9	23.8	26.6	29.4	30.3	31.9	*
80 years and older . . . . .	63	25.0	0.51	*	*	*	23.9	25.2	26.5	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

NOTE: Body mass index is weight in kilograms divided by height in meters squared.

**Table 9. Body mass index for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,758	26.5	0.14	18.8	19.8	20.5	21.8	25.0	29.9	32.8	35.3	38.8
20–29 years . . . . .	1,665	24.3	0.20	18.4	19.0	19.5	20.5	22.8	26.3	29.8	32.0	35.8
30–39 years . . . . .	1,775	26.3	0.24	18.7	19.4	20.0	21.3	24.3	30.2	33.3	35.9	39.6
40–49 years . . . . .	1,367	27.0	0.27	19.2	20.4	21.0	22.4	25.5	30.2	33.2	36.0	39.9
50–59 years . . . . .	1,006	28.4	0.31	19.9	21.0	22.2	23.6	27.2	32.1	35.1	37.1	40.6
60–69 years . . . . .	1,172	27.6	0.27	19.7	20.9	21.8	23.5	26.6	30.8	33.6	35.7	38.6
70–79 years . . . . .	985	26.9	0.28	19.5	20.7	21.4	22.6	25.9	29.9	32.1	34.5	38.8
80 years and older . . . . .	788	25.2	0.26	17.7	19.3	20.3	21.7	25.0	28.4	30.0	31.4	33.6
Non-Hispanic white												
20 years and older . . . . .	3,757	26.0	0.18	18.8	19.6	20.4	21.6	24.6	29.4	32.1	34.6	38.1
20–29 years . . . . .	452	23.8	0.30	18.4	19.0	19.4	20.2	22.2	25.6	28.3	31.5	35.5
30–39 years . . . . .	579	25.5	0.33	18.5	19.2	19.6	20.6	23.5	28.7	32.0	34.9	38.7
40–49 years . . . . .	477	26.4	0.36	19.2	20.4	21.0	22.1	24.8	29.3	32.4	34.4	39.4
50–59 years . . . . .	484	28.2	0.36	19.9	21.0	22.0	23.3	26.9	31.8	35.0	37.0	40.6
60–69 years . . . . .	501	27.3	0.32	19.5	20.7	21.7	23.4	26.4	30.4	33.3	35.5	38.3
70–79 years . . . . .	643	26.7	0.28	19.5	20.9	21.4	22.6	25.8	29.7	31.7	33.4	37.3
80 years and older . . . . .	621	25.1	0.24	17.7	19.2	20.3	21.7	24.9	28.2	29.9	31.0	33.5
Non-Hispanic black												
20 years and older . . . . .	2,493	28.8	0.20	19.3	20.6	21.7	23.5	27.6	32.7	35.8	38.4	42.3
20–29 years . . . . .	563	26.3	0.30	18.7	19.5	20.6	22.0	24.9	29.5	32.9	35.3	38.3
30–39 years . . . . .	626	28.7	0.34	19.6	20.5	21.5	23.2	27.3	32.8	36.1	38.2	42.5
40–49 years . . . . .	456	30.4	0.42	20.4	21.5	22.7	25.0	28.9	34.7	38.6	40.8	46.2
50–59 years . . . . .	275	30.5	0.50	19.9	21.7	23.0	25.6	29.9	34.6	38.3	40.0	42.4
60–69 years . . . . .	300	30.3	0.49	20.4	22.1	24.0	25.5	29.5	33.7	36.4	38.6	43.9
70–79 years . . . . .	181	29.4	0.59	*	21.9	22.9	25.0	28.3	32.9	36.0	39.2	*
80 years and older . . . . .	92	25.9	0.66	*	*	20.4	22.1	25.2	29.1	31.3	*	*
Mexican American												
20 years and older . . . . .	2,132	28.1	0.22	19.7	20.8	22.0	23.7	27.3	31.3	34.1	36.3	39.5
20–29 years . . . . .	575	26.1	0.30	18.7	19.7	20.5	22.0	25.2	29.2	31.5	33.0	36.7
30–39 years . . . . .	493	28.5	0.36	20.1	20.9	22.2	23.8	27.3	32.1	35.0	37.1	40.8
40–49 years . . . . .	366	29.9	0.41	22.1	23.3	24.1	25.3	29.3	33.2	35.7	37.4	42.3
50–59 years . . . . .	193	29.2	0.49	*	22.6	23.6	25.2	29.1	32.6	34.1	35.7	*
60–69 years . . . . .	321	29.5	0.42	21.7	22.5	23.6	25.2	28.7	32.3	35.9	37.8	41.4
70–79 years . . . . .	126	27.4	0.60	*	*	21.9	23.3	26.8	29.9	33.6	*	*
80 years and older . . . . .	58	25.1	0.72	*	*	*	21.3	25.0	28.3	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

NOTES: Pregnant women are excluded. Body mass index is weight in kilograms divided by height in meters squared.

**Table 10. Height in inches for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years . . . . .	589	35.8	0.11	33.3	33.9	34.4	34.8	35.8	36.9	37.5	37.8	38.6
3 years . . . . .	513	38.9	0.13	36.2	36.6	36.9	37.5	39.1	40.2	40.6	41.1	41.6
4 years . . . . .	551	41.4	0.13	38.6	39.3	39.6	40.4	41.4	42.5	43.3	43.8	44.6
5 years . . . . .	497	44.2	0.15	41.0	41.9	42.3	42.8	44.2	45.4	46.4	47.0	47.8
6 years . . . . .	283	46.8	0.26	*	43.9	44.1	45.1	46.8	48.5	49.3	50.0	*
7 years . . . . .	270	49.6	0.27	*	46.5	47.3	47.8	49.6	51.6	52.6	53.1	*
8 years . . . . .	269	51.7	0.24	*	48.7	49.3	49.8	51.7	53.3	54.0	55.0	*
9 years . . . . .	280	54.2	0.26	*	51.0	51.6	52.4	54.1	55.9	57.5	57.9	*
10 years . . . . .	297	55.9	0.33	*	52.9	53.3	54.4	56.3	57.6	58.7	59.9	*
11 years . . . . .	285	58.0	0.30	*	54.6	55.1	56.5	58.0	59.6	60.9	62.0	*
12 years . . . . .	207	61.2	0.35	*	*	58.2	59.1	60.8	63.9	65.1	*	*
13 years . . . . .	190	63.6	0.42	*	*	60.1	61.1	63.7	66.3	67.3	*	*
14 years . . . . .	191	66.5	0.36	*	*	64.0	64.8	66.6	68.5	69.4	*	*
15 years . . . . .	188	68.0	0.39	*	*	64.8	66.0	67.8	70.8	71.7	*	*
16 years . . . . .	197	68.9	0.36	*	*	65.9	67.1	69.0	70.7	72.5	*	*
17 years . . . . .	196	69.5	0.41	*	*	66.3	68.0	69.5	71.8	73.5	*	*
18 years . . . . .	176	69.8	0.39	*	*	66.3	68.0	69.3	71.8	73.3	*	*
19 years . . . . .	169	69.1	0.27	*	*	67.0	67.6	69.1	70.5	71.4	*	*
Female												
2 years . . . . .	564	35.3	0.13	32.6	33.1	33.6	34.2	35.1	36.6	37.2	37.7	38.2
3 years . . . . .	590	38.7	0.13	35.9	36.5	36.9	37.4	38.7	39.9	40.6	41.0	41.7
4 years . . . . .	535	41.4	0.14	*	38.7	39.3	40.2	41.3	42.7	43.4	43.9	*
5 years . . . . .	557	44.2	0.16	*	41.4	41.9	42.5	44.1	45.4	46.4	47.1	*
6 years . . . . .	274	46.4	0.24	*	*	43.9	45.1	46.5	48.1	48.9	*	*
7 years . . . . .	275	49.0	0.26	*	*	46.7	47.4	48.6	50.4	51.5	*	*
8 years . . . . .	247	51.6	0.28	*	*	49.3	50.2	51.7	53.3	54.1	*	*
9 years . . . . .	282	53.8	0.27	*	50.6	50.9	52.2	53.7	55.0	56.1	56.6	*
10 years . . . . .	262	56.2	0.29	*	*	53.3	54.1	56.1	58.2	59.3	*	*
11 years . . . . .	275	59.1	0.30	*	*	56.4	56.8	59.5	61.0	61.8	*	*
12 years . . . . .	239	61.2	0.35	*	*	58.1	59.3	61.2	63.4	64.6	*	*
13 years . . . . .	225	63.0	0.33	*	*	59.8	61.1	62.9	64.8	66.0	*	*
14 years . . . . .	226	63.5	0.33	*	*	60.9	61.5	63.6	65.6	66.5	*	*
15 years . . . . .	201	64.1	0.27	*	*	62.1	62.7	64.1	65.7	66.5	*	*
16 years . . . . .	221	64.2	0.29	*	*	62.0	62.6	64.1	65.5	66.4	*	*
17 years . . . . .	217	64.3	0.31	*	*	61.3	62.6	64.3	65.8	67.3	*	*
18 years . . . . .	193	64.2	0.35	*	*	61.0	62.2	64.4	66.0	67.0	*	*
19 years . . . . .	194	64.5	0.32	*	*	61.4	62.4	64.8	66.4	66.9	*	*

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

**Table 11. Height in inches for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,943	69.1	0.06	64.4	65.5	66.1	67.2	69.1	71.0	72.1	73.0	74.0
20–29 years . . . . .	1,631	69.3	0.11	64.4	65.6	66.4	67.4	69.2	71.5	72.6	73.1	74.0
30–39 years . . . . .	1,481	69.5	0.11	64.9	66.0	66.6	67.6	69.5	71.5	72.6	73.6	74.4
40–49 years . . . . .	1,226	69.4	0.12	64.7	65.6	66.3	67.5	69.4	71.4	72.2	73.0	74.1
50–59 years . . . . .	855	69.2	0.13	64.7	65.7	66.4	67.4	69.3	71.0	71.9	72.5	73.5
60–69 years . . . . .	1,176	68.5	0.12	63.9	65.1	65.9	66.8	68.6	70.5	71.5	72.0	72.9
70–79 years . . . . .	875	67.7	0.13	63.5	64.3	64.8	65.8	67.7	69.5	70.5	71.1	72.2
80 years and older . . . . .	699	66.7	0.16	62.0	63.1	63.9	64.8	66.7	68.6	69.6	70.4	71.1
Non-Hispanic white												
20 years and older . . . . .	3,286	69.5	0.07	65.1	66.1	66.6	67.6	69.4	71.4	72.3	73.1	74.1
20–29 years . . . . .	393	69.9	0.13	65.8	66.6	67.3	68.0	69.8	71.7	72.9	73.3	74.1
30–39 years . . . . .	454	70.0	0.13	66.0	66.7	67.2	68.1	69.8	71.7	73.1	73.9	74.5
40–49 years . . . . .	428	69.8	0.13	65.4	66.3	67.0	68.1	69.6	71.6	72.4	73.1	74.1
50–59 years . . . . .	418	69.6	0.12	65.6	66.4	67.0	67.8	69.6	71.1	72.1	72.6	73.8
60–69 years . . . . .	510	68.9	0.11	65.0	65.9	66.3	67.1	68.9	70.6	71.5	72.2	73.1
70–79 years . . . . .	524	67.8	0.12	63.7	64.4	64.9	65.9	67.8	69.6	70.6	71.1	72.2
80 years and older . . . . .	559	66.9	0.12	62.4	63.3	64.1	65.0	66.8	68.6	69.8	70.5	71.1
Non-Hispanic black												
20 years and older . . . . .	2,113	69.3	0.08	64.8	65.8	66.4	67.5	69.4	71.2	72.3	73.1	74.1
20–29 years . . . . .	488	69.7	0.14	65.2	66.1	66.8	67.8	69.5	71.6	72.8	73.6	74.4
30–39 years . . . . .	497	69.8	0.12	65.3	66.4	67.1	68.1	69.6	71.4	72.4	73.3	74.4
40–49 years . . . . .	370	69.6	0.16	65.0	65.8	66.4	67.6	69.5	71.6	72.9	73.5	74.2
50–59 years . . . . .	217	69.0	0.19	64.8	66.1	66.3	67.2	69.1	70.7	72.0	72.4	73.0
60–69 years . . . . .	295	68.3	0.17	63.8	64.9	65.4	66.4	68.2	70.2	71.0	72.0	72.7
70–79 years . . . . .	187	67.9	0.21	*	64.5	64.8	66.0	68.0	70.1	70.7	71.5	*
80 years and older . . . . .	59	66.5	0.48	*	*	*	65.1	67.1	68.6	*	*	*
Mexican American												
20 years and older . . . . .	2,258	66.8	0.07	62.6	63.5	64.2	65.1	66.7	68.5	69.5	70.2	71.3
20–29 years . . . . .	675	66.8	0.12	62.8	63.6	64.3	65.1	66.9	68.5	69.5	70.1	71.1
30–39 years . . . . .	474	67.2	0.15	62.8	63.7	64.3	65.6	67.1	68.9	70.0	70.6	71.9
40–49 years . . . . .	381	66.8	0.15	63.1	63.7	64.4	65.1	66.6	68.4	69.5	70.2	71.6
50–59 years . . . . .	178	66.6	0.21	*	63.7	64.1	65.0	66.7	68.1	69.0	69.8	*
60–69 years . . . . .	338	66.3	0.15	62.1	63.2	63.8	64.6	66.3	68.1	69.0	69.4	70.1
70–79 years . . . . .	149	65.2	0.22	*	62.4	63.0	63.9	65.0	66.6	67.9	68.2	*
80 years and older . . . . .	63	64.0	0.36	*	*	*	62.1	64.2	65.3	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 12. Height in inches for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	9,067	63.7	0.06	59.2	60.3	60.9	61.9	63.7	65.5	66.6	67.2	68.1
20–29 years . . . . .	1,867	64.1	0.10	59.7	60.8	61.3	62.2	64.0	66.0	67.0	67.6	68.6
30–39 years . . . . .	1,863	64.3	0.10	59.9	60.9	61.6	62.5	64.4	66.2	67.1	67.8	68.9
40–49 years . . . . .	1,371	64.1	0.11	59.8	60.9	61.6	62.4	64.0	65.8	66.8	67.2	68.1
50–59 years . . . . .	1,009	63.7	0.13	59.6	60.6	61.2	62.0	63.8	65.4	66.3	67.1	67.8
60–69 years . . . . .	1,177	63.1	0.12	59.1	60.0	60.7	61.4	63.1	64.9	65.6	66.3	67.5
70–79 years . . . . .	988	62.2	0.14	58.0	59.0	59.9	60.6	62.2	64.0	64.9	65.4	66.1
80 years and older . . . . .	792	61.0	0.15	56.6	57.6	58.3	59.4	61.1	62.8	63.7	64.4	65.2
Non-Hispanic white												
20 years and older . . . . .	3,831	63.9	0.07	59.6	60.6	61.3	62.1	63.9	65.6	66.7	67.4	68.3
20–29 years . . . . .	499	64.4	0.16	60.1	61.2	61.7	62.7	64.3	66.2	67.3	67.8	69.0
30–39 years . . . . .	600	64.7	0.14	60.6	61.6	62.1	63.0	64.7	66.5	67.4	68.1	69.1
40–49 years . . . . .	478	64.4	0.14	60.6	61.6	62.0	62.9	64.3	66.0	67.0	67.3	68.2
50–59 years . . . . .	485	63.9	0.14	60.2	61.1	61.6	62.2	64.0	65.6	66.5	67.1	67.9
60–69 years . . . . .	501	63.3	0.14	59.3	60.3	60.9	61.7	63.2	65.0	65.6	66.4	67.5
70–79 years . . . . .	644	62.3	0.14	58.0	59.1	60.0	60.7	62.3	64.1	64.9	65.4	66.1
80 years and older . . . . .	624	61.0	0.14	56.7	57.9	58.5	59.4	61.1	62.8	63.7	64.4	65.3
Non-Hispanic black												
20 years and older . . . . .	2,585	64.2	0.06	60.0	61.0	61.6	62.4	64.2	65.9	66.7	67.5	68.3
20–29 years . . . . .	624	64.5	0.11	60.4	61.4	61.9	62.8	64.5	66.1	66.9	67.6	68.4
30–39 years . . . . .	654	64.4	0.12	60.2	61.2	61.7	62.4	64.5	66.1	67.2	68.0	68.9
40–49 years . . . . .	457	64.6	0.13	60.7	61.6	62.0	62.9	64.5	66.3	67.0	67.7	68.6
50–59 years . . . . .	275	64.1	0.16	60.2	61.1	61.7	62.5	64.1	65.7	66.7	67.1	67.7
60–69 years . . . . .	301	63.5	0.17	59.2	60.4	60.9	61.8	63.4	65.1	66.0	66.8	67.8
70–79 years . . . . .	182	62.9	0.20	*	59.8	60.4	61.3	63.1	64.6	65.5	66.0	*
80 years and older . . . . .	92	61.5	0.30	*	*	59.1	60.1	61.6	63.1	64.1	*	*
Mexican American												
20 years and older . . . . .	2,267	61.7	0.07	57.8	58.7	59.3	60.1	61.7	63.2	64.1	64.7	65.9
20–29 years . . . . .	663	62.0	0.12	58.2	59.0	59.5	60.3	62.1	63.4	64.5	65.1	66.1
30–39 years . . . . .	530	61.9	0.14	58.1	58.7	59.4	60.3	61.8	63.4	64.1	64.9	66.4
40–49 years . . . . .	368	62.0	0.15	58.5	59.3	59.8	60.4	61.9	63.5	64.1	65.0	66.0
50–59 years . . . . .	195	61.3	0.20	*	58.6	59.1	59.8	61.2	62.8	63.9	64.1	*
60–69 years . . . . .	325	60.7	0.16	57.0	57.8	58.4	59.1	60.7	62.2	63.1	63.5	64.3
70–79 years . . . . .	127	60.1	0.30	*	*	57.9	58.6	60.2	61.9	62.5	*	*
80 years and older . . . . .	59	57.6	0.41	*	*	*	56.3	57.3	59.3	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.



**Table 13. Height in centimeters for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years . . . . .	589	90.9	0.27	84.5	86.0	87.3	88.3	90.9	93.5	95.2	95.9	97.9
3 years . . . . .	513	98.8	0.32	91.9	92.8	93.8	95.3	99.4	102.1	103.1	104.3	105.6
4 years . . . . .	551	105.2	0.33	98.0	99.9	100.6	102.5	105.1	108.0	110.1	111.3	113.3
5 years . . . . .	497	112.3	0.38	104.2	106.4	107.4	108.9	112.3	115.3	117.9	119.3	121.4
6 years . . . . .	283	118.9	0.65	*	111.4	112.0	114.6	118.9	123.2	125.4	126.9	*
7 years . . . . .	270	125.9	0.68	*	118.1	120.1	121.3	126.0	131.1	133.5	134.8	*
8 years . . . . .	269	131.3	0.60	*	123.8	125.2	126.5	131.3	135.4	137.1	139.6	*
9 years . . . . .	280	137.7	0.65	*	129.6	131.0	133.2	137.5	142.0	146.1	147.2	*
10 years . . . . .	297	142.0	0.83	*	134.3	135.5	138.2	143.1	146.4	149.2	152.1	*
11 years . . . . .	285	147.4	0.76	*	138.7	140.0	143.6	147.1	151.5	154.9	157.5	*
12 years . . . . .	207	155.5	0.89	*	*	147.8	150.0	154.5	162.3	165.5	*	*
13 years . . . . .	190	161.6	1.06	*	*	152.7	155.0	161.8	168.3	170.9	*	*
14 years . . . . .	191	169.0	0.91	*	*	162.6	164.6	168.9	174.3	176.3	*	*
15 years . . . . .	188	172.8	0.99	*	*	164.6	167.6	172.3	179.9	182.2	*	*
16 years . . . . .	197	175.0	0.92	*	*	167.3	170.5	175.4	179.6	184.1	*	*
17 years . . . . .	196	176.5	1.03	*	*	168.3	172.6	176.8	182.5	187.0	*	*
18 years . . . . .	176	177.3	0.99	*	*	168.4	172.4	176.0	182.3	186.1	*	*
19 years . . . . .	169	175.5	0.69	*	*	170.1	171.6	175.4	179.0	181.2	*	*
Female												
2 years . . . . .	564	89.7	0.33	82.6	84.0	85.1	86.9	89.2	92.7	94.3	95.3	96.9
3 years . . . . .	590	98.2	0.33	91.3	92.8	93.8	95.0	98.2	101.4	103.2	104.1	106.0
4 years . . . . .	535	105.1	0.36	*	98.3	100.2	102.2	105.0	108.5	110.4	111.5	*
5 years . . . . .	557	112.2	0.41	*	105.2	106.3	108.0	112.0	115.5	117.8	119.5	*
6 years . . . . .	274	117.9	0.61	*	*	111.5	114.5	118.2	122.1	124.1	*	*
7 years . . . . .	275	124.3	0.67	*	*	118.6	120.5	123.4	128.0	130.8	*	*
8 years . . . . .	247	131.1	0.70	*	*	125.3	127.4	131.1	135.5	137.5	*	*
9 years . . . . .	282	136.6	0.70	*	128.6	129.4	132.6	136.5	139.9	142.7	143.6	*
10 years . . . . .	262	142.7	0.74	*	*	135.4	137.2	142.5	147.8	150.6	*	*
11 years . . . . .	275	150.2	0.75	*	*	143.1	144.3	151.1	155.1	157.1	*	*
12 years . . . . .	239	155.5	0.88	*	*	147.5	150.6	155.6	161.2	164.2	*	*
13 years . . . . .	225	159.9	0.83	*	*	152.0	155.3	159.5	164.6	167.6	*	*
14 years . . . . .	226	161.2	0.83	*	*	154.5	156.1	161.5	166.4	169.1	*	*
15 years . . . . .	201	162.8	0.70	*	*	157.8	159.3	162.9	166.8	168.7	*	*
16 years . . . . .	221	163.1	0.74	*	*	157.4	159.1	162.7	166.3	168.7	*	*
17 years . . . . .	217	163.4	0.78	*	*	155.8	158.9	163.4	167.1	171.0	*	*
18 years . . . . .	193	163.2	0.88	*	*	155.0	158.0	163.6	167.6	170.1	*	*
19 years . . . . .	194	163.8	0.81	*	*	156.1	158.5	164.7	168.6	169.9	*	*

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

**Table 14. Height in centimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,943	175.6	0.16	163.5	166.4	168.1	170.7	175.5	180.5	183.2	185.3	187.7
20–29 years . . . . .	1,631	176.1	0.27	163.6	166.7	168.6	171.1	175.8	181.6	184.3	185.8	187.7
30–39 years . . . . .	1,481	176.7	0.28	165.1	167.7	169.2	171.9	176.5	181.5	184.7	186.8	189.1
40–49 years . . . . .	1,226	176.3	0.30	164.4	166.7	168.4	171.6	176.3	181.3	183.6	185.5	188.1
50–59 years . . . . .	855	175.7	0.34	164.5	167.1	168.5	171.1	176.0	180.2	182.5	184.0	186.8
60–69 years . . . . .	1,176	174.1	0.30	162.1	165.2	167.3	169.6	174.3	179.0	181.4	183.0	185.1
70–79 years . . . . .	875	171.9	0.33	161.3	163.4	164.6	167.1	171.9	176.4	179.1	180.4	183.5
80 years and older . . . . .	699	169.4	0.40	157.5	160.1	162.3	164.7	169.6	174.3	176.8	178.6	180.6
Non-Hispanic white												
20 years and older . . . . .	3,286	176.5	0.18	165.2	167.8	169.3	171.8	176.3	181.2	183.7	185.7	188.1
20–29 years . . . . .	393	177.4	0.34	167.1	169.1	170.8	172.7	177.2	182.1	185.1	186.2	188.2
30–39 years . . . . .	454	177.9	0.33	167.6	169.5	170.6	173.1	177.5	182.3	185.6	187.6	189.3
40–49 years . . . . .	428	177.2	0.34	166.0	168.3	169.9	173.1	177.0	181.8	183.9	185.7	188.2
50–59 years . . . . .	418	176.7	0.31	166.7	168.5	170.1	172.3	176.8	180.7	183.2	184.5	187.3
60–69 years . . . . .	510	175.0	0.29	165.0	167.2	168.5	170.6	174.7	179.4	181.6	183.4	185.8
70–79 years . . . . .	524	172.2	0.29	161.8	163.5	164.9	167.4	172.2	176.7	179.2	180.5	183.6
80 years and older . . . . .	559	169.8	0.30	158.3	160.9	162.9	165.1	169.7	174.3	177.2	178.9	180.7
Non-Hispanic black												
20 years and older . . . . .	2,113	176.1	0.20	164.7	167.1	168.7	171.5	176.1	180.8	183.7	185.6	188.2
20–29 years . . . . .	488	177.0	0.35	165.6	167.9	169.7	172.4	176.5	182.0	184.9	187.1	188.9
30–39 years . . . . .	497	177.2	0.32	165.9	168.6	170.7	173.1	177.0	181.2	184.0	186.1	188.9
40–49 years . . . . .	370	176.7	0.40	165.0	167.1	168.5	171.6	176.6	181.8	185.1	186.6	188.6
50–59 years . . . . .	217	175.4	0.48	164.6	167.7	168.5	170.6	175.7	179.6	182.7	183.8	185.2
60–69 years . . . . .	295	173.5	0.42	162.2	164.7	166.0	168.7	173.3	178.3	180.4	182.9	184.7
70–79 years . . . . .	187	172.4	0.54	*	163.8	164.6	167.8	172.7	177.9	179.7	181.5	*
80 years and older . . . . .	59	168.8	1.22	*	*	*	165.2	170.2	174.4	*	*	*
Mexican American												
20 years and older . . . . .	2,258	169.7	0.19	159.2	161.4	163.2	165.4	169.6	174.0	176.6	178.3	181.1
20–29 years . . . . .	675	169.8	0.30	159.3	161.4	163.4	165.5	169.7	174.0	176.6	178.2	180.6
30–39 years . . . . .	474	170.6	0.38	159.7	162.0	163.4	166.6	170.3	174.9	177.7	179.3	182.6
40–49 years . . . . .	381	169.8	0.39	160.3	161.9	163.6	165.5	169.3	173.9	176.6	178.2	181.7
50–59 years . . . . .	178	169.3	0.53	*	161.8	163.0	165.0	169.4	173.0	175.2	177.3	*
60–69 years . . . . .	338	168.4	0.39	158.0	160.7	162.1	164.1	168.4	172.7	175.2	176.2	178.1
70–79 years . . . . .	149	165.7	0.56	*	158.5	159.9	162.4	165.1	169.2	172.6	173.5	*
80 years and older . . . . .	63	162.6	0.90	*	*	*	157.6	163.2	165.9	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 15. Height in centimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	9,067	161.8	0.15	150.4	153.1	154.9	157.2	161.7	166.4	169.1	170.8	173.1
20–29 years . . . . .	1,867	162.7	0.26	151.7	154.5	155.7	158.0	162.6	167.7	170.2	171.7	174.3
30–39 years . . . . .	1,863	163.4	0.26	152.1	154.7	156.3	158.8	163.5	168.2	170.4	172.2	174.9
40–49 years . . . . .	1,371	162.8	0.28	152.0	154.9	156.6	158.6	162.6	167.1	169.6	170.9	172.9
50–59 years . . . . .	1,009	161.8	0.32	151.5	154.0	155.6	157.5	162.1	166.1	168.4	170.3	172.2
60–69 years . . . . .	1,177	160.2	0.30	150.0	152.3	154.1	156.1	160.1	164.7	166.5	168.5	171.2
70–79 years . . . . .	988	158.0	0.34	147.2	149.8	152.1	154.0	158.2	162.6	164.8	166.1	167.9
80 years and older . . . . .	792	154.9	0.39	143.8	146.2	148.2	150.9	155.1	159.4	161.8	163.5	165.7
Non-Hispanic white												
20 years and older . . . . .	3,831	162.3	0.17	151.2	153.9	155.7	157.8	162.3	166.8	169.5	171.1	173.6
20–29 years . . . . .	499	163.6	0.40	152.7	155.5	156.7	159.3	163.2	168.1	170.9	172.3	175.1
30–39 years . . . . .	600	164.5	0.35	153.9	156.3	157.8	160.0	164.5	168.7	171.0	172.7	175.4
40–49 years . . . . .	478	163.5	0.37	153.8	156.3	157.5	159.7	163.3	167.7	170.0	171.0	173.2
50–59 years . . . . .	485	162.4	0.36	152.8	155.2	156.5	158.1	162.6	166.6	168.8	170.7	172.6
60–69 years . . . . .	501	160.7	0.36	150.7	153.2	154.7	156.7	160.6	165.0	166.7	168.7	171.4
70–79 years . . . . .	644	158.1	0.35	147.3	150.1	152.4	154.3	158.4	162.7	164.8	166.1	168.0
80 years and older . . . . .	624	155.0	0.36	143.9	147.0	148.5	151.1	155.1	159.5	161.9	163.5	165.8
Non-Hispanic black												
20 years and older . . . . .	2,585	163.0	0.16	152.5	154.9	156.3	158.4	163.1	167.4	169.6	171.3	173.5
20–29 years . . . . .	624	163.7	0.29	153.4	155.9	157.1	159.6	163.9	167.9	169.9	171.7	173.5
30–39 years . . . . .	654	163.6	0.31	153.0	155.5	156.8	158.6	163.9	168.1	170.9	172.5	175.0
40–49 years . . . . .	457	164.1	0.33	154.3	156.3	157.6	159.7	163.9	168.3	170.2	171.9	174.5
50–59 years . . . . .	275	162.8	0.42	153.0	155.1	156.8	158.6	162.8	167.1	169.5	170.2	172.2
60–69 years . . . . .	301	161.3	0.42	150.5	153.3	154.8	157.0	161.1	165.4	167.7	169.7	172.1
70–79 years . . . . .	182	159.8	0.51	*	152.0	153.4	155.7	160.2	164.2	166.3	167.5	*
80 years and older . . . . .	92	156.1	0.77	*	*	150.1	152.7	156.3	160.3	162.9	*	*
Mexican American												
20 years and older . . . . .	2,267	156.7	0.18	146.9	149.0	150.6	152.6	156.7	160.6	162.7	164.4	167.1
20–29 years . . . . .	663	157.4	0.29	147.9	149.9	151.2	153.2	157.6	161.1	163.7	165.4	167.9
30–39 years . . . . .	530	157.1	0.35	147.4	149.1	150.8	153.1	156.9	161.1	163.0	164.7	168.6
40–49 years . . . . .	368	157.4	0.36	148.7	150.7	151.8	153.5	157.1	161.1	162.9	164.7	167.2
50–59 years . . . . .	195	155.7	0.50	*	148.7	150.2	151.8	155.5	159.6	162.1	162.9	*
60–69 years . . . . .	325	154.2	0.40	144.7	146.8	148.4	150.1	154.3	158.0	160.2	161.4	163.3
70–79 years . . . . .	127	152.6	0.75	*	*	147.0	149.0	153.1	157.1	158.8	*	*
80 years and older . . . . .	59	146.3	1.04	*	*	*	143.2	145.7	150.5	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 16. Recumbent length in centimeters for persons aged 3 months to 3 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
<b>Male</b>												
3–5 months . . . . .	291	64.4	0.29	*	60.4	61.2	62.0	64.2	66.5	67.3	68.0	*
6–8 months . . . . .	321	70.0	0.26	*	66.1	67.1	67.9	69.8	71.7	72.5	73.6	*
9–11 months . . . . .	277	73.8	0.29	*	70.0	70.9	71.8	73.6	75.6	76.6	78.0	*
1 year . . . . .	657	82.2	0.28	74.5	75.6	76.8	78.4	82.1	85.5	87.1	88.1	90.0
2 years . . . . .	616	91.7	0.23	85.0	86.2	87.5	88.8	91.6	94.5	96.1	97.1	99.2
3 years . . . . .	508	100.0	0.27	93.4	94.2	95.1	96.7	100.1	103.0	104.1	105.7	106.9
<b>Female</b>												
3–5 months . . . . .	309	62.4	0.24	*	58.5	59.6	60.9	62.8	64.5	65.5	66.1	*
6–8 months . . . . .	264	68.1	0.23	*	*	65.1	66.3	67.8	69.7	70.6	*	*
9–11 months . . . . .	316	72.0	0.23	*	68.6	69.0	70.0	72.0	73.6	74.6	75.5	*
1 year . . . . .	636	80.7	0.22	73.6	75.0	76.0	77.5	80.6	83.8	86.0	87.0	88.4
2 years . . . . .	598	90.6	0.22	83.8	85.1	85.9	87.7	90.1	93.9	95.6	96.5	97.8
3 years . . . . .	585	99.4	0.23	92.0	93.7	95.2	96.4	99.4	102.5	104.1	105.1	107.0

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

**Table 17. Sitting height in centimeters for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
<b>Male</b>												
2 years . . . . .	581	52.1	0.19	48.5	49.2	49.8	50.8	52.3	53.6	54.4	55.2	55.9
3 years . . . . .	508	54.7	0.20	50.5	51.3	51.9	53.2	54.7	56.2	57.3	57.8	59.1
4 years . . . . .	551	57.4	0.20	53.1	54.2	54.8	55.8	57.4	59.1	60.2	60.6	61.6
5 years . . . . .	497	60.6	0.23	55.7	56.8	57.6	58.7	60.5	62.6	63.3	63.9	65.3
6 years . . . . .	282	63.3	0.37	*	58.6	60.0	61.2	63.0	65.5	66.6	67.9	*
7 years . . . . .	270	66.0	0.38	*	61.6	62.3	63.9	65.6	68.5	70.1	70.7	*
8 years . . . . .	269	68.7	0.36	*	64.3	64.8	66.5	68.6	70.7	72.6	73.6	*
9 years . . . . .	277	71.1	0.36	*	66.9	67.6	68.5	71.1	73.7	74.6	75.5	*
10 years . . . . .	294	73.1	0.38	*	69.1	70.0	70.9	73.1	75.6	76.6	78.1	*
11 years . . . . .	282	75.5	0.38	*	71.1	71.9	73.1	75.7	77.9	79.1	79.8	*
12 years . . . . .	203	79.1	0.51	*	*	74.9	76.0	79.0	82.3	84.2	*	*
13 years . . . . .	186	82.4	0.64	*	*	76.6	79.1	82.4	85.2	87.6	*	*
14 years . . . . .	189	86.9	0.57	*	*	82.5	84.6	86.9	90.3	91.1	*	*
15 years . . . . .	187	88.8	0.55	*	*	84.4	86.2	89.0	91.6	93.4	*	*
16 years . . . . .	194	90.4	0.58	*	*	85.7	86.9	90.4	93.0	95.4	*	*
17 years . . . . .	192	91.7	0.54	*	*	87.5	88.6	91.8	94.7	96.3	*	*
18 years . . . . .	173	91.9	0.50	*	*	88.3	89.1	91.9	94.6	96.5	*	*
19 years . . . . .	165	91.8	0.45	*	*	88.6	89.9	92.0	94.3	94.8	*	*
<b>Female</b>												
2 years . . . . .	548	51.3	0.20	*	48.1	48.8	49.8	51.4	52.8	53.8	54.7	*
3 years . . . . .	584	54.4	0.19	50.5	51.1	51.9	52.5	54.5	56.1	56.9	57.6	58.4
4 years . . . . .	530	57.3	0.22	*	53.9	54.3	55.2	57.3	59.0	60.3	61.2	*
5 years . . . . .	556	60.2	0.24	*	56.1	56.8	58.2	60.0	62.3	63.4	64.3	*
6 years . . . . .	272	62.6	0.33	*	*	59.8	60.6	62.8	64.4	66.0	*	*
7 years . . . . .	275	65.6	0.34	*	*	62.6	63.3	65.4	67.9	69.0	*	*
8 years . . . . .	245	68.3	0.38	*	*	65.3	66.2	68.4	70.1	70.7	*	*
9 years . . . . .	278	70.7	0.39	*	*	67.1	68.2	70.4	72.8	74.4	*	*
10 years . . . . .	261	73.6	0.42	*	*	69.8	70.8	73.7	76.2	78.1	*	*
11 years . . . . .	275	77.4	0.43	*	*	73.1	74.1	77.8	80.6	81.6	*	*
12 years . . . . .	237	80.4	0.51	*	*	75.9	76.9	80.2	83.4	85.3	*	*
13 years . . . . .	219	83.1	0.52	*	*	78.2	79.5	83.2	86.2	87.2	*	*
14 years . . . . .	218	84.3	0.45	*	*	80.6	81.5	84.9	87.2	88.0	*	*
15 years . . . . .	196	85.5	0.47	*	*	82.4	83.3	85.2	87.7	89.3	*	*
16 years . . . . .	217	85.7	0.39	*	*	82.3	83.6	86.0	88.1	89.0	*	*
17 years . . . . .	215	86.0	0.41	*	*	82.7	83.5	85.7	88.6	89.8	*	*
18 years . . . . .	190	85.6	0.52	*	*	81.3	82.4	85.7	88.8	89.4	*	*
19 years . . . . .	192	86.6	0.44	*	*	82.8	84.3	86.5	89.2	90.6	*	*

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

**Table 18. Sitting height in centimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,603	91.9	0.09	85.3	86.8	87.7	89.2	92.1	94.6	96.1	97.0	98.5
20–29 years . . . . .	1,611	92.2	0.15	85.6	87.0	87.8	89.5	92.2	94.9	96.5	97.3	98.5
30–39 years . . . . .	1,463	92.7	0.17	86.3	87.6	88.5	90.0	92.6	95.4	96.8	97.9	99.6
40–49 years . . . . .	1,200	92.5	0.18	86.5	87.3	88.5	90.0	92.8	95.0	96.4	97.3	98.9
50–59 years . . . . .	831	92.2	0.20	86.1	87.5	88.5	89.8	92.3	94.8	96.0	96.8	97.5
60–69 years . . . . .	1,125	90.8	0.17	85.0	86.3	87.1	88.4	91.1	93.1	94.5	95.2	96.6
70–79 years . . . . .	804	89.3	0.21	82.6	84.6	85.6	87.0	89.4	91.5	93.2	94.1	95.6
80 years and older . . . . .	569	87.3	0.26	81.1	82.5	83.5	84.9	87.3	90.2	91.3	92.5	93.6
Non-Hispanic white												
20 years and older . . . . .	3,094	92.6	0.10	86.5	87.7	88.7	90.1	92.7	95.1	96.6	97.5	98.9
20–29 years . . . . .	389	93.1	0.21	87.1	88.1	89.5	90.9	93.2	95.5	97.1	97.6	98.8
30–39 years . . . . .	453	93.6	0.21	87.5	89.0	89.7	91.1	93.4	96.0	97.6	98.6	100.2
40–49 years . . . . .	421	93.3	0.20	87.0	88.5	89.5	91.1	93.4	95.3	96.9	97.6	99.5
50–59 years . . . . .	409	92.9	0.19	87.1	88.7	89.5	90.5	93.1	95.2	96.3	97.0	97.7
60–69 years . . . . .	487	91.4	0.17	86.2	87.2	87.9	89.1	91.5	93.4	94.9	95.6	96.9
70–79 years . . . . .	483	89.7	0.19	83.6	85.2	86.0	87.2	89.6	92.0	93.5	94.5	95.8
80 years and older . . . . .	452	87.7	0.21	81.5	82.9	84.0	85.4	87.6	90.4	91.6	92.8	93.6
Non-Hispanic black												
20 years and older . . . . .	2,048	89.6	0.09	83.2	84.7	85.7	87.1	89.5	92.1	93.5	94.5	95.8
20–29 years . . . . .	482	90.2	0.19	84.3	85.4	86.5	87.6	90.2	92.7	94.0	95.1	96.9
30–39 years . . . . .	491	90.1	0.18	84.0	85.5	86.3	87.6	90.0	92.6	94.0	94.9	95.6
40–49 years . . . . .	357	90.1	0.22	83.8	85.4	86.5	87.6	90.1	92.6	93.9	94.5	96.1
50–59 years . . . . .	212	89.0	0.27	83.5	84.6	85.4	86.7	88.9	91.0	92.6	93.6	95.6
60–69 years . . . . .	281	88.0	0.24	81.9	83.1	84.7	85.9	88.0	90.5	91.9	92.9	94.1
70–79 years . . . . .	175	86.6	0.34	*	81.0	82.5	83.9	86.9	89.4	91.0	91.7	*
80 years and older . . . . .	50	85.2	0.59	*	*	*	83.7	85.1	87.4	*	*	*
Mexican American												
20 years and older . . . . .	2,180	89.6	0.10	83.8	85.1	86.0	87.2	89.6	92.0	93.3	94.4	95.6
20–29 years . . . . .	665	89.5	0.18	84.0	85.0	85.8	87.1	89.5	92.0	93.1	94.0	95.3
30–39 years . . . . .	463	90.3	0.22	84.3	85.5	86.6	87.7	90.4	92.6	93.7	95.0	96.5
40–49 years . . . . .	375	89.9	0.23	84.2	85.7	86.5	87.8	89.9	91.9	93.6	94.7	95.7
50–59 years . . . . .	168	89.4	0.31	*	85.7	86.4	87.5	89.6	91.1	92.8	93.6	*
60–69 years . . . . .	324	88.5	0.23	83.4	85.0	85.6	86.4	88.2	90.6	91.9	93.0	94.5
70–79 years . . . . .	134	86.5	0.38	*	81.6	82.2	84.7	86.6	88.6	90.3	91.0	*
80 years and older . . . . .	51	84.1	0.60	*	*	*	81.3	85.0	86.0	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 19. Sitting height in centimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,598	85.5	0.09	78.8	80.5	81.6	83.0	85.6	88.1	89.5	90.4	91.7
20–29 years . . . . .	1,837	86.1	0.13	80.2	81.5	82.5	83.6	86.1	88.5	90.0	90.9	92.0
30–39 years . . . . .	1,837	86.7	0.13	80.6	82.0	82.9	84.4	86.0	89.1	90.3	91.3	92.5
40–49 years . . . . .	1,338	86.5	0.15	80.8	82.1	82.9	84.1	86.6	88.9	90.1	90.9	92.5
50–59 years . . . . .	981	85.5	0.17	79.5	80.8	82.1	83.4	85.6	88.0	89.1	89.8	91.1
60–69 years . . . . .	1,107	84.0	0.15	78.6	79.9	80.9	82.0	84.0	86.2	87.4	88.4	89.5
70–79 years . . . . .	894	82.4	0.20	76.0	77.6	78.7	80.2	82.8	84.9	86.2	86.8	88.0
80 years and older . . . . .	604	79.6	0.24	72.9	74.5	75.6	77.1	79.6	82.4	83.6	84.6	85.8
Non-Hispanic white												
20 years and older . . . . .	3,558	86.0	0.10	79.5	81.1	82.2	83.6	86.1	88.6	89.9	90.8	92.1
20–29 years . . . . .	489	86.9	0.19	81.5	82.6	83.2	84.7	86.9	89.2	90.6	91.4	92.3
30–39 years . . . . .	595	87.5	0.17	81.9	83.1	84.2	85.4	87.4	89.8	91.0	91.9	93.0
40–49 years . . . . .	467	87.1	0.18	81.9	83.0	83.6	84.9	87.1	89.4	90.5	91.4	92.7
50–59 years . . . . .	476	86.1	0.19	80.4	81.9	82.8	84.1	86.1	88.5	89.5	90.1	91.4
60–69 years . . . . .	472	84.5	0.17	79.2	80.7	81.5	82.5	84.4	86.6	87.8	88.7	89.6
70–79 years . . . . .	584	82.6	0.20	76.1	78.0	79.0	80.4	83.1	85.1	86.5	87.0	88.1
80 years and older . . . . .	475	79.9	0.22	73.8	75.1	76.1	77.4	79.9	82.5	83.9	84.7	86.2
Non-Hispanic black												
20 years and older . . . . .	2,480	84.0	0.08	78.2	79.5	80.3	81.7	84.1	86.6	87.7	88.6	89.6
20–29 years . . . . .	615	84.3	0.15	78.9	79.8	80.9	82.1	84.3	86.6	87.6	88.5	89.6
30–39 years . . . . .	644	84.8	0.15	79.3	80.3	81.1	82.3	85.0	87.2	88.4	89.3	90.3
40–49 years . . . . .	446	84.9	0.16	79.7	80.7	81.5	82.7	85.0	87.1	88.2	88.9	89.8
50–59 years . . . . .	263	83.9	0.22	78.3	79.6	80.6	81.8	83.7	85.9	87.3	88.4	90.0
60–69 years . . . . .	280	82.6	0.22	76.9	78.5	79.2	80.2	82.6	84.8	86.1	87.0	87.9
70–79 years . . . . .	165	80.9	0.27	*	76.9	77.2	78.6	81.0	83.3	84.2	85.3	*
80 years and older . . . . .	67	78.1	0.47	*	*	*	75.8	78.5	80.5	*	*	*
Mexican American												
20 years and older . . . . .	2,193	83.5	0.10	78.0	79.3	80.2	81.4	83.6	85.6	86.8	87.7	89.0
20–29 years . . . . .	654	83.9	0.16	78.8	79.9	80.6	81.8	83.9	86.0	87.2	88.3	89.1
30–39 years . . . . .	520	84.0	0.19	78.6	79.9	80.6	81.7	84.1	85.8	87.0	88.1	89.5
40–49 years . . . . .	357	84.1	0.20	79.7	80.5	81.2	82.1	84.0	86.0	87.0	87.9	89.2
50–59 years . . . . .	189	82.9	0.27	*	78.6	80.1	80.6	83.2	85.1	85.7	86.1	*
60–69 years . . . . .	307	81.6	0.23	76.5	77.6	78.4	79.4	82.1	83.7	84.9	85.4	86.5
70–79 years . . . . .	117	79.7	0.45	*	*	76.0	77.1	80.5	82.4	83.1	*	*
80 years and older . . . . .	49	74.2	0.67	*	*	*	*	74.0	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 20. Upper arm length in centimeters for persons aged 3 months to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
3–5 months . . . . .	282	12.3	0.11	*	11.0	11.1	11.5	12.1	13.0	13.2	13.5	*
6–8 months . . . . .	314	13.5	0.11	*	12.0	12.3	12.8	13.5	14.2	14.6	15.0	*
9–11 months . . . . .	269	14.3	0.11	*	12.8	13.0	13.6	14.3	15.0	15.5	16.0	*
1 year . . . . .	651	16.0	0.09	14.0	14.4	14.8	15.0	16.0	16.8	17.2	17.6	18.0
2 years . . . . .	571	17.9	0.08	16.0	16.4	16.7	17.0	17.8	18.6	19.2	19.5	20.0
3 years . . . . .	484	19.4	0.10	17.2	17.9	18.0	18.5	19.5	20.2	20.7	21.0	21.3
4 years . . . . .	541	20.9	0.10	19.0	19.3	19.5	20.0	20.8	21.7	22.1	22.5	23.0
5 years . . . . .	494	22.4	0.11	20.0	20.4	20.6	21.5	22.2	23.5	24.0	24.3	24.6
6 years . . . . .	279	23.8	0.18	*	21.6	22.0	22.7	23.8	24.7	25.5	26.0	*
7 years . . . . .	268	25.4	0.18	*	23.2	23.6	24.0	25.2	26.5	27.2	27.6	*
8 years . . . . .	263	26.6	0.18	*	24.5	25.0	25.5	26.2	27.7	28.9	29.2	*
9 years . . . . .	276	28.3	0.20	*	26.0	26.2	26.8	28.0	29.6	30.5	30.7	*
10 years . . . . .	294	29.1	0.25	*	26.5	27.0	27.8	29.2	30.7	31.4	31.8	*
11 years . . . . .	282	30.3	0.20	*	28.0	28.5	29.1	30.2	31.5	32.4	33.0	*
12 years . . . . .	202	32.3	0.28	*	*	30.1	30.9	32.2	33.6	34.3	*	*
13 years . . . . .	181	33.6	0.31	*	*	31.0	32.0	33.5	35.4	36.6	*	*
14 years . . . . .	185	35.3	0.31	*	*	33.0	34.0	35.2	36.4	37.1	*	*
15 years . . . . .	183	36.2	0.31	*	*	33.4	34.6	36.0	38.1	39.0	*	*
16 years . . . . .	192	36.8	0.28	*	*	34.4	35.3	36.8	38.4	39.0	*	*
17 years . . . . .	193	37.1	0.24	*	*	35.1	36.0	37.0	38.7	39.3	*	*
18 years . . . . .	169	37.2	0.27	*	*	34.6	35.6	37.1	38.8	39.4	*	*
19 years . . . . .	162	37.1	0.27	*	*	35.1	36.0	37.4	38.6	39.3	*	*
Female												
3–5 months . . . . .	306	11.8	0.11	*	10.5	11.0	11.2	12.0	12.5	13.0	13.0	*
6–8 months . . . . .	257	13.0	0.11	*	*	12.0	12.2	13.0	13.7	14.0	*	*
9–11 months . . . . .	309	13.8	0.11	*	12.5	13.0	13.0	13.8	14.5	15.0	15.2	*
1 year . . . . .	629	15.6	0.09	13.6	14.0	14.2	14.6	15.5	16.5	17.0	17.4	18.0
2 years . . . . .	556	17.5	0.10	*	15.9	16.0	16.8	17.5	18.4	18.9	19.0	*
3 years . . . . .	562	19.2	0.09	17.1	17.6	18.0	18.5	19.2	20.0	20.5	21.0	21.4
4 years . . . . .	527	20.8	0.11	*	19.0	19.4	19.9	20.8	22.0	22.5	23.0	*
5 years . . . . .	556	22.4	0.11	*	20.5	20.7	21.2	22.3	23.4	24.0	24.2	*
6 years . . . . .	274	23.7	0.18	*	*	21.5	22.4	23.8	24.8	25.5	*	*
7 years . . . . .	270	24.9	0.20	*	*	22.5	23.8	24.8	26.0	27.0	*	*
8 years . . . . .	245	26.5	0.19	*	*	24.7	25.4	26.5	27.6	28.2	*	*
9 years . . . . .	271	28.1	0.22	*	*	26.0	26.5	28.0	29.5	30.2	*	*
10 years . . . . .	255	29.1	0.21	*	*	27.0	27.8	29.0	30.5	31.3	*	*
11 years . . . . .	268	31.0	0.23	*	*	28.8	29.7	31.0	32.5	33.0	*	*
12 years . . . . .	233	32.1	0.25	*	*	29.4	30.4	32.5	34.0	34.2	*	*
13 years . . . . .	218	33.1	0.27	*	*	30.9	31.4	33.0	34.7	35.3	*	*
14 years . . . . .	220	33.8	0.24	*	*	32.0	32.5	33.6	34.9	36.0	*	*
15 years . . . . .	195	33.9	0.26	*	*	31.8	32.7	34.0	35.2	35.7	*	*
16 years . . . . .	211	34.1	0.26	*	*	32.3	32.8	34.1	35.2	35.8	*	*
17 years . . . . .	210	34.2	0.23	*	*	32.0	33.0	34.2	35.7	36.0	*	*
18 years . . . . .	186	34.0	0.29	*	*	*	32.4	33.9	35.5	*	*	*
19 years . . . . .	185	34.0	0.26	*	*	*	32.8	34.0	35.2	*	*	*

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

**Table 21. Upper arm length in centimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,467	37.8	0.05	34.2	35.0	35.5	36.3	37.9	39.2	40.1	40.6	41.4
20–29 years . . . . .	1,585	37.4	0.08	33.6	34.5	35.0	35.8	37.4	39.0	40.0	40.5	41.1
30–39 years . . . . .	1,435	37.8	0.08	34.2	35.0	35.6	36.3	37.8	39.2	40.0	40.6	41.4
40–49 years . . . . .	1,176	38.0	0.09	34.6	35.2	35.7	36.5	38.0	39.4	40.2	40.7	41.6
50–59 years . . . . .	820	38.1	0.11	34.4	35.2	35.9	37.0	38.1	39.5	40.2	40.6	41.8
60–69 years . . . . .	1,112	38.1	0.09	34.8	35.4	36.0	36.6	38.0	39.5	40.1	40.8	41.4
70–79 years . . . . .	788	37.7	0.11	34.6	35.1	35.5	36.3	37.7	39.1	40.0	40.5	41.2
80 years and older . . . . .	551	37.6	0.13	34.1	35.0	35.4	36.1	37.6	39.3	40.0	40.2	41.1
Non-Hispanic white												
20 years and older . . . . .	3,044	38.0	0.05	34.6	35.2	35.8	36.6	38.0	39.4	40.1	40.6	41.4
20–29 years . . . . .	386	37.6	0.11	34.0	34.6	35.2	36.0	37.6	39.1	40.0	40.5	41.1
30–39 years . . . . .	446	38.0	0.10	34.6	35.5	36.0	36.7	38.0	39.3	40.1	40.8	41.5
40–49 years . . . . .	416	38.1	0.11	35.0	35.3	35.8	36.6	38.1	39.5	40.3	40.7	41.6
50–59 years . . . . .	402	38.3	0.10	34.7	35.8	36.2	37.1	38.2	39.6	40.2	40.7	41.8
60–69 years . . . . .	482	38.2	0.09	35.0	35.6	36.0	36.7	38.0	39.5	40.1	40.8	41.3
70–79 years . . . . .	474	37.8	0.10	34.8	35.2	35.6	36.4	37.8	39.2	40.0	40.5	41.3
80 years and older . . . . .	438	37.7	0.10	34.4	35.1	35.5	36.2	37.7	39.3	40.0	40.2	41.1
Non-Hispanic black												
20 years and older . . . . .	1,990	38.3	0.07	34.8	35.6	36.0	37.0	38.2	39.8	40.6	41.1	42.0
20–29 years . . . . .	473	38.3	0.12	34.4	35.4	35.8	36.7	38.1	39.8	40.7	41.3	42.4
30–39 years . . . . .	479	38.2	0.10	35.0	35.7	36.2	37.0	38.2	39.6	40.4	41.0	41.5
40–49 years . . . . .	343	38.6	0.14	34.9	35.9	36.5	37.0	38.5	40.0	41.0	41.2	42.5
50–59 years . . . . .	207	38.4	0.16	35.2	35.8	36.3	36.8	38.1	40.0	40.7	41.2	42.1
60–69 years . . . . .	277	38.5	0.15	34.8	35.6	36.1	37.0	38.5	39.8	41.0	41.4	42.3
70–79 years . . . . .	165	38.0	0.19	*	35.0	35.5	36.5	38.0	39.5	40.2	41.0	*
80 years and older . . . . .	46	38.3	0.36	*	*	*	36.5	38.8	40.0	*	*	*
Mexican American												
20 years and older . . . . .	2,158	36.5	0.07	33.2	34.0	34.4	35.1	36.5	38.0	38.8	39.3	40.0
20–29 years . . . . .	654	36.3	0.09	33.0	33.8	34.2	35.0	36.2	37.6	38.4	39.0	39.7
30–39 years . . . . .	456	36.6	0.11	33.3	34.0	34.5	35.2	36.6	38.0	39.0	39.5	40.0
40–49 years . . . . .	371	36.8	0.12	33.5	34.4	34.7	35.4	36.7	38.1	39.0	39.5	40.2
50–59 years . . . . .	169	36.7	0.18	*	34.0	34.5	35.2	37.0	38.2	39.0	39.2	*
60–69 years . . . . .	321	36.6	0.14	33.0	33.5	34.2	35.1	36.5	38.1	39.2	40.0	40.3
70–79 years . . . . .	136	36.2	0.16	*	34.0	34.6	35.1	36.1	37.5	38.1	38.3	*
80 years and older . . . . .	51	36.4	0.28	*	*	*	35.0	36.2	37.2	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.



**Table 22. Upper arm length in centimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,393	34.6	0.04	31.3	32.0	32.5	33.2	34.5	36.0	36.7	37.2	38.0
20–29 years . . . . .	1,807	34.3	0.07	31.0	31.6	32.1	33.0	34.3	35.7	36.5	37.1	38.0
30–39 years . . . . .	1,791	34.6	0.06	31.5	32.1	32.7	33.3	34.6	36.0	36.6	37.1	38.0
40–49 years . . . . .	1,302	34.6	0.07	31.5	32.1	32.6	33.4	34.5	36.0	36.7	37.2	37.8
50–59 years . . . . .	964	34.8	0.09	31.5	32.2	32.5	33.3	34.7	36.1	37.1	37.6	38.2
60–69 years . . . . .	1,089	34.6	0.09	31.4	32.1	32.5	33.2	34.5	36.0	37.0	37.5	38.1
70–79 years . . . . .	864	34.5	0.10	31.2	32.0	32.4	33.1	34.5	36.0	36.7	37.0	38.0
80 years and older . . . . .	576	34.4	0.11	31.4	32.0	32.3	33.0	34.4	35.6	36.3	36.9	38.0
Non-Hispanic white												
20 years and older . . . . .	3,486	34.6	0.04	31.5	32.1	32.6	33.2	34.5	36.0	36.6	37.1	37.8
20–29 years . . . . .	485	34.3	0.11	31.2	31.7	32.2	33.0	34.2	35.5	36.4	37.0	38.1
30–39 years . . . . .	580	34.7	0.09	31.8	32.4	32.9	33.5	34.6	36.0	36.6	37.0	37.6
40–49 years . . . . .	459	34.6	0.09	31.5	32.2	32.6	33.5	34.5	35.9	36.5	37.0	37.6
50–59 years . . . . .	470	34.8	0.10	32.0	32.3	32.7	33.4	34.8	36.1	37.1	37.6	38.1
60–69 years . . . . .	469	34.6	0.10	31.6	32.2	32.6	33.2	34.5	36.0	36.8	37.4	37.8
70–79 years . . . . .	571	34.5	0.09	31.3	32.0	32.4	33.1	34.5	35.9	36.6	37.0	37.6
80 years and older . . . . .	452	34.3	0.10	31.4	32.0	32.3	33.0	34.4	35.6	36.2	36.8	37.8
Non-Hispanic black												
20 years and older . . . . .	2,398	35.7	0.06	32.3	33.0	33.5	34.2	35.6	37.1	38.0	38.5	39.2
20–29 years . . . . .	603	35.3	0.10	32.1	32.6	33.1	33.8	35.3	36.6	37.5	38.0	38.5
30–39 years . . . . .	622	35.6	0.11	32.0	33.0	33.5	34.0	35.5	37.0	38.0	38.5	39.1
40–49 years . . . . .	426	35.9	0.12	32.7	33.5	34.0	34.5	36.0	37.4	38.0	38.5	39.7
50–59 years . . . . .	257	36.0	0.17	33.0	33.3	33.8	34.5	35.9	37.5	38.4	39.0	39.7
60–69 years . . . . .	270	36.1	0.18	33.0	33.5	33.7	34.5	36.0	37.8	38.7	39.2	40.0
70–79 years . . . . .	153	35.7	0.22	*	33.0	33.5	34.3	35.6	37.1	38.0	38.5	*
80 years and older . . . . .	67	35.5	0.27	*	*	*	34.2	35.2	36.7	*	*	*
Mexican American												
20 years and older . . . . .	2,149	33.6	0.06	30.6	31.2	31.6	32.3	33.6	35.0	35.6	36.1	37.0
20–29 years . . . . .	640	33.5	0.09	30.5	31.0	31.4	32.1	33.3	34.8	35.6	36.0	37.0
30–39 years . . . . .	515	33.6	0.10	30.3	31.2	31.6	32.3	33.6	35.0	35.6	36.3	37.1
40–49 years . . . . .	350	33.9	0.12	30.8	31.6	32.0	32.8	34.0	35.1	35.7	36.2	37.0
50–59 years . . . . .	185	33.8	0.16	*	31.3	32.1	32.6	33.8	35.2	35.7	36.0	*
60–69 years . . . . .	302	33.7	0.13	30.8	31.2	31.9	32.5	33.8	34.9	35.6	36.2	37.1
70–79 years . . . . .	112	33.6	0.22	*	*	31.5	32.1	33.7	34.9	35.6	*	*
80 years and older . . . . .	45	32.3	0.28	*	*	*	*	*	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 23. Upper leg length in centimeters for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and the selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years . . . . .	530	18.5	0.14	16.0	16.5	17.0	17.5	18.4	19.6	20.2	20.8	21.5
3 years . . . . .	490	21.2	0.17	18.0	19.0	19.4	20.1	21.0	22.2	23.0	23.8	24.6
4 years . . . . .	541	23.2	0.16	20.2	20.9	21.1	21.7	23.0	24.5	25.3	25.7	26.7
5 years . . . . .	488	25.2	0.19	21.7	22.5	22.8	23.7	25.1	26.7	27.6	28.2	29.0
6 years . . . . .	279	27.5	0.29	*	24.5	25.0	25.9	27.2	29.4	30.5	31.1	*
7 years . . . . .	268	29.5	0.31	*	26.1	27.1	28.0	29.6	31.1	31.9	33.0	*
8 years . . . . .	262	31.1	0.30	*	27.7	28.4	29.5	31.0	32.6	33.9	34.5	*
9 years . . . . .	275	33.0	0.32	*	29.3	30.0	31.0	32.8	34.9	36.0	36.7	*
10 years . . . . .	293	34.4	0.38	*	31.0	32.1	33.0	34.6	36.4	37.6	38.2	*
11 years . . . . .	279	35.9	0.34	*	32.1	32.7	33.5	35.7	37.7	39.5	40.0	*
12 years . . . . .	202	38.6	0.43	*	*	35.3	36.1	38.6	41.2	41.9	*	*
13 years . . . . .	182	39.8	0.42	*	*	36.8	37.8	39.4	41.8	42.6	*	*
14 years . . . . .	186	42.0	0.41	*	*	39.3	40.1	41.8	43.5	45.3	*	*
15 years . . . . .	181	43.2	0.45	*	*	40.0	40.9	43.2	45.5	46.7	*	*
16 years . . . . .	192	43.6	0.41	*	*	40.4	41.7	43.4	45.6	47.0	*	*
17 years . . . . .	191	44.7	0.38	*	*	41.8	42.4	45.2	46.7	47.2	*	*
18 years . . . . .	168	44.5	0.46	*	*	41.1	42.6	44.4	47.2	47.8	*	*
19 years . . . . .	162	43.5	0.38	*	*	41.0	41.6	43.0	45.1	46.5	*	*
Female												
2 years . . . . .	518	18.8	0.18	*	16.5	17.0	17.5	18.6	20.0	20.7	21.3	*
3 years . . . . .	567	21.5	0.17	18.5	19.2	19.7	20.2	21.5	22.7	23.4	24.0	24.5
4 years . . . . .	528	23.4	0.18	*	21.0	21.5	22.1	23.4	24.6	25.5	26.1	*
5 years . . . . .	556	25.6	0.19	*	23.2	23.7	24.3	25.4	27.1	27.8	28.3	*
6 years . . . . .	274	27.4	0.29	*	*	25.0	25.7	27.4	29.0	29.8	*	*
7 years . . . . .	270	28.9	0.33	*	*	26.6	27.2	28.8	30.2	31.2	*	*
8 years . . . . .	245	31.4	0.38	*	*	28.8	29.8	30.9	33.3	34.2	*	*
9 years . . . . .	273	32.8	0.32	*	*	30.5	31.1	32.6	34.1	35.2	*	*
10 years . . . . .	255	34.9	0.35	*	*	32.5	33.2	34.4	36.5	37.8	*	*
11 years . . . . .	267	36.7	0.36	*	*	34.1	35.1	36.6	38.2	39.5	*	*
12 years . . . . .	233	38.5	0.48	*	*	35.3	36.1	38.3	40.8	41.8	*	*
13 years . . . . .	217	39.8	0.43	*	*	37.1	38.1	39.6	41.8	43.2	*	*
14 years . . . . .	219	39.9	0.44	*	*	37.4	37.8	39.5	41.6	43.6	*	*
15 years . . . . .	193	40.1	0.44	*	*	37.0	38.4	40.0	42.0	43.4	*	*
16 years . . . . .	208	40.2	0.42	*	*	37.4	38.4	40.3	41.7	42.7	*	*
17 years . . . . .	209	40.5	0.39	*	*	37.1	38.5	40.9	42.0	43.2	*	*
18 years . . . . .	185	40.1	0.49	*	*	*	38.1	39.7	42.1	*	*	*
19 years . . . . .	185	40.4	0.54	*	*	*	38.6	40.8	42.0	*	*	*

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

**Table 24. Upper leg length in centimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,405	42.3	0.08	37.0	38.1	39.0	40.1	42.2	44.5	45.6	46.6	47.8
20–29 years . . . . .	1,579	43.2	0.15	38.1	39.2	40.0	41.0	43.1	45.5	46.6	47.4	48.6
30–39 years . . . . .	1,434	43.1	0.16	38.1	39.0	39.8	41.0	43.0	45.1	46.2	47.0	48.4
40–49 years . . . . .	1,170	42.2	0.17	37.1	38.1	39.0	40.1	42.2	44.2	45.4	46.4	47.5
50–59 years . . . . .	816	41.7	0.20	36.2	37.7	39.0	40.0	41.7	43.6	44.6	45.6	46.8
60–69 years . . . . .	1,101	41.0	0.19	35.5	36.7	37.5	38.8	41.0	43.2	44.5	45.2	46.2
70–79 years . . . . .	774	40.6	0.22	35.4	36.6	37.3	38.4	40.6	42.7	44.1	44.8	46.0
80 years and older . . . . .	531	40.1	0.26	34.6	36.1	37.2	38.0	40.1	42.1	43.2	44.3	45.6
Non-Hispanic white												
20 years and older . . . . .	3,016	42.4	0.18	37.2	38.4	39.2	40.3	42.4	44.5	45.6	46.5	47.6
20–29 years . . . . .	385	43.4	0.22	38.9	39.6	40.2	41.2	43.4	45.6	46.6	47.2	48.4
30–39 years . . . . .	446	43.3	0.20	38.6	39.6	40.3	41.2	43.3	45.2	46.3	47.0	48.2
40–49 years . . . . .	413	42.3	0.21	37.9	38.2	39.1	40.2	42.3	44.2	45.4	46.4	47.5
50–59 years . . . . .	401	42.0	0.21	36.3	38.6	39.1	40.3	42.0	43.8	44.6	45.6	47.1
60–69 years . . . . .	479	41.0	0.21	35.6	37.0	37.8	39.0	41.1	43.2	44.5	45.2	46.1
70–79 years . . . . .	471	40.6	0.21	35.3	36.6	37.4	38.5	40.6	42.7	44.0	44.7	45.6
80 years and older . . . . .	421	40.2	0.22	35.3	36.8	37.5	38.2	40.1	42.0	43.2	44.5	45.7
Non-Hispanic black												
20 years and older . . . . .	1,965	44.0	0.14	39.0	40.0	40.7	41.8	44.0	46.1	47.4	48.2	49.5
20–29 years . . . . .	470	45.0	0.17	40.4	41.2	41.8	42.6	44.7	47.1	48.1	49.0	50.4
30–39 years . . . . .	478	44.5	0.16	40.0	40.8	41.5	42.4	44.4	46.5	48.1	48.8	49.8
40–49 years . . . . .	341	43.6	0.19	38.6	39.7	40.3	41.5	43.5	45.7	47.1	47.8	48.7
50–59 years . . . . .	204	43.0	0.24	37.7	39.1	39.8	40.6	43.1	45.1	46.0	46.2	48.0
60–69 years . . . . .	270	42.6	0.22	37.8	38.9	39.5	40.6	42.3	44.5	45.8	46.4	47.5
70–79 years . . . . .	158	42.3	0.28	*	38.4	39.5	40.2	42.3	44.0	45.4	46.5	*
80 years and older . . . . .	44	41.2	0.50	*	*	*	40.0	41.5	42.6	*	*	*
Mexican American												
20 years and older . . . . .	2,151	40.6	0.16	35.7	36.8	37.5	38.5	40.5	42.6	43.6	44.4	45.5
20–29 years . . . . .	653	41.3	0.14	36.8	37.7	38.3	39.6	41.1	43.1	44.2	45.0	45.9
30–39 years . . . . .	456	40.9	0.18	36.1	37.0	37.8	38.9	40.8	43.1	44.0	44.8	45.7
40–49 years . . . . .	370	40.0	0.19	35.5	36.5	37.3	38.2	40.0	42.1	43.0	43.5	44.4
50–59 years . . . . .	169	39.5	0.29	*	35.6	36.3	37.5	39.9	41.1	42.5	43.2	*
60–69 years . . . . .	321	39.2	0.23	35.0	35.8	36.3	37.1	39.1	41.3	42.2	43.0	44.0
70–79 years . . . . .	132	38.3	0.32	*	34.5	35.1	36.4	38.1	40.1	41.4	42.4	*
80 years and older . . . . .	50	37.0	0.54	*	*	*	*	37.2	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 25. Upper leg length in centimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,337	38.6	0.07	33.0	34.4	35.4	36.6	38.7	40.9	42.0	42.6	43.9
20–29 years . . . . .	1,802	39.6	0.14	34.5	35.9	36.5	37.5	39.7	41.8	42.9	43.7	44.7
30–39 years . . . . .	1,783	39.4	0.13	34.7	35.9	36.6	37.6	39.4	41.2	42.4	43.1	44.4
40–49 years . . . . .	1,295	38.8	0.17	33.5	35.1	36.0	37.1	39.0	41.0	41.8	42.4	43.6
50–59 years . . . . .	958	38.0	0.20	32.3	34.1	34.7	36.0	38.0	40.1	41.2	42.0	42.9
60–69 years . . . . .	1,078	37.3	0.19	32.0	33.0	34.0	35.3	37.4	39.4	40.5	41.2	42.3
70–79 years . . . . .	857	36.8	0.22	31.5	32.4	33.3	34.6	37.0	39.1	40.2	41.0	42.0
80 years and older . . . . .	564	36.9	0.27	31.5	32.8	33.6	34.6	36.8	38.7	40.1	40.9	42.5
Non-Hispanic white												
20 years and older . . . . .	3,460	38.7	0.16	33.2	34.6	35.5	36.7	38.7	40.9	41.9	42.5	43.6
20–29 years . . . . .	484	39.7	0.20	35.1	36.2	36.8	37.6	39.8	41.7	42.6	43.5	44.4
30–39 years . . . . .	576	39.6	0.17	35.2	36.2	37.0	37.8	39.5	41.3	42.4	43.1	44.4
40–49 years . . . . .	458	38.9	0.21	33.7	35.4	36.2	37.3	39.1	41.0	41.8	42.4	43.5
50–59 years . . . . .	470	38.0	0.20	32.9	34.2	35.0	36.1	38.1	40.1	41.1	41.9	42.6
60–69 years . . . . .	464	37.4	0.21	32.1	33.3	34.2	35.6	37.5	39.4	40.2	41.2	42.2
70–79 years . . . . .	565	36.9	0.20	31.5	32.6	33.3	34.6	37.0	39.1	40.2	41.0	41.9
80 years and older . . . . .	443	36.8	0.22	31.5	32.9	33.6	35.0	36.8	38.7	40.1	40.6	42.3
Non-Hispanic black												
20 years and older . . . . .	2,378	40.4	0.13	35.0	36.2	37.1	38.2	40.3	42.5	43.6	44.4	45.6
20–29 years . . . . .	602	41.7	0.16	37.0	38.2	39.1	39.8	41.7	43.4	44.9	45.5	46.5
30–39 years . . . . .	620	40.7	0.16	36.0	37.1	38.0	38.9	40.5	42.8	43.6	44.3	45.7
40–49 years . . . . .	422	40.2	0.21	35.1	36.4	37.0	38.0	40.2	42.2	43.7	44.4	45.4
50–59 years . . . . .	253	39.3	0.29	34.0	34.7	35.8	37.1	39.4	41.3	42.6	43.5	44.5
60–69 years . . . . .	265	38.5	0.28	32.4	34.1	35.2	36.2	38.6	40.8	42.0	42.5	44.2
70–79 years . . . . .	152	38.5	0.33	*	35.2	35.6	36.6	38.2	40.4	41.1	42.4	*
80 years and older . . . . .	64	38.3	0.63	*	*	*	36.0	38.2	39.9	*	*	*
Mexican American												
20 years and older . . . . .	2,138	36.7	0.17	31.4	32.7	33.5	34.8	37.0	38.8	40.0	40.5	41.8
20–29 years . . . . .	637	37.6	0.16	33.0	34.1	34.8	35.8	37.7	39.3	40.2	41.1	42.3
30–39 years . . . . .	513	37.2	0.19	32.3	33.5	34.2	35.2	37.4	39.1	40.2	40.7	42.0
40–49 years . . . . .	348	36.6	0.23	31.3	32.9	33.2	34.7	36.8	38.5	39.8	40.4	41.6
50–59 years . . . . .	183	35.7	0.31	*	31.6	32.4	34.1	35.9	37.5	38.7	39.5	*
60–69 years . . . . .	301	34.3	0.29	28.8	29.7	30.5	31.8	34.6	36.6	37.6	38.4	39.6
70–79 years . . . . .	111	34.2	0.47	*	*	31.2	32.2	34.0	37.3	37.6	*	*
80 years and older . . . . .	45	32.4	0.64	*	*	*	*	*	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 26. Knee height in centimeters for males aged 60 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
60 years and older . . . . .	2,419	54.1	0.12	49.4	50.4	51.1	52.2	54.3	56.1	57.1	57.8	58.8
60–69 years . . . . .	1,096	54.4	0.11	49.7	50.4	51.4	52.6	54.6	56.4	57.4	58.0	58.9
70–79 years . . . . .	781	53.8	0.13	49.2	50.3	51.1	51.9	53.9	55.6	56.7	57.7	58.8
80 years and older . . . . .	542	53.5	0.14	49.2	50.1	50.5	51.8	53.6	55.2	56.2	56.8	58.3
Non-Hispanic white												
60 years and older . . . . .	1,378	54.2	0.10	49.8	50.6	51.4	52.4	54.4	56.1	57.1	57.8	58.8
60–69 years . . . . .	476	54.6	0.13	50.2	51.0	51.9	52.8	54.8	56.4	57.4	58.0	58.9
70–79 years . . . . .	473	53.8	0.13	49.5	50.4	51.1	52.0	53.8	55.5	56.7	57.6	58.7
80 years and older . . . . .	429	53.6	0.13	49.4	50.2	50.6	52.0	53.6	55.2	56.2	56.7	58.3
Non-Hispanic black												
60 years and older . . . . .	478	55.5	0.15	50.3	51.7	52.7	53.7	55.5	57.4	58.5	59.2	60.0
60–69 years . . . . .	271	55.6	0.21	50.8	52.3	53.1	53.8	55.7	57.4	58.6	59.2	59.9
70–79 years . . . . .	161	55.4	0.27	*	51.5	52.3	53.4	55.6	57.4	58.3	59.1	*
80 years and older . . . . .	46	54.7	0.44	*	*	*	53.3	54.4	56.4	*	*	*
Mexican American												
60 years and older . . . . .	503	52.2	0.17	48.4	49.3	49.9	50.5	52.1	54.0	54.9	55.6	56.3
60–69 years . . . . .	318	52.5	0.18	48.8	49.4	50.0	50.7	52.3	54.2	55.5	56.1	56.8
70–79 years . . . . .	134	51.7	0.25	*	49.4	49.9	50.5	51.4	53.4	54.1	54.9	*
80 years and older . . . . .	51	51.2	0.48	*	*	*	49.7	51.4	53.1	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 27. Knee height in centimeters for females aged 60 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
60 years and older . . . . .	2,519	49.5	0.11	45.1	46.1	46.8	47.7	49.4	51.3	52.4	53.0	54.1
60–69 years . . . . .	1,081	49.7	0.12	45.0	46.1	46.8	47.9	49.7	51.3	52.4	53.0	54.2
70–79 years . . . . .	863	49.4	0.13	45.4	46.2	46.8	47.6	49.1	51.3	52.4	53.1	53.9
80 years and older . . . . .	575	49.2	0.16	44.8	45.9	46.6	47.6	49.2	50.9	52.0	52.7	53.9
Non-Hispanic white												
60 years and older . . . . .	1,480	49.5	0.09	45.3	46.3	46.9	47.8	49.4	51.2	52.3	52.9	53.8
60–69 years . . . . .	462	49.7	0.15	45.4	46.5	47.2	48.1	49.7	51.2	52.3	52.9	53.9
70–79 years . . . . .	569	49.3	0.14	45.4	46.2	46.8	47.6	49.1	51.2	52.3	53.0	53.6
80 years and older . . . . .	449	49.1	0.16	44.8	45.9	46.6	47.6	49.1	50.7	51.8	52.6	53.6
Non-Hispanic black												
60 years and older . . . . .	490	51.3	0.14	46.8	47.7	48.4	49.4	51.3	53.1	54.4	55.1	56.3
60–69 years . . . . .	269	51.5	0.20	46.8	47.7	48.7	49.6	51.4	53.2	54.6	55.1	56.7
70–79 years . . . . .	154	51.3	0.26	*	47.7	48.2	49.3	51.7	53.1	54.2	55.4	*
80 years and older . . . . .	67	50.8	0.35	*	*	*	49.2	50.3	52.1	*	*	*
Mexican American												
60 years and older . . . . .	460	47.6	0.17	43.5	44.5	45.3	46.1	47.7	49.2	50.1	50.7	51.9
60–69 years . . . . .	302	47.7	0.20	43.5	44.6	45.3	46.1	47.8	49.4	50.4	51.0	51.9
70–79 years . . . . .	111	47.7	0.30	*	*	45.5	46.4	47.4	49.1	49.8	*	*
80 years and older . . . . .	47	46.9	0.43	*	*	*	*	*	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 28. Triceps skinfold thickness in millimeters for persons aged 3 months to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
3–5 months . . . . .	290	10.5	0.22	*	7.9	8.3	9.2	10.7	11.7	12.5	13.2	*
6–8 months . . . . .	320	10.2	0.23	*	7.3	7.9	8.5	9.9	11.6	12.5	13.3	*
9–11 months . . . . .	275	9.5	0.20	*	7.1	7.4	8.1	9.2	10.7	11.1	11.8	*
1 year . . . . .	647	9.4	0.15	6.4	6.9	7.2	7.9	9.1	10.7	11.7	12.1	13.1
2 years . . . . .	555	9.1	0.13	6.4	6.7	7.3	7.9	8.9	10.4	11.1	11.5	12.4
3 years . . . . .	479	8.9	0.20	*	6.4	6.8	7.3	8.6	10.0	10.8	11.6	*
4 years . . . . .	538	9.0	0.18	6.0	6.6	6.8	7.3	8.6	10.0	11.4	12.0	12.9
5 years . . . . .	493	8.7	0.20	6.0	6.3	6.8	7.2	8.1	9.5	10.3	11.3	13.0
6 years . . . . .	278	9.8	0.46	*	6.0	6.4	7.1	8.5	10.8	12.9	14.9	*
7 years . . . . .	268	9.7	0.45	*	6.1	6.4	7.1	8.7	10.7	13.3	16.8	*
8 years . . . . .	262	10.8	0.59	*	6.3	6.4	7.3	8.8	12.3	15.7	20.1	*
9 years . . . . .	276	12.4	0.69	*	6.6	6.8	7.4	9.7	15.4	21.3	23.9	*
10 years . . . . .	293	12.5	0.63	*	6.0	6.9	8.2	10.4	15.5	20.8	22.3	*
11 years . . . . .	282	13.6	0.70	*	6.7	7.2	8.6	11.3	18.2	19.5	22.3	*
12 years . . . . .	200	13.5	0.77	*	*	7.6	8.6	12.9	17.4	19.2	*	*
13 years . . . . .	182	12.4	0.89	*	*	6.4	7.1	10.5	15.7	19.7	*	*
14 years . . . . .	183	11.0	0.82	*	*	6.2	6.7	8.3	13.4	17.0	*	*
15 years . . . . .	182	12.1	1.00	*	*	6.0	6.7	9.5	13.8	19.2	*	*
16 years . . . . .	191	11.1	0.86	*	*	6.6	7.1	8.6	13.6	17.0	*	*
17 years . . . . .	191	11.3	0.82	*	*	5.8	7.2	8.9	12.8	19.2	*	*
18 years . . . . .	168	10.9	0.90	*	*	5.7	6.3	8.3	12.6	16.8	*	*
19 years . . . . .	160	12.1	1.05	*	*	6.3	7.5	9.5	12.2	21.9	*	*
Female												
3–5 months . . . . .	309	10.4	0.21	*	7.9	8.2	8.7	10.3	11.8	12.3	12.6	*
6–8 months . . . . .	261	9.9	0.28	*	*	7.6	8.2	9.4	11.3	12.2	*	*
9–11 months . . . . .	316	9.6	0.24	*	7.1	7.4	8.0	9.2	10.9	11.9	12.7	*
1 year . . . . .	626	9.7	0.16	6.5	7.1	7.4	8.1	9.6	11.0	11.9	12.4	13.5
2 years . . . . .	545	9.5	0.17	*	7.1	7.4	7.9	9.2	10.9	11.6	12.3	*
3 years . . . . .	554	9.7	0.21	*	7.1	7.4	8.1	9.1	10.9	11.6	12.4	*
4 years . . . . .	529	10.3	0.29	*	7.3	7.7	8.4	9.6	11.6	12.8	13.4	*
5 years . . . . .	554	10.3	0.27	*	7.3	7.6	8.2	9.6	11.4	12.8	14.4	*
6 years . . . . .	273	10.3	0.48	*	*	7.1	7.5	9.3	11.1	13.6	*	*
7 years . . . . .	269	11.9	0.59	*	*	7.4	7.9	10.6	14.5	18.0	*	*
8 years . . . . .	244	12.4	0.64	*	*	7.8	8.5	10.7	14.2	17.6	*	*
9 years . . . . .	270	14.4	0.84	*	*	8.2	8.9	12.1	16.5	23.9	*	*
10 years . . . . .	255	15.0	0.81	*	*	8.7	10.1	12.9	18.1	21.7	*	*
11 years . . . . .	268	15.1	0.78	*	*	8.9	9.9	12.9	19.8	21.2	*	*
12 years . . . . .	233	15.2	0.90	*	*	8.2	9.6	13.2	19.4	23.4	*	*
13 years . . . . .	218	17.5	0.89	*	*	10.4	11.7	15.9	22.3	24.4	*	*
14 years . . . . .	216	18.7	0.90	*	*	11.6	12.4	17.5	22.5	25.4	*	*
15 years . . . . .	188	17.8	0.98	*	*	11.1	12.4	16.7	20.7	25.7	*	*
16 years . . . . .	202	18.6	0.89	*	*	12.0	14.0	16.8	21.8	25.4	*	*
17 years . . . . .	191	20.0	0.98	*	*	12.4	14.2	19.6	24.8	27.3	*	*
18 years . . . . .	165	19.4	1.07	*	*	*	13.8	17.9	24.2	*	*	*
19 years . . . . .	167	19.6	1.18	*	*	*	14.0	18.5	24.1	*	*	*

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

NOTE: Pregnant women are excluded.

**Table 29. Triceps skinfold thickness in millimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,540	13.1	0.14	5.7	6.6	7.4	8.7	11.9	15.7	18.5	21.3	25.3
20–29 years . . . . .	1,556	12.0	0.22	5.2	5.8	6.2	7.6	10.5	15.3	17.8	20.0	24.1
30–39 years . . . . .	1,419	13.0	0.23	5.6	6.6	7.3	8.8	11.6	15.5	18.1	20.8	26.7
40–49 years . . . . .	1,164	13.5	0.25	5.9	6.9	7.7	9.3	12.3	16.1	19.8	21.9	25.0
50–59 years . . . . .	813	13.7	0.29	6.6	7.5	8.0	9.4	12.6	16.0	18.7	21.8	25.2
60–69 years . . . . .	1,122	14.2	0.25	6.9	7.7	8.5	10.1	12.7	17.1	20.2	23.1	25.6
70–79 years . . . . .	825	13.4	0.28	6.3	7.3	7.9	9.0	12.4	16.0	18.8	20.6	24.4
80 years and older . . . . .	641	12.0	0.28	5.4	6.6	7.6	8.7	11.2	13.8	16.2	18.0	22.3
Non-Hispanic white												
20 years and older . . . . .	3,135	13.4	0.16	5.9	7.0	7.7	9.1	12.3	16.0	18.8	21.7	25.5
20–29 years . . . . .	382	12.3	0.35	5.3	5.9	6.5	7.9	10.7	15.4	18.0	20.3	24.2
30–39 years . . . . .	440	13.3	0.34	5.9	7.1	7.5	9.0	11.8	15.7	18.3	21.0	27.0
40–49 years . . . . .	410	13.8	0.33	6.3	7.1	8.1	9.8	12.5	16.4	20.2	22.0	25.0
50–59 years . . . . .	402	13.8	0.33	6.8	7.6	8.3	9.4	12.9	16.2	18.7	21.8	25.1
60–69 years . . . . .	486	14.6	0.31	7.5	8.1	9.0	10.5	13.1	17.4	21.4	23.3	26.0
70–79 years . . . . .	500	13.5	0.29	6.4	7.4	8.0	9.3	12.4	16.4	18.8	20.6	24.7
80 years and older . . . . .	515	12.0	0.25	5.4	6.8	7.6	8.8	11.3	13.9	16.2	18.0	22.2
Non-Hispanic black												
20 years and older . . . . .	1,965	12.1	0.20	4.4	5.2	5.8	7.1	10.3	15.0	18.7	21.4	26.4
20–29 years . . . . .	456	11.8	0.35	4.4	5.1	5.6	6.4	9.8	15.0	18.9	21.7	26.2
30–39 years . . . . .	471	11.8	0.31	4.4	5.0	5.6	6.9	10.4	14.9	17.9	20.3	25.9
40–49 years . . . . .	341	12.5	0.39	4.2	5.2	5.9	7.7	10.7	15.4	19.4	22.8	26.2
50–59 years . . . . .	200	12.5	0.48	5.0	5.9	6.6	7.9	10.9	14.8	18.3	22.5	25.7
60–69 years . . . . .	279	12.6	0.44	4.8	5.4	6.1	7.5	10.7	15.6	19.3	24.0	29.4
70–79 years . . . . .	168	12.5	0.54	*	6.1	6.9	7.8	10.7	14.9	19.2	20.7	*
80 years and older . . . . .	50	11.6	0.87	*	*	*	7.6	10.7	13.4	*	*	*
Mexican American												
20 years and older . . . . .	2,164	12.3	0.17	5.6	6.4	7.2	8.4	11.1	14.6	17.4	19.7	23.8
20–29 years . . . . .	646	11.7	0.26	5.2	6.0	6.7	7.7	10.8	14.0	16.6	18.7	21.9
30–39 years . . . . .	455	12.8	0.35	5.4	6.5	7.5	8.8	10.9	15.3	18.2	20.5	25.4
40–49 years . . . . .	368	12.5	0.35	6.1	7.0	7.6	8.5	11.5	14.7	18.0	20.1	23.8
50–59 years . . . . .	169	13.6	0.61	*	7.2	8.3	9.3	12.3	16.1	18.6	22.6	*
60–69 years . . . . .	325	12.2	0.34	6.6	7.1	8.2	9.2	11.4	13.7	15.8	17.9	22.1
70–79 years . . . . .	143	10.7	0.40	*	6.4	7.1	8.0	10.3	12.9	14.4	15.3	*
80 years and older . . . . .	58	11.2	0.58	*	*	*	8.8	10.3	13.2	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.



**Table 30. Triceps skinfold thickness in millimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,065	23.5	0.19	10.8	12.7	14.2	16.8	22.9	29.9	33.2	35.3	38.1
20–29 years . . . . .	1,579	20.9	0.33	9.9	11.4	12.5	14.3	19.4	26.0	31.2	33.4	37.0
30–39 years . . . . .	1,623	23.6	0.35	10.4	12.4	14.1	16.2	22.3	31.0	34.6	36.4	38.9
40–49 years . . . . .	1,237	25.3	0.35	12.0	14.3	16.6	19.5	25.3	31.2	34.1	35.8	38.8
50–59 years . . . . .	929	26.7	0.40	14.1	16.4	18.3	20.6	26.7	32.1	35.2	37.0	39.8
60–69 years . . . . .	1,090	24.2	0.37	12.4	14.5	15.9	18.2	24.1	29.7	32.9	34.9	37.8
70–79 years . . . . .	902	22.3	0.39	11.0	12.5	14.0	16.4	21.8	27.7	30.6	32.1	35.8
80 years and older . . . . .	705	18.6	0.42	7.6	9.3	11.1	13.1	18.1	23.3	26.4	28.9	31.7
Non-Hispanic white												
20 years and older . . . . .	3,527	23.3	0.21	10.8	12.7	14.2	16.7	22.6	29.7	33.1	35.0	37.9
20–29 years . . . . .	438	20.6	0.50	10.1	11.0	12.2	13.9	18.8	25.8	31.6	33.4	37.0
30–39 years . . . . .	549	22.9	0.48	10.2	12.3	13.5	15.6	21.5	30.6	33.9	36.2	38.6
40–49 years . . . . .	445	25.1	0.46	12.0	14.3	16.3	19.4	25.1	30.7	33.8	35.5	38.4
50–59 years . . . . .	460	26.7	0.44	14.5	16.4	18.4	20.6	26.7	32.0	35.1	37.0	39.5
60–69 years . . . . .	473	24.3	0.44	12.5	14.8	16.3	18.3	24.3	29.6	32.8	34.8	37.9
70–79 years . . . . .	601	22.2	0.38	11.2	12.5	14.0	16.4	21.6	27.5	30.2	31.8	35.4
80 years and older . . . . .	561	18.7	0.37	7.6	10.0	11.2	13.4	18.4	23.4	26.3	28.9	31.7
Non-Hispanic black												
20 years and older . . . . .	2,191	24.8	0.26	9.8	12.2	13.8	17.3	24.7	32.5	35.9	37.7	39.9
20–29 years . . . . .	517	21.9	0.46	9.0	10.8	12.3	14.1	20.6	28.6	33.2	35.9	38.1
30–39 years . . . . .	546	25.4	0.48	10.2	11.7	14.4	17.7	25.2	33.9	37.1	38.6	40.6
40–49 years . . . . .	389	27.3	0.53	11.3	14.6	17.7	20.8	28.1	34.4	37.4	39.0	41.1
50–59 years . . . . .	240	27.5	0.67	11.0	13.9	16.6	21.8	29.2	33.6	36.5	37.9	39.9
60–69 years . . . . .	268	26.0	0.61	11.8	13.8	15.9	19.4	26.8	32.9	35.4	36.7	38.6
70–79 years . . . . .	154	23.9	0.80	*	12.6	14.0	18.8	24.1	28.9	33.8	36.5	*
80 years and older . . . . .	77	17.1	0.98	*	*	9.2	11.3	16.2	22.8	26.2	*	*
Mexican American												
20 years and older . . . . .	2,000	24.7	0.24	12.1	14.3	15.9	18.6	24.4	30.8	34.1	35.9	38.0
20–29 years . . . . .	553	22.8	0.42	10.7	12.8	14.2	16.6	22.2	28.6	32.3	34.3	36.6
30–39 years . . . . .	460	25.5	0.49	12.6	14.6	16.2	18.7	25.0	32.2	36.0	37.8	39.1
40–49 years . . . . .	338	27.5	0.47	15.8	18.1	19.3	22.5	27.7	33.2	35.1	36.4	37.9
50–59 years . . . . .	179	26.1	0.67	*	16.6	18.2	20.8	25.6	30.7	35.0	36.1	*
60–69 years . . . . .	301	24.8	0.49	14.2	16.4	17.5	20.1	24.7	30.0	32.6	33.9	35.6
70–79 years . . . . .	117	21.0	0.87	*	*	14.7	15.6	19.6	26.4	29.5	*	*
80 years and older . . . . .	52	16.1	1.02	*	*	*	11.8	14.4	20.2	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

NOTE: Pregnant women are excluded.

**Table 31. Subscapular skinfold thickness in millimeters for persons aged 3 months to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
3–5 months . . . . .	283	7.8	0.18	*	5.8	6.2	6.5	7.6	8.7	9.4	10.1	*
6–8 months . . . . .	313	7.6	0.19	*	5.4	5.7	6.2	7.4	8.6	9.6	10.0	*
9–11 months . . . . .	269	7.2	0.16	*	5.5	5.9	6.2	7.0	8.0	8.6	9.4	*
1 year . . . . .	644	6.9	0.11	4.6	5.0	5.3	5.7	6.7	7.9	8.7	9.0	9.6
2 years . . . . .	549	6.4	0.11	4.4	4.8	5.0	5.4	6.2	7.3	8.0	8.6	9.1
3 years . . . . .	479	6.2	0.22	*	4.5	4.6	5.0	5.7	6.5	7.2	7.9	*
4 years . . . . .	537	6.0	0.15	4.1	4.4	4.5	5.0	5.6	6.4	7.3	8.0	9.2
5 years . . . . .	491	5.8	0.18	4.0	4.3	4.4	4.7	5.3	6.0	6.6	7.4	9.3
6 years . . . . .	278	6.9	0.45	*	4.5	4.7	4.8	5.5	6.5	8.2	13.6	*
7 years . . . . .	267	6.7	0.52	*	4.3	4.5	4.6	5.4	6.5	7.8	9.6	*
8 years . . . . .	261	7.6	0.50	*	4.4	4.6	4.8	5.8	8.4	9.5	15.0	*
9 years . . . . .	271	8.6	0.58	*	4.5	4.7	5.0	6.3	10.0	13.1	18.2	*
10 years . . . . .	292	9.1	0.53	*	4.7	4.9	5.4	6.4	12.4	14.8	17.2	*
11 years . . . . .	280	10.5	0.75	*	5.0	5.2	5.7	7.2	11.9	18.6	26.0	*
12 years . . . . .	199	10.8	0.82	*	*	5.6	6.0	8.3	13.5	18.5	*	*
13 years . . . . .	180	10.2	0.90	*	*	5.3	5.9	7.2	11.5	16.0	*	*
14 years . . . . .	182	11.0	1.04	*	*	6.1	6.8	8.1	11.9	14.7	*	*
15 years . . . . .	181	11.7	0.97	*	*	6.4	6.9	8.5	14.4	21.5	*	*
16 years . . . . .	187	10.9	0.82	*	*	6.7	7.4	8.4	11.3	15.5	*	*
17 years . . . . .	190	12.7	0.93	*	*	7.3	8.0	10.1	13.6	17.7	*	*
18 years . . . . .	168	12.3	0.87	*	*	7.3	8.0	9.8	13.3	17.1	*	*
19 years . . . . .	159	13.9	0.98	*	*	*	9.2	11.7	15.3	*	*	*
Female												
3–5 months . . . . .	307	8.1	0.22	*	6.0	6.3	6.8	7.8	9.4	10.0	10.6	*
6–8 months . . . . .	255	7.9	0.29	*	*	5.7	6.3	7.4	9.0	10.0	*	*
9–11 months . . . . .	312	7.6	0.19	*	5.7	5.9	6.5	7.5	8.7	9.3	9.7	*
1 year . . . . .	624	7.1	0.15	4.9	5.3	5.5	5.9	6.8	7.9	8.6	9.5	10.8
2 years . . . . .	541	6.9	0.17	*	5.2	5.3	5.6	6.6	7.7	8.4	9.0	*
3 years . . . . .	553	6.9	0.23	*	4.9	5.1	5.5	6.3	7.6	8.3	9.0	*
4 years . . . . .	526	7.3	0.35	*	5.0	5.2	5.4	6.2	7.7	8.9	9.8	*
5 years . . . . .	555	7.4	0.36	*	4.8	4.9	5.3	6.3	7.8	9.4	10.5	*
6 years . . . . .	273	7.6	0.61	*	*	4.9	5.1	6.1	7.6	10.4	*	*
7 years . . . . .	265	9.1	0.81	*	*	5.0	5.3	6.2	10.3	14.4	*	*
8 years . . . . .	243	9.0	0.75	*	*	5.0	5.6	6.7	10.7	12.8	*	*
9 years . . . . .	269	11.0	1.00	*	*	5.5	6.1	7.9	12.0	17.6	*	*
10 years . . . . .	253	11.5	0.99	*	*	5.8	6.5	8.5	14.9	19.9	*	*
11 years . . . . .	263	11.9	0.98	*	*	6.2	6.9	8.8	15.0	20.5	*	*
12 years . . . . .	231	12.6	1.05	*	*	6.1	6.9	9.9	15.0	18.9	*	*
13 years . . . . .	215	13.9	1.10	*	*	7.2	8.4	10.7	18.0	22.3	*	*
14 years . . . . .	214	15.3	1.15	*	*	8.4	9.1	13.6	17.8	22.1	*	*
15 years . . . . .	183	14.9	1.17	*	*	*	9.4	12.3	18.5	*	*	*
16 years . . . . .	199	16.0	1.10	*	*	10.1	10.5	13.0	18.9	22.7	*	*
17 years . . . . .	184	17.8	1.14	*	*	*	11.2	16.7	21.5	*	*	*
18 years . . . . .	160	16.4	1.20	*	*	*	11.0	13.2	22.3	*	*	*
19 years . . . . .	162	16.3	1.30	*	*	*	10.9	13.8	18.4	*	*	*

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

NOTE: Pregnant women are excluded.

**Table 32. Subscapular skinfold thickness in millimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,148	19.0	0.18	8.6	9.9	11.0	13.2	18.2	23.7	27.1	29.5	33.1
20–29 years . . . . .	1,541	16.2	0.28	7.9	8.7	9.1	10.6	14.3	20.3	24.1	26.8	31.8
30–39 years . . . . .	1,377	19.0	0.29	8.8	10.0	11.1	13.5	18.3	23.7	26.8	29.2	32.7
40–49 years . . . . .	1,103	20.1	0.33	9.4	11.0	12.5	14.6	19.3	24.4	28.2	30.2	34.1
50–59 years . . . . .	770	20.8	0.40	10.4	11.7	13.0	15.1	20.0	26.0	29.0	30.8	34.2
60–69 years . . . . .	1,059	21.2	0.34	10.2	11.9	13.2	15.4	20.6	25.9	29.4	32.0	35.0
70–79 years . . . . .	761	19.5	0.37	9.1	11.2	12.3	14.4	18.8	24.1	26.6	28.3	32.0
80 years and older . . . . .	537	16.7	0.38	7.7	8.9	10.2	12.2	16.6	20.2	22.5	23.8	27.2
Non-Hispanic white												
20 years and older . . . . .	2,955	19.0	0.24	8.7	10.0	11.1	13.3	18.2	23.6	26.9	29.4	33.0
20–29 years . . . . .	381	15.9	0.44	7.9	8.6	9.0	10.3	13.8	19.3	23.5	26.8	31.9
30–39 years . . . . .	440	18.9	0.39	8.9	10.2	11.4	13.5	18.3	23.5	26.5	28.9	32.6
40–49 years . . . . .	400	20.2	0.41	9.6	11.2	12.7	14.8	19.5	24.4	28.2	30.4	33.7
50–59 years . . . . .	382	20.5	0.44	10.4	11.5	12.8	14.7	19.5	26.0	28.5	30.6	33.6
60–69 years . . . . .	461	21.3	0.40	10.5	12.0	13.5	15.7	20.7	25.9	29.3	32.1	35.1
70–79 years . . . . .	462	19.4	0.36	9.1	11.2	12.3	14.2	18.7	24.1	26.3	28.2	31.8
80 years and older . . . . .	429	16.7	0.33	7.6	8.9	10.2	12.5	16.7	20.1	22.4	23.6	26.9
Non-Hispanic black												
20 years and older . . . . .	1,855	18.9	0.26	7.7	8.8	9.7	11.7	17.6	24.7	28.9	31.9	35.1
20–29 years . . . . .	450	17.2	0.39	7.6	8.5	9.1	10.5	14.4	22.8	26.6	30.1	33.1
30–39 years . . . . .	443	18.2	0.42	7.7	8.7	9.4	11.1	16.4	23.6	27.7	31.2	37.0
40–49 years . . . . .	320	20.1	0.48	8.1	9.6	10.7	13.7	18.9	25.8	30.0	33.1	35.3
50–59 years . . . . .	187	20.8	0.63	*	9.7	11.9	14.0	20.1	26.3	30.6	33.9	*
60–69 years . . . . .	257	20.8	0.56	7.5	8.9	10.9	13.5	20.2	27.0	31.1	33.2	37.2
70–79 years . . . . .	154	20.5	0.66	*	9.7	11.1	13.5	20.2	26.9	29.2	32.1	*
80 years and older . . . . .	44	17.6	1.03	*	*	*	12.3	16.3	23.0	*	*	*
Mexican American												
20 years and older . . . . .	2,077	19.5	0.22	8.9	10.2	11.5	14.0	18.9	24.2	27.4	29.8	33.1
20–29 years . . . . .	639	17.5	0.34	8.4	9.5	10.2	11.8	16.5	21.5	24.8	27.1	31.4
30–39 years . . . . .	442	20.2	0.42	8.9	10.4	11.8	14.8	19.7	25.2	28.3	30.5	33.0
40–49 years . . . . .	342	21.5	0.47	10.1	13.4	14.6	16.0	20.2	26.0	29.3	30.7	35.9
50–59 years . . . . .	159	22.6	0.66	*	14.5	16.1	17.7	21.7	27.4	29.7	32.9	*
60–69 years . . . . .	313	21.9	0.51	11.5	13.2	14.5	16.8	20.8	26.6	29.5	32.3	36.3
70–79 years . . . . .	133	18.5	0.63	*	10.9	12.9	14.6	18.3	21.9	24.0	25.6	*
80 years and older . . . . .	49	16.7	0.86	*	*	*	*	17.4	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 33. Subscapular skinfold thickness in millimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,520	21.3	0.22	8.5	9.8	11.1	13.4	20.4	28.2	32.3	35.1	38.3
20–29 years . . . . .	1,509	18.5	0.36	8.1	9.1	9.9	11.4	16.0	24.4	29.0	33.1	36.6
30–39 years . . . . .	1,544	21.3	0.39	8.3	9.4	10.4	12.7	19.8	28.7	33.7	35.9	39.3
40–49 years . . . . .	1,164	23.1	0.41	9.3	11.4	12.6	15.6	22.7	30.0	33.4	35.6	39.6
50–59 years . . . . .	876	24.5	0.47	10.0	12.7	14.3	17.7	24.3	31.0	35.3	37.1	39.8
60–69 years . . . . .	1,029	22.5	0.42	9.2	10.8	12.8	15.9	22.0	28.7	32.1	34.6	38.6
70–79 years . . . . .	836	19.8	0.44	8.4	9.5	11.0	13.0	19.3	25.1	29.2	30.9	34.6
80 years and older . . . . .	562	16.3	0.48	6.5	7.8	8.8	10.8	15.2	21.5	24.3	26.5	30.2
Non-Hispanic white												
20 years and older . . . . .	3,302	20.5	0.29	8.2	9.5	10.8	12.6	19.2	27.0	31.3	33.9	37.7
20–29 years . . . . .	424	17.4	0.52	8.0	8.7	9.5	11.0	14.2	22.4	28.0	31.5	36.6
30–39 years . . . . .	533	20.0	0.51	7.8	9.2	9.8	11.5	18.1	26.8	31.8	34.6	38.2
40–49 years . . . . .	428	21.9	0.52	8.9	10.8	12.0	14.7	21.1	28.9	32.4	34.1	38.0
50–59 years . . . . .	450	24.1	0.52	10.0	12.2	14.0	17.3	23.4	30.4	35.0	37.0	39.9
60–69 years . . . . .	464	22.1	0.49	8.9	10.2	12.2	15.3	21.4	28.4	32.0	33.8	38.2
70–79 years . . . . .	558	19.3	0.40	8.4	9.5	11.0	12.7	18.9	24.4	28.3	30.4	33.5
80 years and older . . . . .	445	16.1	0.40	6.6	7.8	8.8	10.7	14.5	21.2	23.8	26.1	29.7
Non-Hispanic black												
20 years and older . . . . .	2,004	24.8	0.29	9.2	11.7	13.4	16.8	24.6	32.7	36.3	38.5	40.4
20–29 years . . . . .	493	21.6	0.47	9.0	10.1	11.5	13.9	19.8	28.8	33.1	35.1	38.1
30–39 years . . . . .	505	25.0	0.51	9.4	12.0	13.4	17.5	23.6	33.2	37.4	39.4	41.9
40–49 years . . . . .	350	27.6	0.55	12.2	14.7	16.2	20.9	28.1	35.2	38.2	39.7	40.7
50–59 years . . . . .	212	27.6	0.74	*	13.6	15.5	21.2	29.4	35.1	37.7	38.7	*
60–69 years . . . . .	239	26.7	0.64	11.7	15.1	16.7	20.4	27.2	32.5	37.1	39.1	40.1
70–79 years . . . . .	143	24.3	0.87	*	11.4	14.4	18.8	24.1	30.3	34.4	37.9	*
80 years and older . . . . .	62	18.9	1.28	*	*	*	12.9	17.2	24.9	*	*	*
Mexican American												
20 years and older . . . . .	1,892	24.5	0.27	10.6	12.9	14.7	17.7	24.4	30.8	34.3	36.3	38.5
20–29 years . . . . .	522	22.2	0.45	9.9	11.1	12.8	14.9	21.2	28.5	32.6	35.1	37.9
30–39 years . . . . .	442	25.2	0.51	11.0	13.1	15.0	18.2	25.3	32.9	36.2	37.4	39.4
40–49 years . . . . .	321	27.3	0.47	15.3	18.4	19.7	22.5	27.5	32.2	35.6	37.2	39.0
50–59 years . . . . .	173	25.9	0.68	*	15.8	16.8	20.4	26.9	30.9	33.7	36.2	*
60–69 years . . . . .	282	25.1	0.57	10.8	14.0	16.5	19.5	24.9	31.8	34.0	35.0	38.1
70–79 years . . . . .	108	20.5	0.90	*	*	12.6	15.0	19.3	25.4	29.2	*	*
80 years and older . . . . .	44	15.2	1.16	*	*	*	*	*	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

NOTE: Pregnant women are excluded.

**Table 34. Suprailiac skinfold thickness in millimeters for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years . . . . .	500	5.3	0.11	3.3	3.7	4.0	4.2	5.0	6.1	6.7	7.3	8.2
3 years . . . . .	478	5.3	0.19	*	3.7	3.9	4.2	4.9	5.7	6.2	6.6	*
4 years . . . . .	537	5.4	0.19	3.4	3.7	3.9	4.2	4.8	5.6	6.5	7.4	9.2
5 years . . . . .	488	5.4	0.23	3.4	3.7	3.8	4.1	4.8	5.8	6.2	6.8	9.8
6 years . . . . .	277	6.9	0.60	*	3.5	3.7	4.2	5.2	6.4	8.5	11.5	*
7 years . . . . .	266	7.6	0.69	*	3.7	3.9	4.3	5.0	7.2	10.0	17.0	*
8 years . . . . .	257	8.5	0.72	*	4.0	4.2	4.6	5.8	8.5	14.3	21.3	*
9 years . . . . .	271	10.8	0.97	*	4.3	4.5	4.8	6.0	13.3	22.0	26.9	*
10 years . . . . .	289	11.7	0.90	*	4.1	4.3	4.9	8.2	17.2	24.4	26.1	*
11 years . . . . .	275	13.2	1.03	*	4.4	5.1	5.7	8.0	20.2	26.5	31.1	*
12 years . . . . .	199	15.2	1.24	*	*	5.6	6.2	12.2	23.6	29.0	*	*
13 years . . . . .	181	13.5	1.28	*	*	5.7	6.2	8.0	21.4	26.0	*	*
14 years . . . . .	178	11.9	1.04	*	*	6.1	6.5	8.7	15.3	18.4	*	*
15 years . . . . .	178	14.5	1.38	*	*	5.5	6.3	10.0	21.5	28.6	*	*
16 years . . . . .	186	12.9	1.22	*	*	6.1	6.8	8.6	16.5	23.5	*	*
17 years . . . . .	185	15.3	1.34	*	*	6.7	7.4	10.5	20.2	26.8	*	*
18 years . . . . .	164	13.6	1.25	*	*	5.5	6.3	10.3	17.0	21.4	*	*
19 years . . . . .	159	16.4	1.55	*	*	*	7.7	12.0	21.2	*	*	*
Female												
2 years . . . . .	492	5.9	0.20	*	4.2	4.4	4.7	5.4	6.6	7.4	8.2	*
3 years . . . . .	553	6.4	0.29	*	4.3	4.4	4.8	5.6	6.8	8.2	9.0	*
4 years . . . . .	526	6.7	0.39	*	4.0	4.3	4.6	5.7	7.2	8.3	10.2	*
5 years . . . . .	552	6.9	0.35	*	4.0	4.3	4.6	5.9	7.3	9.1	11.0	*
6 years . . . . .	273	7.6	0.73	*	*	4.0	4.6	5.5	7.8	11.0	*	*
7 years . . . . .	266	9.8	0.99	*	*	4.4	5.1	6.4	11.5	17.1	*	*
8 years . . . . .	242	9.7	0.93	*	*	4.6	5.2	6.8	10.6	16.1	*	*
9 years . . . . .	270	12.7	1.18	*	*	4.9	5.6	8.8	16.8	24.6	*	*
10 years . . . . .	254	13.5	1.20	*	*	6.0	6.7	9.6	18.5	23.3	*	*
11 years . . . . .	267	14.3	1.15	*	*	5.4	6.7	11.9	20.3	25.3	*	*
12 years . . . . .	227	14.9	1.29	*	*	6.1	6.5	12.1	21.1	25.8	*	*
13 years . . . . .	215	16.3	1.34	*	*	7.0	9.0	13.8	24.1	28.0	*	*
14 years . . . . .	210	18.2	1.32	*	*	8.3	10.6	16.0	25.4	28.4	*	*
15 years . . . . .	184	16.8	1.38	*	*	*	9.1	14.3	24.1	*	*	*
16 years . . . . .	197	17.0	1.26	*	*	8.9	10.8	14.1	20.8	25.5	*	*
17 years . . . . .	183	18.7	1.31	*	*	*	11.2	18.7	25.1	*	*	*
18 years . . . . .	163	17.4	1.37	*	*	*	10.7	15.1	24.5	*	*	*
19 years . . . . .	163	17.0	1.43	*	*	*	9.7	16.2	21.9	*	*	*

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

NOTE: Pregnant women are excluded.

**Table 35. Suprailiac skinfold thickness in millimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,258	22.3	0.23	7.0	9.0	10.9	14.2	22.0	29.7	33.5	36.0	38.7
20–29 years . . . . .	1,538	20.3	0.42	5.9	7.2	8.2	11.1	18.7	29.0	33.5	35.5	38.9
30–39 years . . . . .	1,385	23.5	0.41	7.1	9.5	11.7	15.9	23.6	31.3	34.6	36.7	38.7
40–49 years . . . . .	1,144	24.4	0.44	8.4	11.6	13.9	16.7	24.3	31.2	35.8	37.7	40.2
50–59 years . . . . .	794	23.6	0.50	9.0	10.9	12.9	17.0	23.7	30.3	33.1	36.1	38.2
60–69 years . . . . .	1,087	21.9	0.40	9.2	10.8	12.9	15.3	21.6	27.4	31.4	33.4	36.2
70–79 years . . . . .	770	18.5	0.46	6.2	8.7	9.8	12.3	17.7	24.1	27.4	29.9	32.7
80 years and older . . . . .	540	15.4	0.46	5.9	7.3	8.4	10.0	14.7	19.5	22.3	23.9	27.9
Non-Hispanic white												
20 years and older . . . . .	2,991	22.5	0.29	7.6	9.6	11.5	14.7	22.4	29.7	33.4	35.9	38.7
20–29 years . . . . .	378	20.6	0.68	6.0	7.6	8.6	11.4	19.6	29.6	33.6	35.6	38.9
30–39 years . . . . .	439	24.0	0.57	7.4	10.1	12.4	17.4	24.8	31.3	34.7	36.7	38.6
40–49 years . . . . .	403	24.9	0.57	10.3	12.6	14.1	17.8	24.6	31.2	36.0	38.3	40.5
50–59 years . . . . .	396	23.4	0.56	9.1	10.7	12.6	16.6	23.5	29.9	32.8	35.4	38.2
60–69 years . . . . .	476	22.0	0.47	9.6	11.1	13.5	15.5	21.5	27.6	31.2	33.4	36.2
70–79 years . . . . .	469	18.5	0.46	6.2	8.8	10.0	12.4	17.7	23.9	27.5	30.0	32.5
80 years and older . . . . .	430	15.3	0.40	5.9	7.3	8.5	10.0	14.7	19.0	22.3	23.9	27.9
Non-Hispanic black												
20 years and older . . . . .	1,898	19.9	0.38	5.0	5.9	7.1	9.6	18.5	29.1	34.0	36.6	39.6
20–29 years . . . . .	451	18.3	0.57	4.9	5.7	6.1	7.7	14.9	28.0	34.1	37.1	39.6
30–39 years . . . . .	452	19.6	0.56	4.8	5.8	6.6	9.3	18.4	29.1	33.4	36.5	39.9
40–49 years . . . . .	336	21.9	0.65	4.9	6.4	8.1	11.8	22.0	31.6	35.8	37.6	40.4
50–59 years . . . . .	192	21.4	0.76	5.6	7.1	9.8	13.5	20.4	29.4	33.7	36.6	37.3
60–69 years . . . . .	262	20.2	0.67	5.0	6.9	8.3	11.4	19.5	28.0	32.1	35.5	38.2
70–79 years . . . . .	160	18.8	0.81	*	6.7	7.9	10.2	17.8	25.1	29.4	33.3	*
80 years and older . . . . .	45	16.2	1.17	*	*	*	10.9	15.0	20.5	*	*	*
Mexican American												
20 years and older . . . . .	2,100	23.2	0.37	8.1	10.5	12.5	15.6	23.1	30.4	34.1	35.9	38.6
20–29 years . . . . .	638	21.8	0.57	7.3	8.8	10.6	13.4	21.0	29.3	33.6	35.3	38.0
30–39 years . . . . .	443	24.9	0.67	8.8	11.0	13.0	18.0	25.3	32.4	35.4	36.9	39.0
40–49 years . . . . .	361	24.5	0.66	10.1	13.7	14.9	17.7	25.2	30.6	34.3	35.7	38.4
50–59 years . . . . .	164	24.1	0.93	*	14.5	15.6	18.1	23.7	29.1	33.8	35.4	*
60–69 years . . . . .	317	22.6	0.72	9.8	12.0	13.5	15.8	21.5	28.4	32.6	34.0	38.1
70–79 years . . . . .	128	18.2	0.98	*	6.6	9.6	13.7	19.1	23.4	25.1	25.7	*
80 years and older . . . . .	49	16.5	1.18	*	*	*	*	15.4	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 36. Suprailiac skinfold thickness in millimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,602	20.2	0.24	5.9	7.3	8.5	11.2	19.3	28.3	32.9	35.0	38.0
20–29 years . . . . .	1,552	17.7	0.38	5.9	6.9	7.6	9.5	15.4	24.7	29.8	33.5	37.1
30–39 years . . . . .	1,580	19.8	0.41	5.7	6.4	7.6	9.5	18.2	28.4	33.3	36.3	38.9
40–49 years . . . . .	1,205	22.0	0.46	6.0	8.0	9.3	12.6	21.9	31.2	34.5	36.1	38.4
50–59 years . . . . .	890	24.0	0.50	7.2	9.7	11.8	17.2	24.5	31.9	34.8	37.3	38.8
60–69 years . . . . .	1,005	21.1	0.44	6.3	8.4	10.2	13.6	21.0	27.8	31.4	34.3	36.7
70–79 years . . . . .	816	18.7	0.48	5.3	7.4	9.0	11.1	17.9	25.7	29.2	31.7	34.6
80 years and older . . . . .	554	15.7	0.48	5.3	6.8	7.8	10.1	14.2	20.9	24.2	26.7	29.4
Non-Hispanic white												
20 years and older . . . . .	3,280	19.3	0.30	5.8	7.0	8.1	10.4	18.0	27.2	31.7	34.3	37.4
20–29 years . . . . .	431	16.7	0.56	5.8	6.6	7.4	9.0	13.5	22.3	29.1	33.0	37.2
30–39 years . . . . .	530	18.3	0.55	5.3	6.4	7.0	8.5	15.4	26.6	31.7	34.6	38.5
40–49 years . . . . .	443	20.7	0.58	5.7	7.4	9.1	11.4	20.2	29.5	33.6	35.2	37.3
50–59 years . . . . .	442	23.5	0.56	7.1	9.5	11.1	16.5	23.2	31.1	34.4	36.8	38.7
60–69 years . . . . .	446	20.5	0.52	6.2	7.9	9.5	13.0	20.1	27.1	30.6	34.1	36.4
70–79 years . . . . .	548	18.3	0.45	5.3	7.4	9.0	11.0	17.1	25.0	28.6	30.7	34.2
80 years and older . . . . .	440	15.5	0.41	5.4	6.8	7.8	9.9	14.2	20.6	23.7	26.3	28.3
Non-Hispanic black												
20 years and older . . . . .	2,083	23.1	0.35	6.1	7.9	9.6	13.8	23.8	32.1	35.8	37.7	40.0
20–29 years . . . . .	516	19.9	0.53	5.5	6.7	7.9	10.3	18.3	28.6	33.1	36.1	38.5
30–39 years . . . . .	531	22.8	0.54	5.8	7.7	9.5	13.6	22.3	32.7	35.9	38.2	40.1
40–49 years . . . . .	372	26.4	0.59	7.7	11.0	13.7	19.3	27.3	34.8	38.0	39.1	41.2
50–59 years . . . . .	225	26.3	0.78	6.3	10.0	13.3	18.9	28.5	34.6	36.9	38.4	40.9
60–69 years . . . . .	238	24.7	0.68	8.0	11.0	12.7	17.6	26.4	31.5	34.5	36.3	38.2
70–79 years . . . . .	139	22.3	0.93	*	8.2	10.1	14.7	23.1	30.3	33.5	35.7	*
80 years and older . . . . .	62	17.0	1.36	*	*	*	10.3	14.0	22.4	*	*	*
Mexican American												
20 years and older . . . . .	1,910	24.4	0.39	8.4	10.7	12.8	16.8	25.1	32.1	35.2	36.9	38.9
20–29 years . . . . .	536	21.8	0.54	7.6	8.9	10.5	13.6	22.1	29.6	32.4	34.5	36.8
30–39 years . . . . .	451	24.4	0.63	8.4	10.0	11.4	15.3	25.4	32.6	35.8	37.2	38.9
40–49 years . . . . .	326	27.8	0.62	13.2	16.2	18.3	21.9	28.6	34.5	36.8	38.2	40.1
50–59 years . . . . .	176	27.3	0.88	*	14.2	18.1	21.1	27.9	34.4	37.3	38.3	*
60–69 years . . . . .	275	26.2	0.72	10.4	13.3	15.7	20.4	26.4	32.4	36.1	38.3	40.2
70–79 years . . . . .	104	21.7	1.18	*	*	12.7	14.1	20.6	28.5	32.5	*	*
80 years and older . . . . .	42	16.5	1.64	*	*	*	*	*	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

NOTE: Pregnant women are excluded.

**Table 37. Thigh skinfold thickness in millimeters for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years . . . . .	505	12.2	0.22	8.2	8.8	9.2	10.2	11.8	14.0	15.3	16.0	17.7
3 years . . . . .	478	11.2	0.22	*	7.9	8.6	9.2	10.8	12.7	14.0	15.0	*
4 years . . . . .	536	11.5	0.26	6.9	7.5	8.1	9.2	10.7	13.1	14.7	15.5	17.7
5 years . . . . .	485	11.3	0.29	6.9	7.7	8.1	8.8	10.4	12.9	14.3	15.4	17.1
6 years . . . . .	278	12.8	0.72	*	7.2	7.4	8.3	10.9	13.5	17.3	22.1	*
7 years . . . . .	264	12.3	0.55	*	7.3	7.7	8.8	11.0	14.3	16.3	19.8	*
8 years . . . . .	254	13.6	0.73	*	7.5	7.9	8.7	10.9	16.7	19.6	23.6	*
9 years . . . . .	263	15.1	0.89	*	7.2	8.1	9.3	12.2	16.6	24.6	32.8	*
10 years . . . . .	281	16.5	0.87	*	7.1	7.9	10.0	13.8	20.2	27.7	29.7	*
11 years . . . . .	259	15.9	0.75	*	7.8	8.4	10.5	13.9	20.6	23.8	27.5	*
12 years . . . . .	192	16.2	0.89	*	*	8.4	10.4	14.7	20.6	23.2	*	*
13 years . . . . .	171	14.4	0.98	*	*	7.0	9.0	11.8	17.7	24.9	*	*
14 years . . . . .	171	13.2	0.98	*	*	7.1	7.8	10.3	15.0	22.0	*	*
15 years . . . . .	170	12.4	0.95	*	*	6.4	7.7	9.7	13.9	20.0	*	*
16 years . . . . .	181	11.7	0.70	*	*	6.9	7.8	10.2	13.6	16.8	*	*
17 years . . . . .	181	11.6	0.74	*	*	5.8	7.7	10.0	14.5	17.1	*	*
18 years . . . . .	162	11.5	0.78	*	*	6.5	7.6	9.4	14.2	17.5	*	*
19 years . . . . .	149	13.4	1.15	*	*	*	8.0	10.0	16.7	*	*	*
Female												
2 years . . . . .	494	14.2	0.29	*	10.3	10.9	11.8	13.5	16.0	17.2	18.5	*
3 years . . . . .	555	13.8	0.31	*	9.5	10.2	11.1	12.9	15.5	17.4	18.0	*
4 years . . . . .	525	14.2	0.34	*	9.5	10.3	11.6	13.1	16.2	18.5	19.1	*
5 years . . . . .	554	14.6	0.40	*	9.5	10.2	11.3	13.5	16.4	18.5	20.9	*
6 years . . . . .	269	14.4	0.57	*	*	9.7	10.8	12.9	17.2	19.7	*	*
7 years . . . . .	262	16.5	0.76	*	*	10.3	11.7	14.5	19.5	23.9	*	*
8 years . . . . .	233	16.8	0.71	*	*	10.9	12.1	15.3	20.3	22.2	*	*
9 years . . . . .	265	19.1	0.77	*	*	11.5	13.3	17.2	23.6	27.2	*	*
10 years . . . . .	238	18.4	0.84	*	*	11.6	12.8	16.6	22.3	27.2	*	*
11 years . . . . .	243	19.3	0.80	*	*	11.8	13.8	17.7	24.4	27.2	*	*
12 years . . . . .	200	18.9	0.95	*	*	11.1	13.6	16.5	24.1	28.3	*	*
13 years . . . . .	190	21.6	0.98	*	*	13.7	15.4	19.4	27.0	30.6	*	*
14 years . . . . .	190	23.9	0.99	*	*	15.1	17.3	23.4	28.4	34.0	*	*
15 years . . . . .	164	23.4	1.10	*	*	*	17.2	22.5	29.1	*	*	*
16 years . . . . .	179	25.2	1.03	*	*	*	19.5	24.7	30.2	*	*	*
17 years . . . . .	152	25.8	1.08	*	*	*	19.5	25.1	32.2	*	*	*
18 years . . . . .	147	25.3	1.12	*	*	*	19.4	25.3	32.4	*	*	*
19 years . . . . .	139	25.1	1.28	*	*	*	18.5	22.4	33.6	*	*	*

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

NOTE: Pregnant women are excluded.



**Table 38. High skinfold thickness in millimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,145	14.6	0.18	5.9	7.0	7.8	9.3	12.9	18.0	21.7	24.3	30.5
20–29 years . . . . .	1,493	13.6	0.29	5.6	6.4	7.2	8.2	11.9	17.1	20.3	22.6	29.2
30–39 years . . . . .	1,375	14.7	0.32	5.9	7.0	8.1	9.5	12.9	18.0	21.7	24.3	30.5
40–49 years . . . . .	1,128	15.1	0.36	6.5	7.5	8.2	9.7	13.7	18.0	21.7	24.1	32.1
50–59 years . . . . .	796	15.5	0.42	6.3	7.6	8.5	10.0	13.9	18.7	23.1	25.8	31.7
60–69 years . . . . .	1,079	15.0	0.37	6.5	7.2	8.0	9.5	13.0	18.5	22.1	24.5	31.5
70–79 years . . . . .	752	14.6	0.44	6.0	7.1	7.9	8.9	12.5	18.4	21.8	26.2	30.8
80 years and older . . . . .	522	14.3	0.49	5.5	6.7	7.5	9.2	12.5	18.3	21.6	24.8	28.4
Non-Hispanic white												
20 years and older . . . . .	2,933	15.3	0.18	6.3	7.4	8.3	9.7	13.5	18.6	22.3	25.8	31.5
20–29 years . . . . .	371	14.2	0.45	5.8	6.8	7.3	8.6	12.8	17.8	21.4	24.5	29.6
30–39 years . . . . .	430	15.4	0.44	6.2	7.4	8.8	9.8	13.5	18.7	22.8	26.4	30.9
40–49 years . . . . .	395	15.8	0.47	7.2	8.0	8.8	10.4	14.3	18.4	22.3	26.4	34.9
50–59 years . . . . .	390	16.0	0.47	6.6	7.9	8.9	10.2	14.3	20.0	24.0	26.5	32.3
60–69 years . . . . .	470	15.5	0.43	7.0	7.7	8.4	10.0	13.4	18.9	22.6	25.5	32.9
70–79 years . . . . .	461	14.7	0.42	6.0	7.3	8.0	9.0	12.5	18.8	21.8	26.2	30.8
80 years and older . . . . .	416	14.4	0.42	5.6	6.7	7.6	9.2	12.6	18.8	21.9	25.1	28.4
Non-Hispanic black												
20 years and older . . . . .	1,869	12.3	0.20	4.5	5.4	6.0	7.1	10.4	15.5	18.8	21.6	26.5
20–29 years . . . . .	438	11.6	0.34	4.7	5.2	5.7	6.7	9.6	14.9	17.9	20.7	25.0
30–39 years . . . . .	453	12.3	0.33	4.5	5.4	6.1	7.0	10.5	15.9	19.2	21.7	25.9
40–49 years . . . . .	327	12.6	0.41	4.4	5.2	6.1	7.6	11.0	16.0	18.6	21.7	26.0
50–59 years . . . . .	197	12.5	0.55	4.4	5.5	6.1	7.6	10.4	14.9	18.5	21.7	27.7
60–69 years . . . . .	262	12.3	0.46	5.1	5.6	5.9	7.1	10.1	15.7	20.2	22.4	26.1
70–79 years . . . . .	150	13.4	0.68	*	6.0	6.7	7.9	11.2	16.3	20.6	24.6	*
80 years and older . . . . .	42	13.5	1.16	*	*	*	7.5	13.1	16.5	*	*	*
Mexican American												
20 years and older . . . . .	2,084	12.3	0.16	5.8	6.5	7.1	8.3	11.0	14.7	17.7	19.6	24.0
20–29 years . . . . .	617	12.2	0.28	5.6	6.2	6.9	8.0	11.0	14.7	17.3	19.4	23.2
30–39 years . . . . .	443	12.8	0.33	5.9	6.9	7.6	9.0	11.4	15.8	18.0	20.3	24.9
40–49 years . . . . .	362	12.0	0.35	6.0	6.5	7.0	8.1	10.7	14.1	17.0	20.2	23.6
50–59 years . . . . .	168	12.8	0.59	*	6.9	7.6	8.5	10.5	15.2	18.0	22.8	*
60–69 years . . . . .	318	11.9	0.38	6.1	6.6	7.2	8.1	10.4	13.7	16.4	18.7	23.7
70–79 years . . . . .	128	10.8	0.49	*	5.4	6.4	7.6	10.5	12.8	14.5	16.5	*
80 years and older . . . . .	48	11.7	0.96	*	*	*	*	10.0	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 39. High skinfold thickness in millimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	6,412	29.3	0.22	13.9	17.0	19.1	22.5	30.0	36.7	39.1	40.6	42.3
20–29 years . . . . .	1,336	26.7	0.34	13.8	15.5	17.1	19.7	26.4	33.4	36.8	38.5	41.1
30–39 years . . . . .	1,261	29.0	0.36	14.8	17.6	19.5	22.1	28.7	36.4	39.2	40.6	42.2
40–49 years . . . . .	955	31.6	0.40	15.8	19.3	21.6	26.1	33.0	38.3	40.1	41.4	43.2
50–59 years . . . . .	701	31.3	0.47	15.3	19.1	21.4	25.4	32.6	38.4	40.8	41.6	42.6
60–69 years . . . . .	906	30.2	0.44	12.3	16.8	20.4	24.2	31.6	37.5	39.7	40.8	42.8
70–79 years . . . . .	740	29.1	0.47	13.8	16.9	18.4	22.5	29.8	36.1	39.0	40.4	42.1
80 years and older . . . . .	513	27.4	0.54	12.6	15.2	18.1	21.3	27.8	33.7	37.1	38.5	40.2
Non-Hispanic white												
20 years and older . . . . .	2,820	29.8	0.21	14.5	17.6	19.8	23.4	30.7	37.2	39.4	40.8	42.4
20–29 years . . . . .	387	27.1	0.52	14.1	15.9	17.5	20.2	26.8	33.6	37.1	38.7	41.2
30–39 years . . . . .	435	29.2	0.51	15.2	17.8	19.6	22.3	28.8	36.9	39.3	40.8	42.2
40–49 years . . . . .	355	32.4	0.53	16.7	20.2	23.4	27.7	34.0	38.6	40.4	41.6	43.8
50–59 years . . . . .	350	31.8	0.54	17.1	20.4	22.3	26.1	32.9	38.9	40.9	41.7	42.6
60–69 years . . . . .	393	30.8	0.54	13.0	18.3	21.6	25.5	32.2	37.6	39.9	41.1	43.0
70–79 years . . . . .	493	29.5	0.47	14.7	17.5	19.1	23.4	30.2	36.1	39.2	40.4	42.1
80 years and older . . . . .	407	27.8	0.50	13.5	16.0	18.8	21.9	28.0	34.2	37.2	38.6	40.3
Non-Hispanic black												
20 years and older . . . . .	1,648	28.5	0.30	12.5	15.2	17.9	21.1	29.3	36.5	39.2	40.6	42.2
20–29 years . . . . .	425	26.2	0.50	12.8	14.4	16.1	19.0	25.4	33.7	37.5	38.9	41.2
30–39 years . . . . .	401	28.8	0.55	13.0	15.1	18.0	21.3	29.8	36.9	39.6	41.0	42.4
40–49 years . . . . .	276	30.7	0.63	13.6	18.7	21.0	23.8	32.6	38.7	40.5	41.1	42.6
50–59 years . . . . .	170	29.4	0.88	*	15.0	17.7	21.7	42.4	37.8	39.6	41.2	*
60–69 years . . . . .	200	29.8	0.78	*	16.5	19.3	23.7	31.1	37.6	39.3	40.4	*
70–79 years . . . . .	121	28.4	0.92	*	15.8	18.2	20.7	28.7	35.2	38.8	40.3	*
80 years and older . . . . .	55	25.8	1.39	*	*	*	18.8	25.4	31.9	*	*	*
Mexican American												
20 years and older . . . . .	1,669	27.2	0.28	13.0	15.0	17.0	20.2	27.2	34.4	37.5	38.9	41.2
20–29 years . . . . .	458	25.7	0.47	12.2	14.5	16.1	19.0	25.3	32.3	35.8	37.6	40.8
30–39 years . . . . .	373	27.6	0.51	14.1	15.7	17.7	21.1	27.0	34.5	37.4	39.0	41.2
40–49 years . . . . .	276	29.7	0.61	13.7	17.3	20.0	22.9	30.1	37.3	38.7	40.8	42.2
50–59 years . . . . .	146	28.2	0.81	*	16.2	18.2	21.7	29.3	35.4	37.6	38.5	*
60–69 years . . . . .	270	27.3	0.65	13.2	14.6	16.5	19.9	27.9	35.3	38.4	39.1	40.2
70–79 years . . . . .	103	24.0	0.95	*	*	14.7	16.8	23.2	30.5	33.1	*	*
80 years and older . . . . .	43	18.7	1.51	*	*	*	*	*	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnic groups not listed separately.

NOTE: Pregnant women are excluded.

**Table 40. Head circumference in centimeters for persons aged 3 months to 7 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
3–5 months . . . . .	291	42.4	0.14	*	40.7	41.1	41.5	42.2	43.1	43.8	44.2	*
6–8 months . . . . .	317	44.8	0.14	*	42.9	43.2	43.8	44.8	45.9	46.3	46.5	*
9–11 months . . . . .	275	46.0	0.13	*	44.3	44.8	45.2	46.0	46.8	47.3	47.6	*
1 year . . . . .	656	47.9	0.10	45.6	46.0	46.4	46.8	47.8	48.8	49.5	49.9	50.3
2 years . . . . .	599	49.5	0.10	47.3	47.8	48.1	48.5	49.5	50.5	51.0	51.2	51.8
3 years . . . . .	495	50.3	0.10	48.2	48.7	49.0	49.4	50.1	51.2	51.7	52.1	52.3
4 years . . . . .	549	50.8	0.10	48.6	49.1	49.5	50.0	50.8	51.7	52.2	52.5	53.5
5 years . . . . .	491	51.5	0.10	49.4	49.8	50.2	50.7	51.6	52.3	52.8	53.1	53.9
6 years . . . . .	275	52.0	0.16	*	50.0	50.3	50.8	52.1	53.2	54.1	54.2	*
7 years . . . . .	261	52.5	0.14	*	50.7	51.0	51.5	52.6	53.3	53.7	54.0	*
Female												
3–5 months . . . . .	307	41.2	0.12	*	39.5	39.7	40.1	41.2	42.2	42.6	43.0	*
6–8 months . . . . .	263	43.5	0.12	*	*	42.1	42.6	43.4	44.4	44.9	*	*
9–11 months . . . . .	315	44.9	0.09	*	43.2	43.6	44.1	44.9	45.8	46.2	46.5	*
1 year . . . . .	631	46.7	0.09	44.4	44.9	45.2	45.7	46.7	47.7	48.2	48.7	49.1
2 years . . . . .	582	48.4	0.08	45.9	46.6	46.9	47.4	48.4	49.3	49.8	50.1	50.7
3 years . . . . .	574	49.5	0.07	47.2	47.8	48.1	48.6	49.4	50.4	50.7	51.1	51.7
4 years . . . . .	528	49.9	0.08	*	48.1	48.5	49.1	50.1	50.9	51.5	51.7	*
5 years . . . . .	553	50.7	0.08	*	49.1	49.3	49.7	50.6	51.7	52.2	52.6	*
6 years . . . . .	269	51.0	0.11	*	*	49.7	50.1	50.8	52.0	52.4	*	*
7 years . . . . .	267	51.3	0.13	*	*	49.6	50.3	51.3	52.6	53.0	*	*

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

**Table 41. Mid-upper arm circumference in centimeters for persons aged 3 months to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
3–5 months . . . . .	289	14.6	0.12	*	13.2	13.5	13.9	14.5	15.4	15.7	16.0	*
6–8 months . . . . .	319	15.3	0.12	*	13.8	14.0	14.4	15.2	16.1	16.6	17.0	*
9–11 months . . . . .	275	15.6	0.12	*	14.1	14.5	14.8	15.7	16.4	16.8	17.1	*
1 year . . . . .	651	16.1	0.08	14.4	14.8	15.0	15.4	16.0	16.9	17.3	17.7	18.3
2 years . . . . .	574	16.5	0.08	14.8	15.1	15.4	15.6	16.3	17.2	17.8	18.0	18.5
3 years . . . . .	483	16.9	0.13	15.0	15.4	15.7	15.9	16.8	17.7	18.2	18.6	19.0
4 years . . . . .	542	17.3	0.11	15.3	15.6	16.0	16.4	17.1	18.0	18.4	19.0	19.5
5 years . . . . .	495	17.9	0.13	15.5	16.0	16.2	16.8	17.7	18.6	19.3	19.6	20.7
6 years . . . . .	279	18.9	0.28	*	16.4	16.8	17.1	18.4	19.6	20.5	22.7	*
7 years . . . . .	268	19.3	0.24	*	17.1	17.6	17.9	18.9	20.3	21.3	21.7	*
8 years . . . . .	261	20.4	0.31	*	17.5	18.0	18.4	19.6	21.8	23.4	24.7	*
9 years . . . . .	276	21.7	0.34	*	18.3	18.6	19.2	20.7	24.2	25.3	27.0	*
10 years . . . . .	294	22.6	0.34	*	18.7	19.2	20.1	22.0	25.0	26.6	27.5	*
11 years . . . . .	281	23.6	0.38	*	19.7	20.0	21.1	22.7	25.5	27.4	28.1	*
12 years . . . . .	202	25.2	0.45	*	*	21.6	23.1	24.1	27.3	28.5	*	*
13 years . . . . .	181	25.7	0.49	*	*	22.0	23.6	24.6	27.8	28.6	*	*
14 years . . . . .	185	28.1	0.78	*	*	23.9	24.3	27.0	29.8	30.6	*	*
15 years . . . . .	183	28.5	0.51	*	*	24.9	25.9	27.5	31.1	33.3	*	*
16 years . . . . .	191	29.2	0.50	*	*	25.6	26.6	28.4	31.2	32.6	*	*
17 years . . . . .	193	30.7	0.51	*	*	26.7	27.7	30.0	33.1	35.3	*	*
18 years . . . . .	168	30.1	0.55	*	*	25.9	27.4	29.6	31.8	34.5	*	*
19 years . . . . .	161	31.5	0.52	*	*	27.8	28.6	30.8	33.7	35.8	*	*
Female												
3–5 months . . . . .	309	14.0	0.13	*	12.7	12.9	13.3	14.0	14.8	15.2	15.6	*
6–8 months . . . . .	262	14.8	0.14	*	*	13.6	13.9	14.7	15.4	16.1	*	*
9–11 months . . . . .	315	15.2	0.12	*	13.8	14.0	14.4	15.2	15.9	16.4	16.7	*
1 year . . . . .	627	15.9	0.09	14.0	14.4	14.7	15.0	15.9	16.7	17.0	17.5	17.9
2 years . . . . .	556	16.3	0.09	*	15.0	15.2	15.5	16.2	17.0	17.4	17.9	*
3 years . . . . .	561	17.0	0.11	15.1	15.5	15.8	16.1	16.8	17.6	18.1	18.5	19.3
4 years . . . . .	527	17.6	0.17	*	15.6	15.9	16.4	17.3	18.2	19.0	19.6	*
5 years . . . . .	555	18.1	0.15	*	16.1	16.3	16.8	17.8	19.0	19.7	20.6	*
6 years . . . . .	273	18.7	0.28	*	*	16.7	17.2	18.1	19.5	21.1	*	*
7 years . . . . .	270	19.9	0.34	*	*	17.1	17.6	19.3	21.4	23.5	*	*
8 years . . . . .	245	20.6	0.35	*	*	17.9	18.6	20.0	21.5	23.3	*	*
9 years . . . . .	272	22.1	0.47	*	*	18.4	19.3	20.9	24.0	26.5	*	*
10 years . . . . .	255	22.6	0.42	*	*	19.0	19.8	21.8	24.6	26.5	*	*
11 years . . . . .	268	23.7	0.40	*	*	20.1	21.2	23.5	25.7	27.4	*	*
12 years . . . . .	233	24.5	0.48	*	*	20.0	21.5	23.8	27.1	28.3	*	*
13 years . . . . .	217	26.3	0.53	*	*	22.1	23.0	25.4	29.1	31.1	*	*
14 years . . . . .	218	26.9	0.49	*	*	23.0	24.0	25.9	29.5	31.1	*	*
15 years . . . . .	189	26.7	0.49	*	*	23.8	24.2	25.9	28.1	30.1	*	*
16 years . . . . .	204	27.3	0.47	*	*	23.5	24.7	26.4	29.5	31.3	*	*
17 years . . . . .	195	27.7	0.50	*	*	24.2	25.2	27.0	29.3	31.2	*	*
18 years . . . . .	170	27.4	0.59	*	*	*	24.4	26.5	29.8	*	*	*
19 years . . . . .	168	28.2	0.63	*	*	*	25.2	27.2	29.6	*	*	*

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

NOTE: Pregnant women are excluded.

**Table 42. Mid-upper arm circumference in centimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,622	33.0	0.09	27.3	28.5	29.2	30.4	32.8	35.3	36.7	37.6	39.5
20–29 years . . . . .	1,585	32.4	0.14	27.0	27.9	28.7	29.6	32.3	34.6	36.2	37.4	38.9
30–39 years . . . . .	1,435	33.4	0.15	27.9	29.0	29.7	31.0	33.3	35.6	37.0	38.2	39.9
40–49 years . . . . .	1,178	33.7	0.15	28.3	29.5	30.2	31.2	33.3	35.7	37.5	38.4	40.8
50–59 years . . . . .	824	33.7	0.18	27.9	29.2	30.0	31.1	33.7	35.6	37.2	37.9	39.3
60–69 years . . . . .	1,126	32.8	0.15	26.8	28.4	29.2	30.6	32.7	35.2	36.2	37.0	37.8
70–79 years . . . . .	832	31.5	0.17	26.5	27.5	28.2	29.3	31.3	33.4	35.1	36.1	37.3
80 years and older . . . . .	642	29.5	0.19	23.5	25.5	26.2	27.3	29.5	31.5	32.6	33.3	35.3
Non-Hispanic white												
20 years and older . . . . .	3,159	33.1	0.11	27.5	28.6	29.4	30.6	33.0	35.3	36.7	37.6	39.3
20–29 years . . . . .	386	32.5	0.20	27.2	28.2	28.8	29.7	32.6	34.6	36.1	37.1	38.7
30–39 years . . . . .	444	33.6	0.19	27.9	29.1	29.9	31.2	33.5	35.7	37.1	38.2	39.9
40–49 years . . . . .	417	33.9	0.19	29.0	29.8	30.5	31.4	33.3	35.7	37.5	38.2	41.1
50–59 years . . . . .	406	33.7	0.19	27.9	29.4	30.1	31.1	33.7	35.8	37.2	38.0	39.3
60–69 years . . . . .	487	32.9	0.16	27.1	28.6	29.4	30.9	33.0	35.2	36.2	37.0	37.8
70–79 years . . . . .	502	31.6	0.16	26.5	27.5	28.3	29.4	31.3	33.5	35.2	36.1	37.2
80 years and older . . . . .	517	29.5	0.16	23.6	25.5	26.3	27.3	29.5	31.5	32.6	33.2	35.1
Non-Hispanic black												
20 years and older . . . . .	2,008	33.6	0.12	26.9	28.5	29.4	30.6	33.2	36.2	37.9	39.2	41.5
20–29 years . . . . .	473	33.7	0.23	27.5	28.4	29.4	30.4	33.0	36.5	38.3	39.8	41.9
30–39 years . . . . .	480	33.9	0.21	27.9	29.1	29.8	30.8	33.3	36.4	38.1	39.9	42.0
40–49 years . . . . .	344	33.9	0.23	27.2	29.1	30.0	31.2	33.8	36.2	37.6	39.2	40.9
50–59 years . . . . .	207	33.9	0.35	26.5	28.0	29.2	31.0	33.8	36.4	38.0	39.2	41.3
60–69 years . . . . .	282	32.9	0.28	25.9	26.7	28.6	30.2	32.8	35.8	37.8	38.6	39.9
70–79 years . . . . .	172	31.9	0.33	*	26.8	27.9	29.3	31.6	34.2	36.0	36.8	*
80 years and older . . . . .	50	30.0	0.65	*	*	*	27.6	30.0	32.2	*	*	*
Mexican American												
20 years and older . . . . .	2,180	32.5	0.12	27.0	28.1	29.0	30.2	32.3	34.6	36.1	37.1	38.5
20–29 years . . . . .	655	31.7	0.16	26.7	27.5	28.3	29.4	31.4	33.7	35.1	36.2	38.0
30–39 years . . . . .	457	33.0	0.20	27.3	28.6	29.5	30.6	33.1	35.1	36.5	37.5	39.4
40–49 years . . . . .	371	33.7	0.21	28.7	29.9	30.4	31.3	33.5	36.1	37.1	37.8	39.2
50–59 years . . . . .	169	33.5	0.30	*	29.9	30.0	31.2	33.3	35.1	36.6	37.4	*
60–69 years . . . . .	325	31.9	0.21	27.4	27.7	28.4	29.4	31.9	34.0	35.4	36.4	37.2
70–79 years . . . . .	145	30.3	0.32	*	26.0	27.4	28.0	30.5	32.7	33.9	34.4	*
80 years and older . . . . .	58	28.4	0.43	*	*	*	27.3	28.3	30.0	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 43. Mid-upper arm circumference in centimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,348	30.7	0.11	24.0	25.0	25.9	27.1	30.0	33.6	35.8	37.4	40.0
20–29 years . . . . .	1,623	28.9	0.17	23.4	24.2	24.7	25.8	27.9	31.1	33.4	35.1	37.8
30–39 years . . . . .	1,707	30.7	0.19	24.1	24.9	25.7	26.9	29.5	33.9	36.4	38.2	40.4
40–49 years . . . . .	1,300	31.4	0.20	24.8	25.8	26.7	28.0	30.7	34.0	36.0	37.7	40.3
60–59 years . . . . .	970	32.5	0.25	25.4	26.6	27.5	28.7	32.0	35.3	37.5	39.2	42.6
60–69 years . . . . .	1,122	31.7	0.21	24.7	26.2	26.9	28.3	31.2	34.3	36.5	38.3	40.4
70–79 years . . . . .	914	30.5	0.23	24.0	25.4	26.1	27.4	30.1	33.1	35.1	36.7	39.2
80 years and older . . . . .	712	28.5	0.25	21.5	23.0	23.8	25.5	28.4	31.5	33.2	34.0	35.8
Non-Hispanic white												
20 years and older . . . . .	3,595	30.4	0.13	24.0	25.0	25.7	27.0	29.6	33.3	35.4	37.0	39.5
20–29 years . . . . .	442	28.6	0.25	23.4	24.2	24.8	25.6	27.5	30.7	33.3	34.8	37.4
30–39 years . . . . .	561	30.2	0.27	24.0	24.7	25.4	26.6	28.9	33.0	35.8	37.0	39.6
40–49 years . . . . .	459	31.0	0.27	24.8	25.7	26.5	27.9	30.4	33.6	35.4	37.0	39.7
60–59 years . . . . .	472	32.4	0.28	25.5	26.6	27.5	28.6	31.9	35.0	37.3	38.8	42.4
60–69 years . . . . .	485	31.5	0.26	24.3	26.0	26.8	28.3	31.0	34.1	36.0	37.7	40.2
70–79 years . . . . .	608	30.4	0.22	24.1	25.4	26.2	27.4	29.9	32.6	34.9	36.2	38.6
80 years and older . . . . .	568	28.5	0.23	21.5	23.0	23.9	25.6	28.4	31.5	33.0	34.0	35.7
Non-Hispanic black												
20 years and older . . . . .	2,347	32.5	0.14	24.4	25.6	26.7	28.2	31.8	35.8	38.4	40.1	42.6
20–29 years . . . . .	548	30.3	0.24	23.4	24.5	25.2	26.8	29.5	33.1	35.2	37.3	39.8
30–39 years . . . . .	593	32.4	0.26	24.7	25.8	26.7	28.2	31.6	35.8	38.4	40.1	42.2
40–49 years . . . . .	426	34.0	0.33	26.0	27.1	27.9	29.8	33.1	37.5	39.6	42.1	44.4
60–59 years . . . . .	261	34.1	0.41	25.2	26.3	27.8	30.1	34.2	37.9	40.0	41.1	44.3
60–69 years . . . . .	280	34.0	0.39	25.4	27.5	28.7	30.1	33.6	37.1	39.5	41.0	42.9
70–79 years . . . . .	161	32.8	0.51	*	26.3	27.5	29.4	32.1	36.2	37.8	40.7	*
80 years and older . . . . .	78	28.9	0.63	*	*	23.5	24.9	29.1	32.9	34.1	*	*
Mexican American												
20 years and older . . . . .	2,048	31.5	0.17	24.3	25.8	26.6	28.0	31.0	34.4	36.2	37.8	40.5
20–29 years . . . . .	559	29.7	0.24	23.6	24.3	25.2	26.5	29.0	32.4	34.7	35.8	37.9
30–39 years . . . . .	481	31.9	0.27	25.2	26.3	26.9	28.5	31.2	35.1	36.8	38.5	41.4
40–49 years . . . . .	348	33.1	0.29	27.0	27.9	28.9	29.9	32.9	35.5	37.2	38.8	41.3
60–59 years . . . . .	185	32.9	0.41	*	28.0	28.5	30.0	32.5	35.5	36.7	38.3	*
60–69 years . . . . .	309	32.8	0.34	26.2	27.8	28.1	29.4	32.3	35.4	37.0	38.6	43.4
70–79 years . . . . .	115	30.5	0.62	*	*	25.5	26.2	29.9	33.4	37.2	*	*
80 years and older . . . . .	51	27.2	0.75	*	*	*	23.1	27.2	30.1	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

NOTE: Pregnant women are excluded.

**Table 44. Thigh circumference in centimeters for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years . . . . .	522	28.1	0.15	25.0	25.5	25.8	26.8	27.8	29.4	30.3	30.8	31.8
3 years . . . . .	482	29.2	0.21	25.7	26.3	27.0	27.6	28.9	30.6	31.3	31.7	32.5
4 years . . . . .	539	30.2	0.18	26.6	27.2	27.8	28.5	30.0	31.5	32.2	33.0	35.0
5 years . . . . .	489	31.6	0.22	27.5	28.0	28.6	29.5	31.1	33.0	34.1	34.7	37.3
6 years . . . . .	279	33.7	0.44	*	29.0	30.0	30.8	32.8	35.5	37.0	39.5	*
7 years . . . . .	268	34.9	0.40	*	30.4	31.3	32.1	34.0	37.0	38.4	39.9	*
8 years . . . . .	260	36.7	0.48	*	31.7	32.4	33.5	35.7	39.0	41.4	43.1	*
9 years . . . . .	273	39.4	0.53	*	33.9	34.4	35.3	38.1	43.0	44.7	46.9	*
10 years . . . . .	293	40.5	0.47	*	34.2	35.6	37.0	39.7	43.8	46.5	46.6	*
11 years . . . . .	279	42.9	0.61	*	36.5	37.5	38.5	41.4	46.2	49.0	51.2	*
12 years . . . . .	201	44.9	0.65	*	*	39.7	40.9	43.6	48.8	50.7	*	*
13 years . . . . .	181	45.9	0.72	*	*	40.0	41.8	45.8	49.7	52.5	*	*
14 years . . . . .	185	49.5	1.05	*	*	43.0	44.7	47.9	50.6	54.8	*	*
15 years . . . . .	180	50.7	0.74	*	*	45.3	46.3	49.6	54.5	56.0	*	*
16 years . . . . .	191	50.5	0.76	*	*	45.4	46.2	49.5	52.9	56.3	*	*
17 years . . . . .	191	51.7	0.62	*	*	46.7	47.6	51.3	55.2	56.3	*	*
18 years . . . . .	169	50.7	0.79	*	*	43.8	45.7	50.2	53.7	55.7	*	*
19 years . . . . .	161	51.7	0.66	*	*	47.0	47.8	50.8	54.6	56.9	*	*
Female												
2 years . . . . .	508	28.4	0.17	*	25.7	26.3	26.9	28.2	29.6	30.6	31.1	*
3 years . . . . .	560	29.5	0.19	25.8	26.5	27.3	27.9	29.2	30.9	32.0	32.3	33.6
4 years . . . . .	527	31.1	0.28	*	27.7	28.3	29.0	30.5	32.4	33.6	34.8	*
5 years . . . . .	556	32.1	0.25	*	28.4	28.9	29.7	31.5	33.6	35.3	36.8	*
6 years . . . . .	274	33.4	0.45	*	*	29.9	30.5	32.3	35.2	37.7	*	*
7 years . . . . .	268	35.3	0.50	*	*	31.0	31.8	34.2	37.4	41.0	*	*
8 years . . . . .	245	37.4	0.51	*	*	32.8	34.2	37.1	39.0	41.5	*	*
9 years . . . . .	271	39.4	0.64	*	*	34.5	35.3	37.6	42.0	44.5	*	*
10 years . . . . .	255	40.6	0.61	*	*	34.9	36.1	39.6	43.6	47.4	*	*
11 years . . . . .	268	43.1	0.57	*	*	37.8	38.9	43.0	45.6	47.7	*	*
12 years . . . . .	231	44.8	0.70	*	*	39.0	40.1	43.7	48.0	51.2	*	*
13 years . . . . .	218	47.9	0.71	*	*	42.3	43.3	47.0	52.0	54.6	*	*
14 years . . . . .	217	48.8	0.71	*	*	43.1	44.8	47.3	53.0	55.5	*	*
15 years . . . . .	187	48.7	0.64	*	*	43.7	45.2	48.3	50.9	54.6	*	*
16 years . . . . .	202	49.5	0.65	*	*	44.1	45.4	48.2	52.8	54.7	*	*
17 years . . . . .	192	49.9	0.73	*	*	44.8	46.3	49.0	53.6	55.0	*	*
18 years . . . . .	169	49.6	0.88	*	*	*	45.2	48.5	52.3	*	*	*
19 years . . . . .	168	51.0	0.92	*	*	*	46.3	49.9	53.2	*	*	*

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

NOTE: Pregnant women are excluded.

**Table 45. High circumference in centimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,369	51.7	0.12	44.0	45.6	46.7	48.2	51.3	54.7	56.8	58.3	61.2
20–29 years . . . . .	1,574	52.4	0.18	44.8	46.3	47.1	48.4	51.7	55.4	57.9	59.6	61.8
30–39 years . . . . .	1,430	53.0	0.19	45.7	47.2	48.1	49.5	52.4	56.0	57.8	59.2	63.3
40–49 years . . . . .	1,170	52.3	0.20	45.0	46.1	47.5	49.1	51.7	55.0	57.1	58.7	61.9
50–59 years . . . . .	815	51.6	0.22	44.1	46.1	47.1	48.6	51.6	54.2	56.2	57.3	59.1
60–69 years . . . . .	1,091	49.8	0.18	42.5	44.8	45.6	46.8	49.6	52.6	54.2	55.3	57.1
70–79 years . . . . .	764	48.1	0.24	41.7	42.8	43.6	45.0	47.7	50.8	52.7	53.8	56.1
80 years and older . . . . .	525	46.1	0.25	39.4	40.9	42.2	43.6	46.0	48.6	50.4	51.4	52.9
Non-Hispanic white												
20 years and older . . . . .	3,004	51.7	0.14	44.1	45.7	46.8	48.3	51.3	54.6	56.7	58.0	61.0
20–29 years . . . . .	384	52.2	0.27	45.1	46.3	47.1	48.4	51.5	55.3	57.7	59.0	61.2
30–39 years . . . . .	444	53.2	0.26	45.7	47.3	48.4	49.7	52.7	56.1	57.6	58.9	63.3
40–49 years . . . . .	413	52.4	0.25	45.4	46.6	48.0	49.4	51.8	55.0	57.0	58.7	61.6
50–59 years . . . . .	401	51.7	0.23	44.4	46.6	47.4	48.8	51.7	54.2	56.2	57.4	59.1
60–69 years . . . . .	476	49.9	0.21	42.8	45.0	45.9	47.0	49.7	52.5	54.2	55.3	57.0
70–79 years . . . . .	468	48.1	0.23	41.9	42.8	43.6	45.2	47.7	50.8	52.5	53.6	55.5
80 years and older . . . . .	418	46.1	0.21	39.3	40.8	42.0	43.7	46.1	48.5	50.3	51.4	52.8
Non-Hispanic black												
20 years and older . . . . .	1,956	53.5	0.16	43.8	45.9	47.3	49.4	53.0	57.1	59.6	61.5	64.8
20–29 years . . . . .	470	55.4	0.33	45.9	47.4	48.9	50.8	54.2	59.3	61.6	64.6	68.2
30–39 years . . . . .	477	54.3	0.30	44.8	47.7	48.6	50.3	53.6	57.7	59.7	62.6	65.2
40–49 years . . . . .	342	53.3	0.32	44.5	46.4	47.7	49.7	53.1	56.7	58.9	60.5	62.9
50–59 years . . . . .	203	51.9	0.44	42.4	44.1	45.3	48.1	52.2	55.5	58.1	58.8	60.9
60–69 years . . . . .	265	50.7	0.38	41.2	42.4	45.0	47.1	50.8	54.8	56.8	58.1	60.3
70–79 years . . . . .	156	49.2	0.48	*	41.8	43.1	45.4	49.2	53.3	55.1	56.3	*
80 years and older . . . . .	43	48.2	0.66	*	*	*	45.5	48.0	50.8	*	*	*
Mexican American												
20 years and older . . . . .	2,138	50.8	0.17	43.4	45.0	46.1	47.8	50.6	53.6	55.5	56.9	58.9
20–29 years . . . . .	650	51.0	0.22	44.1	45.2	46.6	47.9	50.7	53.7	55.6	57.0	58.6
30–39 years . . . . .	455	51.4	0.27	44.5	45.8	46.8	48.4	51.4	54.1	55.5	56.9	59.4
40–49 years . . . . .	369	51.3	0.30	43.8	45.6	46.5	48.1	51.4	54.4	56.4	57.6	59.3
50–59 years . . . . .	169	50.5	0.42	*	45.0	46.2	47.6	50.2	52.8	54.3	56.8	*
60–69 years . . . . .	319	48.0	0.30	40.5	42.1	43.3	45.3	48.3	50.7	52.9	53.6	55.2
70–79 years . . . . .	128	46.4	0.46	*	40.8	42.4	43.6	46.6	49.6	50.8	51.6	*
80 years and older . . . . .	48	44.5	0.70	*	*	*	*	44.2	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.



**Table 46. Thigh circumference in centimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,022	51.1	0.15	41.9	43.6	44.6	46.3	50.1	55.0	57.9	60.4	64.1
20–29 years . . . . .	1,615	50.7	0.23	42.7	44.0	45.0	46.2	49.7	54.1	57.4	60.0	63.1
30–39 years . . . . .	1,690	52.4	0.26	43.2	44.3	45.5	46.9	51.2	56.5	60.2	62.4	66.4
40–49 years . . . . .	1,289	52.1	0.29	42.6	44.6	45.9	47.5	51.1	55.6	58.4	60.8	64.5
50–59 years . . . . .	957	52.0	0.34	42.2	44.2	45.1	47.2	51.4	56.1	58.6	61.3	65.1
60–69 years . . . . .	1,071	49.8	0.30	40.3	42.2	43.6	45.4	49.5	53.4	56.1	57.9	61.1
70–79 years . . . . .	848	48.6	0.33	40.2	41.5	42.7	44.3	47.8	51.9	54.9	56.7	59.9
80 years and older . . . . .	552	46.8	0.37	37.9	40.0	41.1	43.1	46.3	50.1	52.3	54.3	57.6
Non-Hispanic white												
20 years and older . . . . .	3,375	50.7	0.17	41.9	43.5	44.6	46.2	49.8	54.2	57.2	59.3	62.8
20–29 years . . . . .	440	50.2	0.34	42.7	44.0	44.8	46.1	49.0	53.2	56.1	59.0	61.5
30–39 years . . . . .	553	51.7	0.36	43.1	44.2	45.2	46.6	50.5	55.7	59.1	60.9	65.9
40–49 years . . . . .	456	51.8	0.38	42.8	45.0	46.1	47.5	50.8	55.3	57.8	59.7	62.9
50–59 years . . . . .	469	51.8	0.39	42.2	44.2	45.1	47.1	51.3	55.7	58.1	60.5	63.8
60–69 years . . . . .	463	49.6	0.35	40.4	42.3	43.6	45.5	49.4	53.2	55.8	57.5	60.6
70–79 years . . . . .	559	48.4	0.32	40.4	41.7	42.7	44.3	47.6	51.5	54.3	56.0	59.4
80 years and older . . . . .	435	46.7	0.33	37.9	40.1	41.2	43.1	46.3	50.0	51.8	53.3	57.1
Non-Hispanic black												
20 years and older . . . . .	2,281	55.0	0.19	43.9	45.5	47.0	49.3	54.1	59.7	63.1	65.8	69.3
20–29 years . . . . .	546	54.4	0.35	43.5	45.3	46.8	49.1	53.3	59.0	62.4	65.0	68.2
30–39 years . . . . .	589	55.8	0.37	44.2	46.1	47.4	50.0	54.9	60.5	64.6	66.8	70.1
40–49 years . . . . .	421	56.3	0.44	44.9	46.0	47.7	50.3	55.6	60.8	64.5	67.5	71.4
50–59 years . . . . .	253	55.0	0.54	41.3	45.9	47.2	49.3	55.0	60.0	62.7	65.3	68.4
60–69 years . . . . .	260	54.4	0.57	43.8	45.6	46.6	48.6	53.4	59.5	62.3	65.6	69.6
70–79 years . . . . .	151	52.6	0.71	*	44.2	45.5	47.6	51.4	57.3	59.6	61.4	*
80 years and older . . . . .	61	49.4	0.94	*	*	*	44.6	48.5	55.3	*	*	*
Mexican American												
20 years and older . . . . .	2,013	50.6	0.23	41.3	43.2	44.4	46.2	50.0	54.1	56.8	59.1	63.0
20–29 years . . . . .	555	50.3	0.31	42.0	43.4	44.4	46.0	49.6	53.9	56.5	58.4	60.7
30–39 years . . . . .	476	51.6	0.37	42.1	44.2	45.4	47.2	50.4	55.2	57.8	60.8	63.7
40–49 years . . . . .	345	51.9	0.40	42.2	44.4	45.7	47.9	51.5	55.2	58.0	60.3	64.6
50–59 years . . . . .	183	50.1	0.53	*	42.6	44.3	45.8	50.0	53.7	55.7	57.0	*
60–69 years . . . . .	300	48.5	0.42	40.4	41.8	42.7	44.2	47.6	52.0	54.0	56.3	60.0
70–79 years . . . . .	110	46.2	0.69	*	*	40.3	41.7	45.9	49.1	51.3	*	*
80 years and older . . . . .	44	42.0	0.88	*	*	*	*	*	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

NOTE: Pregnant women are excluded.

**Table 47. Waist circumference in centimeters for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years . . . . .	524	47.9	0.20	43.5	44.4	45.0	46.0	47.7	49.5	50.8	51.8	53.1
3 years . . . . .	485	49.8	0.31	45.1	46.0	46.6	47.5	49.3	51.2	52.5	53.2	55.5
4 years . . . . .	542	51.4	0.25	46.4	47.2	47.8	48.9	51.4	52.9	54.4	55.3	57.2
5 years . . . . .	492	53.0	0.31	47.6	48.4	48.8	50.1	52.5	54.9	56.0	57.3	61.2
6 years . . . . .	279	55.7	0.64	*	49.6	50.5	51.5	54.1	57.8	59.7	66.5	*
7 years . . . . .	268	57.4	0.63	*	51.4	52.1	53.0	55.7	59.4	62.7	64.2	*
8 years . . . . .	262	60.0	0.72	*	52.7	53.6	54.6	58.0	63.7	67.2	72.0	*
9 years . . . . .	273	63.3	0.91	*	54.1	55.0	56.7	59.6	68.8	75.0	78.1	*
10 years . . . . .	293	65.1	0.83	*	55.1	56.1	57.9	62.9	69.5	76.7	77.5	*
11 years . . . . .	281	68.7	1.02	*	58.2	59.0	61.0	65.1	74.1	81.1	84.4	*
12 years . . . . .	202	72.2	1.20	*	*	61.1	64.5	69.1	80.2	84.5	*	*
13 years . . . . .	181	73.0	1.35	*	*	61.7	65.0	69.6	80.4	85.5	*	*
14 years . . . . .	185	77.4	1.91	*	*	66.6	67.5	73.1	79.5	85.5	*	*
15 years . . . . .	182	78.7	1.54	*	*	66.8	69.6	75.4	85.4	92.1	*	*
16 years . . . . .	191	78.3	1.25	*	*	70.1	71.4	75.0	82.0	85.8	*	*
17 years . . . . .	190	81.0	1.26	*	*	70.9	73.0	77.6	84.5	94.7	*	*
18 years . . . . .	169	80.2	1.35	*	*	71.0	71.9	77.0	84.9	91.0	*	*
19 years . . . . .	162	82.1	1.33	*	*	73.1	75.1	79.2	86.2	94.6	*	*
Female												
2 years . . . . .	507	48.0	0.28	*	44.2	44.8	45.9	48.0	49.8	50.8	52.0	*
3 years . . . . .	562	49.8	0.35	43.6	45.5	46.1	47.1	49.3	51.6	53.3	54.5	57.2
4 years . . . . .	527	52.1	0.46	*	47.2	47.8	49.0	51.1	53.7	55.6	56.8	*
5 years . . . . .	554	53.3	0.41	*	47.9	48.6	49.6	52.6	55.4	57.4	59.8	*
6 years . . . . .	273	54.6	0.78	*	*	49.1	50.4	53.0	56.5	60.1	*	*
7 years . . . . .	268	57.6	0.92	*	*	50.7	52.2	55.4	60.4	64.6	*	*
8 years . . . . .	244	59.4	0.94	*	*	53.1	54.1	58.2	62.1	65.4	*	*
9 years . . . . .	273	62.9	1.14	*	*	53.5	55.9	59.8	66.6	73.0	*	*
10 years . . . . .	254	64.7	1.22	*	*	56.0	57.1	61.3	69.5	76.1	*	*
11 years . . . . .	266	67.4	1.05	*	*	58.7	60.5	65.8	72.6	77.6	*	*
12 years . . . . .	233	69.9	1.36	*	*	59.8	61.7	67.8	77.1	79.5	*	*
13 years . . . . .	216	74.0	1.49	*	*	62.9	66.4	71.6	80.3	85.6	*	*
14 years . . . . .	217	76.4	1.40	*	*	65.6	69.2	74.0	82.9	89.3	*	*
15 years . . . . .	188	74.1	1.43	*	*	65.3	68.1	71.6	77.6	81.3	*	*
16 years . . . . .	204	76.5	1.69	*	*	67.1	68.7	72.2	81.3	86.8	*	*
17 years . . . . .	191	78.5	1.50	*	*	69.1	70.1	76.5	81.6	91.3	*	*
18 years . . . . .	169	76.5	1.72	*	*	*	69.0	74.6	81.1	*	*	*
19 years . . . . .	170	78.6	1.88	*	*	*	69.6	75.2	82.5	*	*	*

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

NOTE: Pregnant women are excluded.

**Table 48. Waist circumference in centimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,410	95.2	0.30	75.9	79.1	81.6	86.1	94.3	102.9	108.1	111.7	118.6
20–29 years . . . . .	1,579	87.6	0.43	72.3	74.5	76.2	79.1	85.6	94.0	99.6	103.4	111.5
30–39 years . . . . .	1,428	93.6	0.46	76.4	79.3	81.7	85.7	92.5	100.0	103.5	108.1	115.1
40–49 years . . . . .	1,173	97.7	0.54	79.1	83.1	85.2	89.5	96.5	104.2	109.6	112.7	121.1
50–59 years . . . . .	816	100.5	0.58	83.4	86.0	88.6	92.3	99.4	107.2	111.9	116.7	121.5
60–69 years . . . . .	1,101	101.6	0.49	82.8	87.2	90.3	94.3	101.9	109.0	112.2	116.1	120.7
70–79 years . . . . .	773	100.1	0.57	80.8	86.0	89.1	93.0	100.3	107.2	110.8	114.0	120.2
80 years and older . . . . .	540	97.6	0.67	79.2	84.2	86.4	91.5	97.5	103.6	108.5	111.1	115.0
Non-Hispanic white												
20 years and older . . . . .	3,024	96.3	0.37	77.4	80.3	83.1	87.5	95.3	103.6	108.8	112.3	119.4
20–29 years . . . . .	383	88.1	0.63	73.6	76.0	77.5	79.5	86.1	94.3	100.0	103.7	111.6
30–39 years . . . . .	445	94.6	0.61	77.7	81.2	83.2	87.0	93.2	100.5	103.6	108.5	117.3
40–49 years . . . . .	416	98.4	0.66	80.5	84.3	87.1	91.0	97.1	104.6	110.0	112.7	121.6
50–59 years . . . . .	402	100.9	0.61	84.4	86.4	89.2	92.5	100.1	107.1	113.4	117.9	121.6
60–69 years . . . . .	479	102.3	0.55	84.1	88.3	91.0	95.3	102.5	109.5	112.5	116.7	121.0
70–79 years . . . . .	469	100.7	0.52	81.9	88.3	90.0	93.5	100.6	107.5	111.2	114.5	121.0
80 years and older . . . . .	430	98.2	0.55	80.0	85.4	87.8	91.9	97.9	104.5	108.6	111.3	115.1
Non-Hispanic black												
20 years and older . . . . .	1,969	91.8	0.45	72.0	74.6	77.2	80.5	90.6	100.3	105.9	110.5	118.2
20–29 years . . . . .	473	87.1	0.72	70.4	72.0	73.4	76.6	84.0	94.7	100.6	104.7	113.9
30–39 years . . . . .	473	90.3	0.69	71.5	74.2	76.8	80.2	88.5	96.8	103.7	108.9	119.0
40–49 years . . . . .	341	93.9	0.77	74.2	78.3	79.6	84.0	92.4	102.2	106.3	111.6	118.5
50–59 years . . . . .	203	97.1	1.08	75.0	79.0	83.3	88.0	96.2	103.1	109.9	114.0	125.6
60–69 years . . . . .	271	97.7	0.85	75.6	80.2	83.3	88.9	96.8	106.7	111.5	115.1	117.7
70–79 years . . . . .	162	96.7	1.05	*	80.1	82.6	87.1	97.7	104.5	108.0	110.7	*
80 years and older . . . . .	46	94.0	1.74	*	*	*	86.1	93.6	102.1	*	*	*
Mexican American												
20 years and older . . . . .	2,144	93.5	0.43	75.4	78.5	81.0	85.1	92.3	101.0	105.6	109.4	114.6
20–29 years . . . . .	652	87.8	0.52	73.1	75.5	77.2	80.0	86.8	93.6	98.4	102.2	107.8
30–39 years . . . . .	456	93.7	0.62	77.8	80.5	83.2	86.6	93.0	99.1	103.6	106.8	112.6
40–49 years . . . . .	370	99.0	0.75	83.5	86.7	88.3	91.0	97.6	106.0	110.6	113.3	120.2
50–59 years . . . . .	169	101.9	1.10	*	87.5	89.5	93.5	102.5	108.7	113.0	116.5	*
60–69 years . . . . .	319	100.9	0.67	84.0	88.6	90.6	95.1	100.1	108.0	111.5	113.6	117.2
70–79 years . . . . .	130	98.3	1.24	*	83.6	84.3	91.4	99.8	104.5	106.8	111.1	*
80 years and older . . . . .	48	95.4	1.47	*	*	*	*	95.6	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 49. Waist circumference in centimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity, age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,061	88.6	0.34	68.0	70.6	72.8	76.6	86.5	98.5	105.1	109.3	116.5
20–29 years . . . . .	1,616	80.5	0.51	65.6	67.2	69.0	70.9	76.6	87.1	94.0	99.4	107.0
30–39 years . . . . .	1,702	86.4	0.59	67.1	69.1	71.5	74.8	83.5	94.6	103.6	108.9	116.3
40–49 years . . . . .	1,295	89.7	0.66	69.6	72.6	75.1	78.2	86.6	98.8	105.6	109.6	116.7
50–59 years . . . . .	962	94.4	0.75	72.6	76.7	79.1	83.6	92.6	104.3	109.8	113.6	121.4
60–69 years . . . . .	1,074	94.5	0.67	72.8	76.1	79.5	84.9	94.0	102.8	109.3	112.1	119.1
70–79 years . . . . .	852	93.6	0.73	73.9	76.4	79.5	83.5	93.0	102.3	106.5	109.8	118.1
80 years and older . . . . .	560	91.7	0.73	73.6	77.1	80.6	84.3	91.1	100.0	103.6	105.6	109.0
Non-Hispanic white												
20 years and older . . . . .	3,395	88.0	0.42	67.8	70.3	72.3	76.1	85.7	98.0	104.7	108.7	115.5
20–29 years . . . . .	440	79.4	0.76	65.6	67.1	68.7	70.5	75.2	85.1	92.5	98.7	106.9
30–39 years . . . . .	558	84.8	0.79	66.8	68.5	70.2	74.1	81.8	91.6	101.9	107.1	114.5
40–49 years . . . . .	457	88.4	0.85	69.5	72.1	73.8	77.7	85.1	96.9	105.0	108.6	116.0
50–59 years . . . . .	469	94.0	0.86	72.6	76.4	78.5	82.5	92.0	104.1	109.8	113.1	120.7
60–69 years . . . . .	466	94.0	0.79	72.1	75.7	78.7	84.3	93.6	101.9	108.2	111.8	119.0
70–79 years . . . . .	564	93.3	0.70	74.0	76.4	79.2	83.3	92.2	102.1	106.1	108.8	116.8
80 years and older . . . . .	441	91.8	0.63	74.0	78.1	81.1	85.0	91.1	99.8	103.2	105.5	108.2
Non-Hispanic black												
20 years and older . . . . .	2,296	92.8	0.47	69.5	72.7	75.1	80.2	91.1	103.1	110.3	115.5	122.6
20–29 years . . . . .	547	84.6	0.71	65.7	68.9	70.2	73.9	81.9	93.7	99.3	103.1	112.2
30–39 years . . . . .	593	91.4	0.80	69.8	72.4	74.5	79.9	88.2	101.7	109.7	114.9	123.4
40–49 years . . . . .	424	96.7	0.98	72.5	76.2	79.1	85.0	94.4	106.2	115.2	119.2	125.8
50–59 years . . . . .	257	99.3	1.12	73.5	79.1	84.3	89.5	98.5	108.6	115.0	118.9	126.8
60–69 years . . . . .	261	100.6	1.09	78.8	83.3	86.5	89.6	100.0	110.0	114.0	118.9	129.0
70–79 years . . . . .	151	97.9	1.29	*	80.5	85.0	88.6	96.7	107.2	112.8	117.1	*
80 years and older . . . . .	63	91.2	1.95	*	*	*	82.7	90.6	102.1	*	*	*
Mexican American												
20 years and older . . . . .	2,019	91.1	0.52	69.8	73.1	75.6	80.5	90.2	100.0	105.2	110.0	115.9
20–29 years . . . . .	555	84.7	0.70	67.1	69.5	71.1	74.2	83.5	92.6	97.4	102.5	110.0
30–39 years . . . . .	479	90.6	0.82	70.4	73.4	75.6	80.1	89.9	99.2	104.6	110.2	116.3
40–49 years . . . . .	347	95.8	0.85	77.4	80.7	83.0	86.9	95.5	103.1	107.8	112.5	117.6
50–59 years . . . . .	185	96.3	1.13	*	79.3	83.3	88.2	96.8	104.3	108.0	109.8	*
60–69 years . . . . .	299	99.2	1.00	78.5	82.8	85.3	88.8	97.6	108.2	113.1	117.4	124.6
70–79 years . . . . .	110	96.7	1.57	*	82.1	88.6	96.5	105.9	111.4	*	*	*
80 years and older . . . . .	44	90.3	2.02	*	*	*	*	*	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

NOTE: Pregnant women are excluded.

**Table 50. Wrist breadth in centimeters for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years . . . . .	528	3.6	0.02	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.8	4.0
3 years . . . . .	487	3.8	0.02	3.4	3.5	3.5	3.6	3.8	3.9	4.0	4.1	4.2
4 years . . . . .	544	3.9	0.02	3.5	3.6	3.6	3.7	3.9	4.0	4.1	4.2	4.3
5 years . . . . .	495	4.1	0.02	3.6	3.7	3.7	3.9	4.1	4.3	4.4	4.4	4.5
6 years . . . . .	279	4.2	0.03	*	3.9	4.0	4.0	4.3	4.5	4.5	4.6	*
7 years . . . . .	269	4.4	0.03	*	4.0	4.1	4.2	4.3	4.5	4.6	4.7	*
8 years . . . . .	261	4.5	0.04	*	4.0	4.0	4.2	4.4	4.6	4.8	4.9	*
9 years . . . . .	276	4.7	0.03	*	4.2	4.4	4.5	4.7	5.0	5.1	5.1	*
10 years . . . . .	294	4.8	0.03	*	4.5	4.5	4.6	4.8	5.0	5.2	5.2	*
11 years . . . . .	282	5.0	0.04	*	4.6	4.7	4.8	5.0	5.2	5.4	5.5	*
12 years . . . . .	202	5.3	0.05	*	*	4.9	5.0	5.2	5.5	5.8	*	*
13 years . . . . .	182	5.5	0.06	*	*	5.0	5.2	5.5	5.8	5.9	*	*
14 years . . . . .	187	5.7	0.04	*	*	5.3	5.4	5.7	6.0	6.1	*	*
15 years . . . . .	185	5.7	0.04	*	*	5.4	5.5	5.7	5.8	6.0	*	*
16 years . . . . .	192	5.7	0.04	*	*	5.5	5.6	5.7	6.0	6.1	*	*
17 years . . . . .	193	5.8	0.04	*	*	5.5	5.6	5.8	6.0	6.2	*	*
18 years . . . . .	169	5.8	0.05	*	*	5.5	5.6	5.8	6.1	6.2	*	*
19 years . . . . .	164	5.8	0.03	*	*	5.4	5.6	5.7	5.9	6.0	*	*
Female												
2 years . . . . .	508	3.5	0.02	*	3.2	3.2	3.3	3.5	3.6	3.7	3.7	*
3 years . . . . .	567	3.6	0.02	3.2	3.3	3.4	3.5	3.6	3.8	3.9	3.9	4.0
4 years . . . . .	528	3.8	0.02	*	3.5	3.5	3.6	3.8	4.0	4.0	4.2	*
5 years . . . . .	555	3.9	0.02	*	3.6	3.7	3.7	3.9	4.1	4.2	4.3	*
6 years . . . . .	274	4.1	0.03	*	*	3.8	3.9	4.1	4.2	4.4	*	*
7 years . . . . .	269	4.2	0.04	*	*	3.9	4.0	4.2	4.4	4.5	*	*
8 years . . . . .	245	4.4	0.03	*	*	4.1	4.2	4.4	4.6	4.7	*	*
9 years . . . . .	271	4.6	0.03	*	*	4.3	4.4	4.5	4.8	4.9	*	*
10 years . . . . .	257	4.7	0.04	*	*	4.4	4.5	4.7	4.9	5.0	*	*
11 years . . . . .	270	4.9	0.04	*	*	4.5	4.6	4.8	5.1	5.2	*	*
12 years . . . . .	233	5.0	0.04	*	*	4.5	4.7	5.0	5.2	5.2	*	*
13 years . . . . .	218	5.0	0.04	*	*	4.7	4.8	5.0	5.2	5.3	*	*
14 years . . . . .	217	5.0	0.04	*	*	4.7	4.8	5.0	5.2	5.3	*	*
15 years . . . . .	189	5.0	0.04	*	*	4.7	4.9	5.0	5.2	5.3	*	*
16 years . . . . .	203	5.1	0.04	*	*	4.7	4.8	5.1	5.3	5.4	*	*
17 years . . . . .	197	5.0	0.04	*	*	4.8	4.9	5.1	5.3	5.3	*	*
18 years . . . . .	170	5.0	0.04	*	*	*	4.8	5.0	5.2	*	*	*
19 years . . . . .	171	5.0	0.04	*	*	*	4.8	5.0	5.2	*	*	*

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

NOTE: Pregnant women are excluded.

**Table 51. Wrist breadth in centimeters for males aged 20 years and older and number of examined persons, mean standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,501	5.9	0.01	5.3	5.5	5.5	5.7	5.9	6.2	6.3	6.4	6.5
20–29 years . . . . .	1,588	5.8	0.01	5.2	5.4	5.5	5.6	5.8	6.0	6.1	6.2	6.3
30–39 years . . . . .	1,435	5.9	0.01	5.3	5.4	5.5	5.6	5.9	6.1	6.2	6.3	6.5
40–49 years . . . . .	1,180	5.9	0.02	5.4	5.5	5.6	5.7	5.9	6.2	6.3	6.4	6.5
50–59 years . . . . .	819	6.0	0.02	5.4	5.5	5.6	5.7	6.0	6.2	6.4	6.5	6.6
60–69 years . . . . .	1,117	6.1	0.02	5.4	5.5	5.7	5.8	6.1	6.3	6.4	6.5	6.6
70–79 years . . . . .	799	6.1	0.02	5.5	5.6	5.7	5.9	6.1	6.3	6.5	6.5	6.7
80 years and older . . . . .	563	6.1	0.03	5.5	5.6	5.7	5.8	6.1	6.4	6.5	6.5	6.7
Non-Hispanic white												
20 years and older . . . . .	3,058	5.9	0.01	5.4	5.5	5.6	5.7	6.0	6.2	6.3	6.4	6.5
20–29 years . . . . .	386	5.8	0.02	5.3	5.4	5.5	5.6	5.9	6.0	6.1	6.2	6.3
30–39 years . . . . .	445	5.9	0.02	5.3	5.4	5.5	5.6	5.9	6.1	6.2	6.4	6.5
40–49 years . . . . .	418	5.9	0.02	5.4	5.5	5.6	5.7	5.9	6.2	6.3	6.4	6.5
50–59 years . . . . .	403	6.0	0.02	5.5	5.6	5.7	5.7	6.0	6.3	6.4	6.5	6.6
60–69 years . . . . .	483	6.1	0.02	5.5	5.6	5.7	5.9	6.1	6.3	6.4	6.5	6.6
70–79 years . . . . .	477	6.1	0.02	5.6	5.7	5.7	5.9	6.1	6.3	6.5	6.5	6.7
80 years and older . . . . .	446	6.1	0.02	5.5	5.6	5.7	5.8	6.1	6.4	6.5	6.5	6.8
Non-Hispanic black												
20 years and older . . . . .	2,009	5.9	0.01	5.3	5.5	5.6	5.7	5.9	6.2	6.3	6.4	6.6
20–29 years . . . . .	476	5.8	0.02	5.3	5.4	5.5	5.6	5.8	6.1	6.2	6.3	6.4
30–39 years . . . . .	479	5.9	0.02	5.4	5.5	5.5	5.7	5.9	6.1	6.3	6.4	6.5
40–49 years . . . . .	346	6.0	0.02	5.3	5.5	5.6	5.7	6.0	6.2	6.4	6.4	6.6
50–59 years . . . . .	206	6.0	0.03	5.5	5.6	5.6	5.7	6.0	6.3	6.5	6.5	6.6
60–69 years . . . . .	281	6.1	0.03	5.5	5.7	5.8	5.9	6.1	6.4	6.5	6.6	6.7
70–79 years . . . . .	171	6.2	0.04	*	5.6	5.7	5.9	6.2	6.4	6.6	6.7	*
80 years and older . . . . .	50	6.2	0.05	*	*	*	6.0	6.2	6.4	*	*	*
Mexican American												
20 years and older . . . . .	2,159	5.8	0.01	5.3	5.4	5.5	5.6	5.8	6.0	6.1	6.2	6.3
20–29 years . . . . .	654	5.7	0.02	5.2	5.3	5.4	5.5	5.7	6.0	6.1	6.1	6.2
30–39 years . . . . .	457	5.8	0.02	5.3	5.4	5.5	5.6	5.8	6.0	6.1	6.2	6.3
40–49 years . . . . .	370	5.8	0.02	5.4	5.5	5.5	5.7	5.8	6.0	6.2	6.2	6.3
50–59 years . . . . .	168	5.9	0.03	*	5.5	5.5	5.7	5.8	6.1	6.2	6.3	*
60–69 years . . . . .	321	6.0	0.02	5.5	5.5	5.6	5.7	6.0	6.2	6.4	6.4	6.5
70–79 years . . . . .	138	5.9	0.04	*	5.5	5.6	5.7	5.9	6.1	6.2	6.4	*
80 years and older . . . . .	51	5.9	0.06	*	*	*	5.7	5.8	6.1	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 52. Wrist breadth in centimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,162	5.2	0.01	4.7	4.8	4.8	5.0	5.2	5.4	5.5	5.6	5.7
20–29 years . . . . .	1,619	5.0	0.01	4.5	4.7	4.7	4.8	5.0	5.2	5.4	5.4	5.5
30–39 years . . . . .	1,713	5.1	0.01	4.7	4.8	4.8	4.9	5.1	5.3	5.4	5.5	5.6
40–49 years . . . . .	1,305	5.2	0.01	4.6	4.7	4.8	5.0	5.2	5.4	5.5	5.6	5.7
50–59 years . . . . .	965	5.3	0.02	4.7	4.9	4.9	5.0	5.2	5.5	5.6	5.7	5.8
60–69 years . . . . .	1,091	5.3	0.02	4.7	4.9	5.0	5.0	5.3	5.5	5.6	5.7	5.9
70–79 years . . . . .	873	5.3	0.02	4.8	4.9	5.0	5.1	5.3	5.5	5.7	5.7	5.9
80 years and older . . . . .	596	5.4	0.02	4.8	4.9	5.0	5.1	5.4	5.6	5.7	5.7	5.9
Non-Hispanic white												
20 years and older . . . . .	3,432	5.2	0.01	4.7	4.8	4.9	5.0	5.2	5.4	5.5	5.6	5.7
20–29 years . . . . .	440	5.0	0.02	4.6	4.7	4.7	4.8	5.0	5.2	5.4	5.4	5.5
30–39 years . . . . .	559	5.1	0.01	4.7	4.8	4.8	4.9	5.1	5.3	5.4	5.5	5.6
40–49 years . . . . .	461	5.2	0.02	4.6	4.7	4.8	5.0	5.2	5.4	5.5	5.6	5.7
50–59 years . . . . .	470	5.3	0.02	4.8	4.9	5.0	5.0	5.2	5.5	5.6	5.7	5.8
60–69 years . . . . .	468	5.3	0.02	4.7	4.9	5.0	5.0	5.3	5.5	5.6	5.7	5.8
70–79 years . . . . .	571	5.3	0.02	4.8	4.9	5.0	5.1	5.3	5.5	5.7	5.7	5.9
80 years and older . . . . .	463	5.3	0.02	4.8	4.9	5.0	5.1	5.4	5.5	5.7	5.7	5.8
Non-Hispanic black												
20 years and older . . . . .	2,342	5.3	0.01	4.7	4.8	4.9	5.0	5.2	5.5	5.6	5.7	5.9
20–29 years . . . . .	548	5.1	0.02	4.6	4.7	4.8	5.0	5.1	5.3	5.5	5.5	5.6
30–39 years . . . . .	601	5.2	0.02	4.6	4.8	4.8	5.0	5.2	5.4	5.5	5.6	5.7
40–49 years . . . . .	430	5.3	0.02	4.8	4.9	5.0	5.1	5.3	5.5	5.6	5.7	5.8
50–59 years . . . . .	258	5.4	0.03	4.9	4.9	5.0	5.2	5.4	5.6	5.7	5.8	6.0
60–69 years . . . . .	273	5.5	0.03	4.9	5.0	5.1	5.2	5.4	5.7	5.8	5.9	6.0
70–79 years . . . . .	160	5.5	0.04	*	5.0	5.1	5.2	5.5	5.7	5.8	5.9	*
80 years and older . . . . .	72	5.5	0.06	*	*	*	5.3	5.5	5.8	*	*	*
Mexican American												
20 years and older . . . . .	2,035	5.1	0.01	4.6	4.7	4.8	4.9	5.1	5.3	5.5	5.5	5.6
20–29 years . . . . .	557	5.0	0.02	4.5	4.7	4.7	4.8	5.0	5.2	5.3	5.4	5.5
30–39 years . . . . .	481	5.1	0.02	4.6	4.7	4.8	4.9	5.1	5.3	5.4	5.5	5.6
40–49 years . . . . .	347	5.2	0.02	4.7	4.8	4.9	5.0	5.2	5.4	5.5	5.5	5.7
50–59 years . . . . .	185	5.2	0.03	*	4.9	4.9	5.0	5.2	5.4	5.5	5.6	*
60–69 years . . . . .	303	5.2	0.02	4.7	4.8	4.9	5.0	5.2	5.5	5.5	5.6	5.7
70–79 years . . . . .	113	5.3	0.04	*	*	5.0	5.0	5.3	5.5	5.6	*	*
80 years and older . . . . .	49	5.2	0.06	*	*	*	*	5.3	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

NOTE: Pregnant women are excluded.

**Table 53. Biacromial breadth in centimeters for persons aged 3 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
3 years . . . . .	452	22.4	0.12	*	20.5	21.1	21.5	22.3	23.2	23.6	24.0	*
4 years . . . . .	542	23.7	0.12	21.3	21.9	22.2	22.8	23.7	24.5	25.2	25.4	26.0
5 years . . . . .	492	25.0	0.14	22.4	23.2	23.4	23.8	25.1	26.0	26.5	26.8	27.3
6 years . . . . .	279	26.3	0.21	*	24.3	24.4	25.0	26.2	27.4	28.1	28.8	*
7 years . . . . .	268	27.6	0.19	*	25.6	25.9	26.5	27.3	28.8	29.2	29.8	*
8 years . . . . .	262	29.0	0.25	*	26.9	27.0	27.3	28.9	29.9	30.9	31.7	*
9 years . . . . .	274	30.5	0.23	*	28.2	28.6	29.3	30.4	31.8	32.4	33.2	*
10 years . . . . .	292	31.2	0.21	*	28.8	29.5	30.1	31.1	32.2	33.1	33.4	*
11 years . . . . .	281	32.6	0.21	*	30.5	30.9	31.6	32.7	33.6	34.3	35.2	*
12 years . . . . .	202	34.4	0.30	*	*	32.0	32.9	34.4	35.8	36.5	*	*
13 years . . . . .	181	35.9	0.36	*	*	33.2	34.1	35.8	37.7	38.5	*	*
14 years . . . . .	187	37.7	0.34	*	*	35.5	36.4	37.5	38.9	40.6	*	*
15 years . . . . .	183	38.8	0.31	*	*	36.3	37.5	38.9	40.3	40.7	*	*
16 years . . . . .	193	39.9	0.34	*	*	37.8	38.5	39.7	41.1	42.2	*	*
17 years . . . . .	193	40.8	0.30	*	*	38.5	39.4	40.7	42.4	43.2	*	*
18 years . . . . .	169	41.0	0.30	*	*	38.5	39.6	41.2	42.5	43.0	*	*
19 years . . . . .	162	40.8	0.37	*	*	38.2	39.7	41.3	42.6	43.3	*	*
Female												
3 years . . . . .	529	22.2	0.12	*	20.4	20.8	21.3	22.1	23.1	23.4	23.8	*
4 years . . . . .	526	23.8	0.18	*	21.9	22.1	22.7	23.6	24.6	25.2	25.9	*
5 years . . . . .	556	24.9	0.14	*	22.9	23.1	23.7	24.8	26.0	26.5	27.3	*
6 years . . . . .	274	26.1	0.19	*	*	24.8	25.2	26.0	26.9	27.7	*	*
7 years . . . . .	271	27.2	0.24	*	*	25.5	26.2	27.2	28.5	29.3	*	*
8 years . . . . .	245	28.8	0.25	*	*	26.5	27.3	28.8	30.2	30.5	*	*
9 years . . . . .	274	30.2	0.24	*	*	28.4	28.7	30.0	31.4	32.1	*	*
10 years . . . . .	255	31.1	0.21	*	*	29.6	30.1	30.7	32.2	32.9	*	*
11 years . . . . .	269	33.0	0.26	*	*	30.6	31.6	33.0	34.5	35.1	*	*
12 years . . . . .	233	34.1	0.26	*	*	31.9	32.8	34.2	35.5	36.2	*	*
13 years . . . . .	218	35.5	0.31	*	*	33.1	33.9	35.0	36.9	38.1	*	*
14 years . . . . .	219	36.0	0.26	*	*	34.2	34.5	35.9	37.4	37.8	*	*
15 years . . . . .	195	36.3	0.30	*	*	34.0	34.6	36.3	37.8	38.8	*	*
16 years . . . . .	211	36.7	0.24	*	*	34.7	35.3	36.8	38.2	38.5	*	*
17 years . . . . .	212	36.7	0.24	*	*	34.8	35.8	36.6	37.9	38.6	*	*
18 years . . . . .	185	36.6	0.28	*	*	*	35.1	36.7	37.7	*	*	*
19 years . . . . .	186	36.4	0.26	*	*	*	35.2	36.4	37.7	*	*	*

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



**Table 54. Biacromial breadth in centimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,476	41.1	0.05	37.3	38.2	38.7	39.6	41.1	42.6	43.5	44.1	45.0
20–29 years . . . . .	1,587	41.5	0.10	37.7	38.6	39.2	39.9	41.4	43.0	43.9	44.6	45.3
30–39 years . . . . .	1,434	41.5	0.10	38.2	38.9	39.4	40.1	41.3	42.8	43.6	44.1	45.1
40–49 years . . . . .	1,177	41.3	0.11	37.6	38.5	39.0	39.9	41.3	42.7	43.7	44.2	45.2
50–59 years . . . . .	817	41.0	0.14	37.3	38.2	38.7	39.5	41.0	42.6	43.4	44.0	44.6
60–69 years . . . . .	1,114	40.5	0.13	36.6	37.6	38.2	39.0	40.5	42.1	43.1	43.7	44.4
70–79 years . . . . .	793	39.7	0.15	35.9	36.5	37.2	38.1	39.8	41.3	42.0	42.7	43.7
80 years and older . . . . .	554	39.0	0.16	35.5	36.4	36.9	37.6	38.9	40.4	41.1	41.7	42.2
Non-Hispanic white												
20 years and older . . . . .	3,047	41.1	0.10	37.3	38.2	38.7	39.6	41.1	42.6	43.5	44.0	45.0
20–29 years . . . . .	385	41.6	0.15	37.9	38.7	39.3	40.1	41.6	43.1	43.9	44.6	45.3
30–39 years . . . . .	444	41.5	0.14	38.2	39.0	39.5	40.2	41.3	42.8	43.6	44.0	45.1
40–49 years . . . . .	418	41.4	0.14	37.6	38.6	39.1	40.0	41.3	42.8	43.7	44.1	45.2
50–59 years . . . . .	401	41.1	0.15	37.2	38.2	38.7	39.6	41.2	42.7	43.4	44.1	44.6
60–69 years . . . . .	482	40.6	0.14	36.8	37.7	38.3	39.1	40.5	42.2	43.1	43.8	44.4
70–79 years . . . . .	476	39.7	0.14	36.0	36.5	37.2	38.1	39.7	41.3	42.0	42.8	43.7
80 years and older . . . . .	441	38.9	0.13	35.4	36.4	36.9	37.5	38.9	40.3	41.0	41.5	42.2
Non-Hispanic black												
20 years and older . . . . .	1,994	41.8	0.10	38.1	38.9	39.4	40.2	41.6	43.3	44.2	44.8	45.8
20–29 years . . . . .	475	42.0	0.13	38.4	39.1	39.6	40.3	41.9	43.5	44.4	45.1	46.3
30–39 years . . . . .	480	42.2	0.13	38.5	39.6	40.0	40.6	42.1	43.6	44.5	45.1	46.2
40–49 years . . . . .	342	41.8	0.13	38.3	39.1	39.5	40.3	41.8	43.3	44.2	44.8	45.3
50–59 years . . . . .	205	41.6	0.19	37.9	38.6	39.4	39.9	41.4	43.0	44.2	44.6	45.4
60–69 years . . . . .	279	41.1	0.18	37.4	38.0	38.7	39.3	40.8	42.5	43.7	44.3	45.3
70–79 years . . . . .	167	40.3	0.21	*	37.0	38.2	38.9	40.4	41.9	42.7	43.1	*
80 years and older . . . . .	46	39.9	0.34	*	*	*	38.6	40.0	41.5	*	*	*
Mexican American												
20 years and older . . . . .	2,160	41.0	0.07	37.6	38.3	38.8	39.5	40.9	42.4	43.2	43.7	44.4
20–29 years . . . . .	655	41.0	0.10	37.8	38.4	38.9	39.5	41.0	42.4	43.1	43.7	44.3
30–39 years . . . . .	456	41.1	0.13	37.4	38.5	38.9	39.7	41.1	42.6	43.3	44.1	44.7
40–49 years . . . . .	371	41.1	0.14	37.9	38.6	39.2	39.8	41.0	42.4	43.3	43.7	44.4
50–59 years . . . . .	169	41.1	0.20	*	38.6	39.0	39.6	41.2	42.5	43.4	43.8	*
60–69 years . . . . .	321	40.4	0.15	36.9	37.6	38.4	39.1	40.4	41.9	42.2	42.8	43.6
70–79 years . . . . .	137	39.3	0.24	*	36.6	36.7	37.7	39.5	40.6	41.5	42.2	*
80 years and older . . . . .	51	38.6	0.32	*	*	*	37.6	38.9	40.2	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 55. Biacromial breadth in centimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,411	36.7	0.05	33.4	34.2	34.6	35.3	36.6	38.1	38.8	39.4	40.3
20–29 years . . . . .	1,805	36.9	0.09	33.7	34.5	34.9	35.6	36.7	38.1	38.8	39.4	40.3
30–39 years . . . . .	1,795	37.0	0.09	33.8	34.5	35.0	35.7	36.9	38.3	38.9	39.7	40.7
40–49 years . . . . .	1,305	36.9	0.11	33.9	34.4	34.9	35.6	36.9	38.2	38.9	39.6	40.4
50–59 years . . . . .	966	36.9	0.13	33.7	34.4	34.8	35.4	36.8	38.3	39.2	39.7	40.5
60–69 years . . . . .	1,091	36.4	0.12	32.9	33.9	34.4	35.1	36.4	37.6	38.5	38.9	39.8
70–79 years . . . . .	866	35.7	0.13	32.3	33.3	33.7	34.5	35.7	37.0	37.6	38.2	38.8
80 years and older . . . . .	583	34.8	0.15	31.5	32.3	32.8	33.5	34.9	36.0	36.8	37.3	37.9
Non-Hispanic white												
20 years and older . . . . .	3,489	36.6	0.08	33.3	34.2	34.6	35.3	36.6	37.9	38.6	39.2	40.1
20–29 years . . . . .	484	36.8	0.10	33.8	34.5	34.9	35.6	36.7	38.1	38.8	39.3	40.3
30–39 years . . . . .	581	36.9	0.10	33.7	34.5	35.0	35.7	36.8	38.2	38.8	39.4	40.4
40–49 years . . . . .	458	36.8	0.11	33.7	34.4	34.9	35.5	36.7	38.2	38.8	39.4	40.3
50–59 years . . . . .	471	36.9	0.11	33.8	34.5	34.8	35.5	36.8	38.2	39.1	39.6	40.5
60–69 years . . . . .	468	36.3	0.11	32.8	34.0	34.4	35.1	36.4	37.6	38.4	38.8	39.4
70–79 years . . . . .	570	35.6	0.09	32.3	33.1	33.6	34.5	35.7	36.9	37.5	37.8	38.5
80 years and older . . . . .	457	34.7	0.10	31.5	32.3	32.7	33.4	34.8	36.0	36.8	37.2	37.9
Non-Hispanic black												
20 years and older . . . . .	2,411	37.7	0.09	34.2	35.0	35.5	36.2	37.6	39.2	40.0	40.6	41.7
20–29 years . . . . .	604	37.4	0.11	34.2	34.8	35.4	36.2	37.3	38.6	39.5	40.1	41.2
30–39 years . . . . .	625	37.8	0.12	34.2	35.1	35.6	36.2	37.7	39.3	40.3	40.9	41.8
40–49 years . . . . .	429	38.2	0.14	35.1	35.5	36.1	36.8	38.1	39.5	40.2	40.9	42.0
50–59 years . . . . .	258	38.1	0.18	34.8	35.2	35.8	36.5	38.2	39.5	40.3	40.7	41.6
60–69 years . . . . .	272	37.8	0.20	34.0	34.7	35.6	36.4	37.8	39.2	39.9	40.6	42.1
70–79 years . . . . .	155	37.1	0.23	*	34.3	34.6	35.5	37.0	38.9	39.4	39.9	*
80 years and older . . . . .	68	35.9	0.29	*	*	*	34.6	35.8	37.1	*	*	*
Mexican American												
20 years and older . . . . .	2,150	36.8	0.07	33.6	34.2	34.6	35.4	36.7	38.0	38.8	39.4	40.2
20–29 years . . . . .	638	36.7	0.10	33.4	34.2	34.6	35.3	36.6	38.0	38.7	39.4	40.1
30–39 years . . . . .	515	37.0	0.12	33.7	34.3	34.8	35.5	36.9	38.2	39.0	39.5	41.0
40–49 years . . . . .	351	37.2	0.13	34.3	34.7	35.4	36.1	37.0	38.3	39.2	39.6	40.4
50–59 years . . . . .	185	36.7	0.17	*	34.2	34.6	35.5	36.6	37.9	38.4	39.2	*
60–69 years . . . . .	303	36.5	0.14	33.7	34.2	34.6	35.3	36.4	37.4	38.4	38.9	39.9
70–79 years . . . . .	112	35.5	0.21	*	*	33.7	34.3	35.4	36.2	37.5	*	*
80 years and older . . . . .	46	34.2	0.34	*	*	*	*	*	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 56. Iliac breadth in centimeters for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years . . . . .	532	15.3	0.10	13.6	14.0	14.2	14.6	15.3	15.8	16.2	16.4	16.9
3 years . . . . .	487	16.2	0.09	14.4	14.8	15.1	15.4	16.3	16.8	17.1	17.4	17.8
4 years . . . . .	543	16.8	0.09	15.2	15.4	15.7	16.1	16.8	17.5	18.0	18.3	18.6
5 years . . . . .	491	17.7	0.11	15.7	16.0	16.4	16.8	17.7	18.4	18.9	19.2	19.6
6 years . . . . .	277	18.4	0.19	*	16.5	16.8	17.2	18.2	18.9	19.8	20.6	*
7 years . . . . .	268	19.6	0.19	*	17.4	18.0	18.5	19.5	20.6	21.2	21.6	*
8 years . . . . .	261	20.0	0.21	*	18.2	18.4	18.9	20.0	21.0	21.7	22.2	*
9 years . . . . .	272	21.3	0.25	*	18.9	19.3	19.9	21.0	22.8	23.1	23.9	*
10 years . . . . .	292	21.7	0.23	*	19.4	19.5	20.1	21.7	22.8	23.5	24.9	*
11 years . . . . .	281	22.8	0.25	*	20.3	20.9	21.4	22.4	24.0	25.1	25.8	*
12 years . . . . .	202	24.3	0.33	*	*	22.0	22.4	24.1	26.0	26.8	*	*
13 years . . . . .	181	25.3	0.37	*	*	22.4	23.2	25.2	26.9	27.4	*	*
14 years . . . . .	185	26.6	0.53	*	*	24.1	25.0	26.0	27.3	28.5	*	*
15 years . . . . .	183	27.0	0.38	*	*	24.3	25.2	26.6	28.6	30.0	*	*
16 years . . . . .	192	27.4	0.41	*	*	24.9	25.5	27.2	28.9	29.4	*	*
17 years . . . . .	192	27.7	0.43	*	*	24.7	26.3	27.6	28.9	29.6	*	*
18 years . . . . .	169	27.6	0.37	*	*	25.3	25.9	27.5	29.3	30.3	*	*
19 years . . . . .	161	27.9	0.40	*	*	25.5	26.2	27.4	29.4	30.6	*	*
Female												
2 years . . . . .	511	15.1	0.11	*	13.7	13.9	14.3	15.0	15.7	16.2	16.5	*
3 years . . . . .	564	16.0	0.11	14.2	14.6	14.8	15.2	16.0	16.7	17.1	17.3	17.9
4 years . . . . .	528	17.1	0.13	*	15.3	15.8	16.1	16.9	17.8	18.2	18.7	*
5 years . . . . .	555	17.7	0.12	*	16.0	16.4	16.7	17.5	18.4	19.0	19.5	*
6 years . . . . .	273	18.4	0.19	*	*	16.8	17.4	18.0	19.3	20.0	*	*
7 years . . . . .	269	19.4	0.27	*	*	17.1	18.0	19.3	20.7	22.2	*	*
8 years . . . . .	243	20.4	0.27	*	*	18.4	19.0	20.2	21.2	22.2	*	*
9 years . . . . .	274	21.4	0.30	*	*	19.3	20.3	21.0	22.2	23.7	*	*
10 years . . . . .	255	22.4	0.28	*	*	20.2	21.0	21.9	23.8	24.7	*	*
11 years . . . . .	267	23.5	0.29	*	*	20.9	22.2	23.4	25.2	25.8	*	*
12 years . . . . .	233	24.4	0.37	*	*	22.2	22.6	24.0	26.2	26.9	*	*
13 years . . . . .	217	26.1	0.35	*	*	23.3	24.2	26.3	27.3	28.8	*	*
14 years . . . . .	219	26.5	0.34	*	*	24.5	25.0	26.4	28.0	28.9	*	*
15 years . . . . .	195	26.8	0.41	*	*	24.0	24.7	26.6	28.4	29.1	*	*
16 years . . . . .	211	27.1	0.41	*	*	24.6	25.3	27.3	28.5	29.3	*	*
17 years . . . . .	211	27.2	0.36	*	*	24.6	25.4	27.3	29.0	29.1	*	*
18 years . . . . .	186	26.8	0.39	*	*	*	25.0	26.9	27.9	*	*	*
19 years . . . . .	187	28.0	0.49	*	*	25.1	25.9	27.5	29.1	29.9	*	*

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

**Table 57. Biliac breadth in centimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,429	29.6	0.07	25.3	26.2	26.8	27.7	29.4	31.3	32.3	33.1	34.5
20–29 years . . . . .	1,583	28.5	0.12	24.6	25.4	26.1	26.7	28.2	29.8	31.0	32.0	33.4
30–39 years . . . . .	1,434	29.1	0.13	25.1	25.9	26.5	27.5	29.1	30.3	31.4	32.2	33.7
40–49 years . . . . .	1,174	29.9	0.14	25.5	26.5	27.0	28.0	29.7	31.4	32.6	33.6	35.1
50–59 years . . . . .	816	30.5	0.15	26.2	27.3	27.9	28.9	30.5	32.1	32.8	33.4	34.6
60–69 years . . . . .	1,100	30.8	0.13	26.9	27.6	28.3	29.1	30.8	32.3	33.2	33.9	35.1
70–79 years . . . . .	780	30.7	0.15	26.9	27.9	28.3	29.2	30.7	32.2	33.0	33.3	34.4
80 years and older . . . . .	542	30.6	0.17	26.4	27.4	28.4	29.3	30.6	32.1	32.9	33.4	34.3
Non-Hispanic white												
20 years and older . . . . .	3,029	30.0	0.10	25.9	26.7	27.3	28.2	29.8	31.5	32.6	33.3	34.6
20–29 years . . . . .	385	28.8	0.16	25.2	26.0	26.3	27.1	28.4	30.0	31.4	32.2	33.6
30–39 years . . . . .	447	29.5	0.16	25.7	26.5	27.2	28.0	29.3	30.6	31.7	32.4	34.0
40–49 years . . . . .	415	30.1	0.17	26.0	26.9	27.4	28.3	29.9	31.7	32.7	34.0	35.3
50–59 years . . . . .	401	30.8	0.15	26.8	27.8	28.5	29.3	30.8	32.3	33.0	33.7	34.7
60–69 years . . . . .	479	31.1	0.14	27.4	28.2	28.7	29.5	31.1	32.5	33.4	34.1	35.2
70–79 years . . . . .	472	30.9	0.13	27.4	28.2	28.6	29.3	30.8	32.4	33.0	33.7	34.4
80 years and older . . . . .	430	30.8	0.13	26.7	27.8	28.6	29.6	30.8	32.2	33.0	33.5	34.5
Non-Hispanic black												
20 years and older . . . . .	1,978	28.2	0.11	24.1	24.9	25.3	26.2	27.8	29.9	31.1	32.1	33.5
20–29 years . . . . .	474	27.5	0.17	23.7	24.4	24.8	25.5	26.9	28.9	30.2	31.7	33.2
30–39 years . . . . .	477	27.9	0.16	24.1	24.7	25.2	25.9	27.5	29.0	30.7	31.6	33.6
40–49 years . . . . .	343	28.3	0.17	24.3	25.0	25.5	26.3	27.9	30.1	31.2	32.0	33.4
50–59 years . . . . .	204	29.0	0.26	24.8	25.3	26.1	26.8	28.8	30.5	31.6	32.7	33.8
60–69 years . . . . .	270	29.2	0.19	25.5	26.4	26.8	27.5	28.9	30.7	32.0	32.9	34.1
70–79 years . . . . .	164	29.3	0.24	*	25.8	26.4	27.4	29.3	31.0	32.2	32.6	*
80 years and older . . . . .	46	29.5	0.35	*	*	*	28.3	29.1	30.8	*	*	*
Mexican American												
20 years and older . . . . .	2,151	29.1	0.10	25.5	26.2	26.7	27.5	28.9	30.4	31.5	32.3	33.7
20–29 years . . . . .	653	28.3	0.12	25.1	25.8	26.1	26.8	28.2	29.7	30.4	31.1	32.1
30–39 years . . . . .	456	29.0	0.15	25.7	26.4	26.8	27.6	28.8	30.2	31.1	31.9	33.3
40–49 years . . . . .	371	29.9	0.19	26.0	26.8	27.2	28.0	29.6	31.4	32.4	33.2	34.8
50–59 years . . . . .	169	30.6	0.24	*	27.7	28.2	28.9	30.3	31.9	33.4	33.8	*
60–69 years . . . . .	320	30.5	0.16	27.4	28.0	28.3	29.0	30.2	32.0	32.8	33.2	34.1
70–79 years . . . . .	132	30.2	0.26	*	27.5	28.2	28.9	30.0	31.8	32.5	33.1	*
80 years and older . . . . .	50	30.3	0.32	*	*	*	*	30.5	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 58. Iliac breadth in centimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,356	29.1	0.07	23.9	25.1	25.8	26.9	28.9	31.1	32.4	33.3	34.9
20–29 years . . . . .	1,806	27.7	0.12	22.8	23.9	24.7	25.7	27.5	29.3	30.4	31.6	33.4
30–39 years . . . . .	1,786	28.8	0.14	23.4	24.8	25.5	26.6	28.5	30.7	32.0	33.2	35.3
40–49 years . . . . .	1,302	29.4	0.15	24.9	25.8	26.4	27.4	29.0	31.0	32.4	33.3	35.1
50–59 years . . . . .	964	30.1	0.18	24.7	26.0	26.8	27.9	29.8	32.3	33.9	34.7	35.6
60–69 years . . . . .	1,077	30.1	0.16	25.0	26.3	27.1	28.2	30.0	32.1	33.1	33.9	35.7
70–79 years . . . . .	854	30.0	0.17	24.9	26.4	26.9	28.2	30.1	31.7	32.7	33.7	34.8
80 years and older . . . . .	567	29.9	0.19	25.0	26.4	27.0	28.1	30.1	31.8	32.6	33.2	34.0
Non-Hispanic white												
20 years and older . . . . .	3,466	29.3	0.11	24.1	25.3	26.1	27.2	29.1	31.2	32.6	33.4	34.9
20–29 years . . . . .	484	27.8	0.19	22.8	23.9	24.9	25.8	27.6	29.3	30.4	31.6	33.6
30–39 years . . . . .	578	28.9	0.19	23.9	24.9	25.5	26.8	28.6	30.6	32.1	33.2	34.9
40–49 years . . . . .	459	29.4	0.19	25.3	26.1	26.5	27.5	29.0	31.0	32.4	33.2	34.9
50–59 years . . . . .	470	30.3	0.20	24.8	26.4	27.1	28.1	30.0	32.6	34.2	34.7	35.6
60–69 years . . . . .	465	30.3	0.19	25.2	26.6	27.2	28.3	30.2	32.2	33.2	34.0	35.8
70–79 years . . . . .	563	30.0	0.16	25.1	26.5	27.1	28.3	30.1	31.7	32.7	33.6	34.5
80 years and older . . . . .	447	30.0	0.17	25.4	26.6	27.4	28.3	30.3	32.1	32.7	33.3	34.0
Non-Hispanic black												
20 years and older . . . . .	2,389	28.7	0.12	23.6	24.5	25.2	26.2	28.3	31.0	32.4	33.6	35.8
20–29 years . . . . .	603	27.4	0.16	23.3	24.1	24.5	25.2	26.9	29.2	30.9	31.8	33.8
30–39 years . . . . .	622	28.4	0.18	23.2	24.4	25.0	26.0	27.8	30.7	32.2	33.6	35.8
40–49 years . . . . .	425	29.6	0.23	23.5	25.2	26.0	27.0	29.0	31.8	33.4	35.0	37.3
50–59 years . . . . .	257	29.9	0.26	24.6	25.8	26.5	27.2	29.4	32.2	33.3	34.5	36.5
60–69 years . . . . .	265	29.9	0.27	24.7	25.5	26.1	27.3	29.7	32.0	33.1	34.1	36.0
70–79 years . . . . .	152	29.8	0.32	*	25.4	26.5	27.6	29.8	32.0	33.4	34.2	*
80 years and older . . . . .	65	28.9	0.49	*	*	*	26.8	28.4	30.7	*	*	*
Mexican American												
20 years and older . . . . .	2,143	29.2	0.14	24.2	25.3	26.0	27.0	29.0	31.2	32.2	33.1	34.6
20–29 years . . . . .	640	28.1	0.16	23.2	24.7	25.3	26.2	28.0	29.9	31.1	31.8	33.4
30–39 years . . . . .	513	29.4	0.19	24.2	25.4	26.0	27.1	29.0	31.2	32.6	33.4	35.5
40–49 years . . . . .	351	29.9	0.21	25.4	26.3	26.8	27.9	29.8	31.6	32.6	33.5	35.1
50–59 years . . . . .	185	30.0	0.28	*	25.8	27.1	28.4	30.1	31.8	32.9	33.4	*
60–69 years . . . . .	300	30.4	0.22	25.1	26.6	27.6	28.8	30.5	31.9	33.2	34.0	35.5
70–79 years . . . . .	111	30.1	0.34	*	*	27.1	28.9	30.2	31.8	33.1	*	*
80 years and older . . . . .	43	29.4	0.56	*	*	*	*	*	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 59. Buttocks circumference in centimeters for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
<b>Male</b>												
2 years . . . . .	524	51.0	0.23	45.7	46.7	47.9	49.0	50.8	53.0	54.2	55.2	57.0
3 years . . . . .	484	52.4	0.32	47.0	48.1	49.0	50.0	52.0	54.2	55.5	56.2	57.8
4 years . . . . .	540	54.6	0.27	49.2	50.5	51.1	52.0	54.2	56.3	58.3	59.1	61.5
5 years . . . . .	491	57.3	0.33	51.0	52.1	53.1	54.5	56.7	59.6	61.0	62.2	65.1
6 years . . . . .	278	61.0	0.68	*	53.5	54.8	56.5	59.5	64.0	66.3	69.7	*
7 years . . . . .	268	64.1	0.64	*	57.2	58.1	59.4	63.1	68.6	70.7	71.1	*
8 years . . . . .	260	67.8	0.76	*	60.2	61.2	62.6	66.0	71.5	76.2	80.5	*
9 years . . . . .	273	72.3	0.82	*	63.5	63.6	66.1	70.1	78.4	82.8	84.3	*
10 years . . . . .	293	74.5	0.75	*	65.1	66.8	68.5	73.0	79.7	84.3	85.7	*
11 years . . . . .	280	78.2	0.94	*	68.1	68.7	72.1	76.0	83.1	86.8	89.2	*
12 years . . . . .	202	82.6	1.03	*	*	74.2	76.2	81.4	88.4	90.1	*	*
13 years . . . . .	181	85.3	1.15	*	*	75.3	79.0	84.6	90.1	94.1	*	*
14 years . . . . .	185	90.8	1.74	*	*	80.5	82.6	88.1	93.5	98.5	*	*
15 years . . . . .	181	92.5	1.21	*	*	82.5	85.1	91.0	99.0	100.7	*	*
16 years . . . . .	191	93.2	1.06	*	*	85.1	87.4	91.1	95.8	101.3	*	*
17 years . . . . .	191	95.0	0.96	*	*	87.9	89.5	93.4	100.4	103.1	*	*
18 years . . . . .	169	94.7	1.18	*	*	87.1	87.7	93.1	98.1	105.0	*	*
19 years . . . . .	161	96.0	1.20	*	*	87.8	89.6	93.4	99.9	103.1	*	*
<b>Female</b>												
2 years . . . . .	508	50.8	0.28	*	46.6	47.2	48.0	50.5	53.1	54.5	55.2	*
3 years . . . . .	560	52.7	0.28	46.9	48.6	49.5	50.3	52.4	54.6	56.1	57.0	58.7
4 years . . . . .	525	55.8	0.40	*	50.4	51.3	52.9	55.2	57.8	59.6	60.6	*
5 years . . . . .	556	58.4	0.39	*	52.6	53.4	54.7	57.7	60.6	62.8	65.0	*
6 years . . . . .	273	60.9	0.67	*	*	55.2	57.0	59.5	63.3	67.2	*	*
7 years . . . . .	268	65.2	0.79	*	*	58.1	59.5	62.9	68.9	74.4	*	*
8 years . . . . .	244	69.4	0.85	*	*	61.5	63.6	68.2	72.4	77.0	*	*
9 years . . . . .	272	72.8	0.97	*	*	64.1	66.1	71.2	76.1	83.6	*	*
10 years . . . . .	255	75.8	0.92	*	*	68.1	69.5	74.0	80.2	86.6	*	*
11 years . . . . .	267	81.2	0.90	*	*	71.6	75.5	79.6	87.1	90.5	*	*
12 years . . . . .	233	85.5	1.11	*	*	76.0	78.3	85.0	92.1	95.6	*	*
13 years . . . . .	218	91.0	1.13	*	*	81.8	83.1	89.5	97.1	102.2	*	*
14 years . . . . .	217	93.9	1.12	*	*	85.4	87.4	91.5	100.1	102.6	*	*
15 years . . . . .	188	93.4	1.14	*	*	85.3	88.5	92.3	96.0	101.5	*	*
16 years . . . . .	204	95.6	1.27	*	*	87.3	89.5	92.4	99.0	105.7	*	*
17 years . . . . .	193	97.6	1.25	*	*	88.1	90.2	96.1	102.9	107.1	*	*
18 years . . . . .	169	95.8	1.35	*	*	*	87.1	95.1	100.5	*	*	*
19 years . . . . .	170	97.6	1.48	*	*	*	90.1	95.9	101.6	*	*	*

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

NOTE: Pregnant women are excluded.

**Table 60. Buttocks circumference in centimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,411	99.6	0.21	86.8	89.4	91.1	93.6	98.6	104.2	107.6	110.2	115.7
20–29 years . . . . .	1,578	97.4	0.32	85.1	87.1	88.7	91.1	96.1	101.9	106.1	109.3	114.3
30–39 years . . . . .	1,428	99.6	0.34	87.8	90.1	91.5	93.6	98.2	103.9	107.1	110.5	116.6
40–49 years . . . . .	1,174	100.7	0.43	86.7	90.4	92.0	94.5	99.6	105.3	109.0	111.3	118.0
50–59 years . . . . .	817	101.1	0.40	88.7	91.6	93.1	96.1	100.4	105.2	107.6	110.6	116.2
60–69 years . . . . .	1,103	100.6	0.36	88.3	90.6	92.6	95.2	100.2	105.5	108.4	110.5	114.0
70–79 years . . . . .	772	99.6	0.43	87.4	90.1	92.1	93.7	98.6	104.1	107.3	109.6	115.1
80 years and older . . . . .	539	97.5	0.46	86.5	88.5	89.6	92.2	97.1	101.9	103.9	107.1	111.5
Non-Hispanic white												
20 years and older . . . . .	3,020	100.1	0.23	87.7	90.4	92.1	94.2	99.2	104.6	108.0	110.5	115.7
20–29 years . . . . .	385	97.7	0.45	85.5	87.6	89.5	92.0	96.3	102.0	106.5	109.4	114.2
30–39 years . . . . .	442	100.1	0.43	88.9	90.6	92.1	94.2	99.1	104.1	108.1	110.5	116.6
40–49 years . . . . .	415	101.3	0.53	88.1	91.6	92.9	95.2	100.0	105.6	109.0	111.9	119.4
50–59 years . . . . .	402	101.5	0.40	90.1	92.7	94.2	97.0	100.7	105.5	107.7	110.7	117.6
60–69 years . . . . .	480	101.3	0.39	89.3	92.0	93.7	95.8	100.8	105.7	108.6	110.6	114.2
70–79 years . . . . .	468	99.9	0.39	88.6	91.2	92.5	94.1	99.0	104.3	107.3	109.4	114.1
80 years and older . . . . .	428	97.8	0.37	87.1	89.0	90.5	93.0	97.5	102.2	104.5	107.3	111.5
Non-Hispanic black												
20 years and older . . . . .	1,973	99.3	0.31	85.2	87.4	89.0	92.1	98.2	104.7	109.0	112.0	117.9
20–29 years . . . . .	472	99.6	0.58	85.1	87.0	88.4	90.7	97.6	105.3	110.2	115.0	121.5
30–39 years . . . . .	476	99.4	0.51	85.5	88.1	89.6	92.4	98.3	104.5	108.7	111.8	117.8
40–49 years . . . . .	343	99.5	0.55	85.3	87.0	89.3	93.5	99.1	105.2	108.2	111.0	115.8
50–59 years . . . . .	204	99.5	0.82	85.0	86.9	89.4	92.1	98.7	104.6	108.0	110.1	121.5
60–69 years . . . . .	271	98.6	0.64	84.3	86.6	89.3	92.2	97.1	104.7	108.3	112.0	115.0
70–79 years . . . . .	161	98.6	0.81	*	87.1	88.4	91.1	98.1	104.5	107.6	110.3	*
80 years and older . . . . .	46	97.3	1.36	*	*	*	92.1	95.7	100.6	*	*	*
Mexican American												
20 years and older . . . . .	2,145	97.3	0.30	85.6	88.1	89.6	91.8	96.4	101.6	105.1	107.2	112.3
20–29 years . . . . .	650	95.5	0.38	84.6	86.6	88.3	90.5	94.8	99.8	102.5	105.0	108.6
30–39 years . . . . .	456	97.7	0.47	85.6	88.6	90.6	92.5	97.0	101.5	104.8	106.5	113.0
40–49 years . . . . .	370	99.4	0.59	87.8	90.3	91.5	93.7	97.8	104.5	107.6	109.6	115.2
50–59 years . . . . .	169	100.3	0.91	*	90.6	92.3	95.0	99.0	104.0	108.5	111.4	*
60–69 years . . . . .	320	98.2	0.54	87.9	89.5	90.9	92.8	96.8	102.5	106.3	107.6	110.9
70–79 years . . . . .	131	96.7	1.16	*	85.9	87.3	90.6	95.0	100.3	105.1	110.1	*
80 years and older . . . . .	49	94.8	1.16	*	*	*	*	95.5	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 61. Buttocks circumference in centimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,068	102.2	0.28	86.4	88.9	90.5	93.3	99.9	108.5	114.5	119.5	126.4
20–29 years . . . . .	1,616	98.2	0.41	84.2	87.0	88.2	90.4	96.0	103.3	109.4	114.2	120.3
30–39 years . . . . .	1,699	102.7	0.47	86.3	89.0	90.4	93.5	100.0	109.1	116.6	121.0	128.5
40–49 years . . . . .	1,299	104.0	0.53	87.6	90.6	93.0	95.3	101.9	110.1	115.1	120.2	128.5
50–59 years . . . . .	962	105.4	0.63	88.4	91.1	92.8	96.0	103.6	112.5	118.5	122.6	132.4
60–69 years . . . . .	1,076	103.1	0.56	87.2	90.2	91.3	94.6	101.0	109.3	115.0	120.2	126.0
70–79 years . . . . .	854	101.4	0.58	86.7	88.6	90.5	93.1	99.7	107.5	112.0	115.8	123.1
80 years and older . . . . .	562	99.4	0.62	85.2	88.0	89.8	92.5	97.9	105.2	110.3	112.6	118.3
Non-Hispanic white												
20 years and older . . . . .	3,394	101.9	0.30	86.6	89.0	90.6	93.2	99.5	108.0	114.0	118.6	125.1
20–29 years . . . . .	440	97.7	0.63	84.6	87.1	88.3	90.4	95.2	102.7	108.8	114.1	120.3
30–39 years . . . . .	556	101.9	0.67	86.3	88.6	90.0	92.9	99.0	108.4	115.4	119.7	127.6
40–49 years . . . . .	458	103.5	0.71	87.7	91.0	93.1	95.3	101.4	109.5	114.6	118.9	126.8
50–59 years . . . . .	469	105.4	0.73	88.8	91.3	92.8	96.0	103.6	112.6	118.5	122.6	132.4
60–69 years . . . . .	464	102.9	0.68	87.7	90.4	91.5	94.7	101.1	108.4	114.2	119.8	125.4
70–79 years . . . . .	564	101.1	0.58	86.9	88.6	90.6	93.1	99.5	107.0	111.4	114.2	122.2
80 years and older . . . . .	443	99.4	0.57	86.1	88.2	90.1	92.8	97.9	105.2	110.1	112.1	116.3
Non-Hispanic black												
20 years and older . . . . .	2,299	106.3	0.39	86.6	90.1	92.5	96.1	104.2	113.5	120.1	125.3	133.5
20–29 years . . . . .	547	102.4	0.61	84.5	87.5	89.7	93.3	101.0	109.7	115.1	117.7	126.6
30–39 years . . . . .	593	106.4	0.66	87.6	90.5	92.8	96.9	104.1	113.5	120.6	125.9	134.5
40–49 years . . . . .	426	109.6	0.83	89.5	93.2	95.4	99.3	106.7	116.1	125.1	130.9	140.2
50–59 years . . . . .	256	108.4	1.03	85.8	92.0	95.2	98.9	106.6	116.7	121.5	128.7	137.5
60–69 years . . . . .	262	108.3	1.09	89.6	91.5	94.2	97.5	106.3	115.4	121.5	125.1	136.1
70–79 years . . . . .	152	106.0	1.22	*	92.2	93.6	97.1	104.6	113.0	119.7	124.9	*
80 years and older . . . . .	63	100.2	1.70	*	*	*	91.0	99.4	106.0	*	*	*
Mexican American												
20 years and older . . . . .	2,022	102.6	0.47	86.5	88.8	90.5	94.0	100.6	109.0	115.0	118.9	126.0
20–29 years . . . . .	555	99.2	0.62	84.7	86.6	88.2	91.0	97.6	105.0	109.9	114.1	120.0
30–39 years . . . . .	478	103.7	0.78	87.0	89.7	91.1	95.1	101.0	111.0	116.8	121.8	129.1
40–49 years . . . . .	348	106.3	0.86	89.9	93.0	94.1	98.0	103.6	112.5	117.4	123.0	129.5
50–59 years . . . . .	185	103.7	1.06	*	90.6	92.0	95.2	103.3	109.5	115.0	119.5	*
60–69 years . . . . .	302	104.6	1.01	88.0	90.0	91.8	95.5	101.4	111.3	116.3	123.6	133.7
70–79 years . . . . .	110	100.2	1.42	*	*	88.5	91.2	99.0	106.0	113.2	*	*
80 years and older . . . . .	44	93.6	1.71	*	*	*	*	*	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

NOTE: Pregnant women are excluded.



**Table 62. Elbow breadth in centimeters for persons aged 2 to 19 years and number of examined persons, mean, standard error of the mean, and selected percentiles, by sex and age: United States, 1988–1994**

Sex and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years . . . . .	529	4.4	0.02	4.0	4.0	4.1	4.2	4.4	4.5	4.6	4.7	4.8
3 years . . . . .	486	4.6	0.02	4.1	4.2	4.3	4.4	4.5	4.7	4.8	4.9	5.0
4 years . . . . .	544	4.7	0.02	4.3	4.4	4.4	4.5	4.7	4.9	5.0	5.1	5.2
5 years . . . . .	496	4.9	0.02	4.4	4.5	4.6	4.7	4.9	5.1	5.2	5.3	5.4
6 years . . . . .	280	5.1	0.04	*	4.7	4.7	4.9	5.1	5.4	5.5	5.6	*
7 years . . . . .	269	5.3	0.04	*	4.8	4.9	5.0	5.4	5.6	5.7	5.8	*
8 years . . . . .	262	5.6	0.05	*	5.1	5.2	5.3	5.5	5.8	6.0	6.1	*
9 years . . . . .	276	5.8	0.04	*	5.3	5.4	5.5	5.8	6.1	6.2	6.4	*
10 years . . . . .	294	5.9	0.04	*	5.5	5.5	5.6	5.9	6.2	6.4	6.5	*
11 years . . . . .	282	6.2	0.05	*	5.6	5.7	5.8	6.1	6.4	6.6	6.7	*
12 years . . . . .	202	6.6	0.05	*	*	6.1	6.2	6.5	6.9	7.0	*	*
13 years . . . . .	182	6.8	0.06	*	*	6.3	6.5	6.8	7.1	7.3	*	*
14 years . . . . .	187	7.0	0.07	*	*	6.7	6.7	7.0	7.3	7.5	*	*
15 years . . . . .	185	7.2	0.06	*	*	6.8	6.9	7.1	7.5	7.7	*	*
16 years . . . . .	192	7.2	0.05	*	*	6.7	7.0	7.1	7.4	7.5	*	*
17 years . . . . .	193	7.3	0.05	*	*	6.8	7.0	7.2	7.5	7.7	*	*
18 years . . . . .	170	7.2	0.06	*	*	6.8	6.9	7.2	7.5	7.7	*	*
19 years . . . . .	164	7.1	0.05	*	*	6.7	6.9	7.1	7.4	7.5	*	*
Female												
2 years . . . . .	508	4.2	0.02	*	3.9	4.0	4.0	4.2	4.4	4.5	4.5	*
3 years . . . . .	566	4.4	0.02	3.9	4.0	4.1	4.2	4.4	4.5	4.6	4.7	4.9
4 years . . . . .	526	4.6	0.03	*	4.2	4.2	4.3	4.5	4.7	4.8	5.0	*
5 years . . . . .	555	4.8	0.03	*	4.3	4.4	4.5	4.7	5.0	5.2	5.3	*
6 years . . . . .	274	4.9	0.04	*	*	4.5	4.6	4.9	5.1	5.2	*	*
7 years . . . . .	271	5.1	0.04	*	*	4.7	4.8	5.1	5.4	5.5	*	*
8 years . . . . .	245	5.3	0.04	*	*	5.0	5.1	5.3	5.5	5.7	*	*
9 years . . . . .	272	5.6	0.05	*	*	5.2	5.3	5.5	5.7	6.0	*	*
10 years . . . . .	257	5.7	0.05	*	*	5.4	5.5	5.7	6.0	6.1	*	*
11 years . . . . .	270	5.9	0.04	*	*	5.6	5.7	5.9	6.2	6.3	*	*
12 years . . . . .	233	6.1	0.05	*	*	5.6	5.8	6.1	6.4	6.5	*	*
13 years . . . . .	218	6.2	0.05	*	*	5.8	5.9	6.2	6.5	6.6	*	*
14 years . . . . .	220	6.2	0.05	*	*	5.9	6.0	6.1	6.5	6.6	*	*
15 years . . . . .	196	6.2	0.06	*	*	5.8	6.0	6.2	6.5	6.6	*	*
16 years . . . . .	210	6.2	0.05	*	*	5.8	6.0	6.2	6.5	6.5	*	*
17 years . . . . .	212	6.2	0.05	*	*	5.8	6.0	6.2	6.5	6.6	*	*
18 years . . . . .	188	6.1	0.06	*	*	5.7	5.9	6.0	6.4	6.6	*	*
19 years . . . . .	187	6.3	0.06	*	*	5.9	6.0	6.2	6.6	6.7	*	*

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

**Table 63. Elbow breadth in centimeters for males aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	7,497	7.4	0.01	6.6	6.8	6.9	7.0	7.4	7.7	7.9	8.0	8.2
20–29 years . . . . .	1,586	7.2	0.02	6.5	6.7	6.8	7.0	7.2	7.5	7.6	7.8	8.0
30–39 years . . . . .	1,437	7.3	0.02	6.6	6.7	6.8	7.0	7.3	7.6	7.8	8.0	8.1
40–49 years . . . . .	1,181	7.4	0.02	6.7	6.8	7.0	7.1	7.4	7.7	7.9	8.0	8.2
50–59 years . . . . .	820	7.5	0.03	6.7	6.9	7.0	7.2	7.5	7.8	8.0	8.1	8.3
60–69 years . . . . .	1,116	7.5	0.02	6.7	6.9	7.0	7.2	7.5	7.8	8.0	8.1	8.3
70–79 years . . . . .	797	7.5	0.03	6.7	6.9	7.0	7.2	7.5	7.8	8.0	8.1	8.3
80 years and older . . . . .	560	7.5	0.03	6.7	6.8	7.0	7.1	7.5	7.8	7.9	8.0	8.2
Non-Hispanic white												
20 years and older . . . . .	3,059	7.4	0.02	6.7	6.9	7.0	7.1	7.4	7.7	7.9	8.0	8.2
20–29 years . . . . .	385	7.3	0.02	6.7	6.8	6.9	7.0	7.3	7.5	7.7	7.8	8.1
30–39 years . . . . .	447	7.4	0.03	6.7	6.8	6.9	7.1	7.3	7.7	7.9	8.0	8.2
40–49 years . . . . .	418	7.4	0.03	6.7	6.9	7.0	7.1	7.5	7.7	7.9	8.1	8.2
50–59 years . . . . .	403	7.6	0.03	6.8	7.0	7.0	7.3	7.5	7.9	8.0	8.1	8.4
60–69 years . . . . .	484	7.6	0.02	6.8	7.0	7.1	7.3	7.5	7.8	8.0	8.1	8.3
70–79 years . . . . .	477	7.5	0.03	6.8	6.9	7.0	7.2	7.5	7.8	8.0	8.1	8.3
80 years and older . . . . .	445	7.5	0.03	6.7	6.9	7.0	7.1	7.5	7.8	8.0	8.0	8.2
Non-Hispanic black												
20 years and older . . . . .	2,007	7.4	0.02	6.7	6.8	6.9	7.1	7.4	7.7	7.9	8.0	8.2
20–29 years . . . . .	476	7.3	0.02	6.5	6.7	6.8	7.0	7.3	7.6	7.8	8.0	8.2
30–39 years . . . . .	480	7.4	0.02	6.7	6.8	6.9	7.0	7.3	7.6	7.8	8.0	8.1
40–49 years . . . . .	346	7.4	0.03	6.7	6.9	7.0	7.1	7.4	7.7	7.9	8.0	8.1
50–59 years . . . . .	207	7.6	0.03	6.9	7.1	7.1	7.2	7.6	7.9	8.0	8.1	8.3
60–69 years . . . . .	279	7.5	0.03	6.7	7.0	7.1	7.2	7.5	7.9	8.0	8.1	8.3
70–79 years . . . . .	170	7.6	0.04	*	7.0	7.1	7.2	7.6	7.9	8.1	8.2	*
80 years and older . . . . .	49	7.5	0.06	*	*	*	7.3	7.4	7.8	*	*	*
Mexican American												
20 years and older . . . . .	2,156	7.1	0.02	6.4	6.6	6.7	6.8	7.1	7.4	7.5	7.7	7.8
20–29 years . . . . .	653	7.0	0.02	6.4	6.5	6.6	6.7	7.0	7.2	7.4	7.5	7.6
30–39 years . . . . .	456	7.1	0.02	6.4	6.6	6.7	6.8	7.0	7.3	7.5	7.6	7.8
40–49 years . . . . .	371	7.2	0.03	6.5	6.6	6.8	6.9	7.2	7.5	7.7	7.8	8.0
50–59 years . . . . .	168	7.3	0.04	*	6.7	6.8	7.0	7.3	7.6	7.7	7.8	*
60–69 years . . . . .	321	7.3	0.03	6.7	6.8	6.9	7.0	7.4	7.6	7.8	7.9	8.0
70–79 years . . . . .	137	7.3	0.05	*	6.6	6.7	7.0	7.2	7.6	7.8	7.8	*
80 years and older . . . . .	50	7.2	0.08	*	*	*	*	7.2	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

**Table 64. Elbow breadth in centimeters for females aged 20 years and older and number of examined persons, mean, standard error of the mean, and selected percentiles, by race and ethnicity and age: United States, 1988–1994**

Race and ethnicity and age	Number of examined persons	Mean	Standard error of the mean	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All race and ethnicity groups <sup>1</sup>												
20 years and older . . . . .	8,443	6.5	0.01	5.7	5.9	6.0	6.1	6.4	6.8	7.0	7.2	7.4
20–29 years . . . . .	1,805	6.2	0.02	5.6	5.7	5.8	6.0	6.2	6.5	6.7	6.8	7.1
30–39 years . . . . .	1,798	6.4	0.02	5.7	5.8	6.0	6.1	6.4	6.7	6.9	7.0	7.4
40–49 years . . . . .	1,312	6.5	0.02	5.8	5.9	6.0	6.2	6.5	6.7	7.0	7.2	7.4
50–59 years . . . . .	968	6.7	0.03	5.9	6.0	6.1	6.2	6.6	7.0	7.3	7.4	7.7
60–69 years . . . . .	1,092	6.6	0.02	6.0	6.1	6.1	6.3	6.6	6.9	7.1	7.3	7.5
70–79 years . . . . .	873	6.6	0.03	5.9	6.0	6.1	6.2	6.6	7.0	7.2	7.3	7.7
80 years and older . . . . .	595	6.5	0.03	5.8	6.0	6.1	6.2	6.5	6.9	7.0	7.1	7.3
Non-Hispanic white												
20 years and older . . . . .	3,502	6.5	0.02	5.7	5.9	6.0	6.1	6.4	6.8	7.0	7.2	7.4
20–29 years . . . . .	485	6.3	0.02	5.6	5.7	5.8	6.0	6.2	6.5	6.7	6.8	7.0
30–39 years . . . . .	581	6.4	0.03	5.7	5.9	6.0	6.1	6.4	6.7	6.9	7.0	7.3
40–49 years . . . . .	462	6.5	0.03	5.8	5.9	6.0	6.2	6.5	6.7	7.0	7.1	7.4
50–59 years . . . . .	472	6.7	0.03	6.0	6.0	6.1	6.3	6.6	7.0	7.2	7.4	7.6
60–69 years . . . . .	469	6.6	0.03	6.0	6.1	6.1	6.3	6.6	6.9	7.1	7.2	7.5
70–79 years . . . . .	571	6.6	0.03	5.9	6.0	6.1	6.2	6.6	6.9	7.2	7.3	7.7
80 years and older . . . . .	462	6.5	0.03	5.8	6.0	6.1	6.2	6.5	6.9	7.0	7.1	7.3
Non-Hispanic black												
20 years and older . . . . .	2,427	6.6	0.02	5.8	6.0	6.1	6.2	6.5	7.0	7.2	7.4	7.7
20–29 years . . . . .	603	6.4	0.02	5.7	5.9	6.0	6.1	6.4	6.7	6.9	7.1	7.3
30–39 years . . . . .	628	6.5	0.03	5.9	6.0	6.0	6.2	6.5	6.8	7.1	7.3	7.5
40–49 years . . . . .	432	6.8	0.04	5.9	6.1	6.1	6.3	6.7	7.2	7.4	7.6	7.8
50–59 years . . . . .	259	6.9	0.05	6.0	6.1	6.2	6.5	6.8	7.2	7.5	7.6	7.9
60–69 years . . . . .	273	6.9	0.05	6.0	6.2	6.3	6.5	6.9	7.2	7.5	7.7	8.0
70–79 years . . . . .	160	6.8	0.06	*	6.2	6.3	6.5	6.8	7.2	7.4	7.5	*
80 years and older . . . . .	72	6.7	0.07	*	*	*	6.5	6.7	7.1	*	*	*
Mexican American												
20 years and older . . . . .	2,153	6.3	0.02	5.6	5.7	5.8	6.0	6.3	6.7	6.9	7.0	7.3
20–29 years . . . . .	638	6.1	0.02	5.5	5.6	5.7	5.8	6.1	6.4	6.6	6.7	7.0
30–39 years . . . . .	515	6.4	0.03	5.6	5.8	5.9	6.0	6.3	6.7	6.9	7.0	7.3
40–49 years . . . . .	351	6.5	0.04	5.7	5.9	6.0	6.2	6.5	6.8	7.0	7.1	7.4
50–59 years . . . . .	185	6.6	0.05	*	6.0	6.0	6.2	6.6	6.8	7.1	7.2	*
60–69 years . . . . .	302	6.6	0.04	5.9	6.0	6.1	6.3	6.6	6.9	7.2	7.3	7.6
70–79 years . . . . .	113	6.5	0.05	*	*	6.0	6.2	6.5	6.8	6.9	*	*
80 years and older . . . . .	49	6.3	0.07	*	*	*	*	6.2	*	*	*	*

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

<sup>1</sup>Includes all other race and ethnicity groups not listed separately.

# Vital and Health Statistics series descriptions

- SERIES 1. **Programs and Collection Procedures**—These reports describe the data collection programs of the National Center for Health Statistics. They include descriptions of the methods used to collect and process the data, definitions, and other material necessary for understanding the data.
- SERIES 2. **Data Evaluation and Methods Research**—These reports are studies of new statistical methods and include analytical techniques, objective evaluations of reliability of collected data, and contributions to statistical theory. These studies also include experimental tests of new survey methods and comparisons of U.S. methodology with those of other countries.
- SERIES 3. **Analytical and Epidemiological Studies**—These reports present analytical or interpretive studies based on vital and health statistics. These reports carry the analyses further than the expository types of reports in the other series.
- SERIES 4. **Documents and Committee Reports**—These are final reports of major committees concerned with vital and health statistics and documents such as recommended model vital registration laws and revised birth and death certificates.
- SERIES 5. **International Vital and Health Statistics Reports**—These reports are analytical or descriptive reports that compare U.S. vital and health statistics with those of other countries or present other international data of relevance to the health statistics system of the United States.
- SERIES 6. **Cognition and Survey Measurement**—These reports are from the National Laboratory for Collaborative Research in Cognition and Survey Measurement. They use methods of cognitive science to design, evaluate, and test survey instruments.
- SERIES 10. **Data From the National Health Interview Survey**—These reports contain statistics on illness; unintentional injuries; disability; use of hospital, medical, and other health services; and a wide range of special current health topics covering many aspects of health behaviors, health status, and health care utilization. They are based on data collected in a continuing national household interview survey.
- SERIES 11. **Data From the National Health Examination Survey, the National Health and Nutrition Examination Surveys, and the Hispanic Health and Nutrition Examination Survey**—Data from direct examination, testing, and measurement on representative samples of the civilian noninstitutionalized population provide the basis for (1) medically defined total prevalence of specific diseases or conditions in the United States and the distributions of the population with respect to physical, physiological, and psychological characteristics, and (2) analyses of trends and relationships among various measurements and between survey periods.
- SERIES 12. **Data From the Institutionalized Population Surveys**—Discontinued in 1975. Reports from these surveys are included in Series 13.
- SERIES 13. **Data From the National Health Care Survey**—These reports contain statistics on health resources and the public's use of health care resources including ambulatory, hospital, and long-term care services based on data collected directly from health care providers and provider records.
- SERIES 14. **Data on Health Resources: Manpower and Facilities**—Discontinued in 1990. Reports on the numbers, geographic distribution, and characteristics of health resources are now included in Series 13.
- SERIES 15. **Data From Special Surveys**—These reports contain statistics on health and health-related topics collected in special surveys that are not part of the continuing data systems of the National Center for Health Statistics.
- SERIES 16. **Compilations of Advance Data From Vital and Health Statistics**—Advance Data Reports provide early release of information from the National Center for Health Statistics' health and demographic surveys. They are compiled in the order in which they are published. Some of these releases may be followed by detailed reports in Series 10–13.
- SERIES 20. **Data on Mortality**—These reports contain statistics on mortality that are not included in regular, annual, or monthly reports. Special analyses by cause of death, age, other demographic variables, and geographic and trend analyses are included.
- SERIES 21. **Data on Natality, Marriage, and Divorce**—These reports contain statistics on natality, marriage, and divorce that are not included in regular, annual, or monthly reports. Special analyses by health and demographic variables and geographic and trend analyses are included.
- SERIES 22. **Data From the National Mortality and Natality Surveys**—Discontinued in 1975. Reports from these sample surveys, based on vital records, are now published in Series 20 or 21.
- SERIES 23. **Data From the National Survey of Family Growth**—These reports contain statistics on factors that affect birth rates, including contraception, infertility, cohabitation, marriage, divorce, and remarriage; adoption; use of medical care for family planning and infertility; and related maternal and infant health topics. These statistics are based on national surveys of women and men of childbearing age.
- SERIES 24. **Compilations of Data on Natality, Mortality, Marriage, and Divorce**—These include advance reports of births, deaths, marriages, and divorces based on final data from the National Vital Statistics System that were published as *National Vital Statistics Reports* (NVSR), formerly *Monthly Vital Statistics Report*. These reports provide highlights and summaries of detailed data subsequently published in *Vital Statistics of the United States*. Other special reports published here provide selected findings based on final data from the National Vital Statistics System and may be followed by detailed reports in Series 20 or 21.

For answers to questions about this report or for a list of reports published in these series, contact:

Information Dissemination Staff  
National Center for Health Statistics  
Centers for Disease Control and Prevention  
3311 Toledo Road, Room 5412  
Hyattsville, MD 20782  
1-800-232-4636  
E-mail: [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov)  
Internet: [www.cdc.gov/nchs](http://www.cdc.gov/nchs)

**U.S. DEPARTMENT OF  
HEALTH & HUMAN SERVICES**

Centers for Disease Control and Prevention  
National Center for Health Statistics  
3311 Toledo Road  
Hyattsville, MD 20782

---

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300

MEDIA MAIL  
POSTAGE & FEES PAID  
CDC/NCHS  
PERMIT NO. G-284