VITAL AND HEALTH STATISTICS

Anthropometric Reference Data and Prevalence of Overweight

United States, 1976–80

This report presents descriptive data for selected anthropometric measurements and provides estimates of overweight and severe overweight by age, race, and sex. This information is from the second National Health and Nutrition Examination Survey, a national probability sample survey of the civilian, noninstitutionalized population of the United States, that was conducted during the period 1976–80.

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Cooperation of the U.S. Bureau of Census

Under the legislation establishing the National Health Survey, the Public Health Service is authorized to use, insofar as possible, the services or facilities of other Federal, State, or private agencies.

In accordance with specifications established by the National Center for Health Statistics, the U.S. Bureau of the Census participated in the design and selection of the sample and carried out the initial household interview stage of the data collection and certain parts of the statistical processing.

Contents

Symbols

- - -	Data not available
. . .	Category not applicable
-	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standards of reliability or precision (see Technical notes)

Anthropometric Reference Data and Prevalence of Overweight

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Introduction

Statistics on anthropometric measurements for the U.S. civilian noninstitutionalized population 6 months-74 years of age are presented in tables in this report. Also presented here are estimates of the percents and numbers of overweight and severely overweight adults 20-74 years of age in the U.S. population. Overweight estimates were developed from stature and weight measurements. Statistics are presented by age, sex, and race. The data in this report were collected by the National Center for Health Statistics (NCHS) through the second National Health and Nutrition Examination Survey (NHANES II), conducted during 1976-80.[1] NHANES II included a variety of measures of nutritional status and related health information.

The National Health and Nutrition Examination Survey is an expansion of the National Health Examination Survey. The surveys are designed to collect data by direct standardized examination of a sample of the population. Direct examinations, coupled with clinical tests and measurements, are the only source of prevalence data regarding previously undiagnosed and untreated diseases and are the best source of standardized clinical, physical, and physiological data. The three programs of the National Health Examination Survey (1959-70)[2-4] focused on selected aspects of illness and health, each targeting a particular age group of the population. Data on height and weight, other body measurements, dental health, selected chronic conditions, vision and hearing levels, and other measures of health status were obtained in each survey.

In 1971, responsibility for monitoring the nutritional status of the population was added to the National Health Examination Survey, which became the National Health and Nutrition Examination Survey. The first National Health and Nutrition Examination Survey (NHANES I), conducted from April 1971 through June 1974, was designed to assess overall health status, with particular emphasis on dental health, skin problems, eye conditions, and the nutritional status of the population 1-74 years of age.[5] Adults 25-74 years of age were examined to determine the prevalence of chronic lung disease; disabling arthritis of the hip, knee, or lower spine; cardiovascular disease; and hearing levels. In addition, information was obtained on health care needs and general well-being. This segment of the NHANES I program was followed by a 15-month period (July 1974-October 1975) in which an additional national sample of persons 25-74 years of age was given the detailed examination to augment the size of the sample originally included in NHANES I. This study is referred to as the National Health and Nutrition Examination Survey, Augmentation Cycle.[6]

The second National Health and Nutrition Examination Survey, conducted from 1976 through 1980, is the source of data for this report. NHANES II data provide an opportunity to assess the population's health and nutritional status cross-sectionally and to assess some aspects of change over time.[1] Components of nutritional status measurement were included in a physician's examination, a medical history questionnaire, body measurements, laboratory assessments of blood samples, and a dietary interview. Also included in NHANES II were tests and procedures that provided data on diabetes, kidney disease, heart disease, hypertension, certain allergies, disc degeneration, pulmonary function, hearing and speech problems, and exposure to certain potentially toxic substances.

The anthropometric measurements included in this report are useful for many health, research, and applied purposes. These nationally representative reference distributions are invaluable as population parameters both to describe the physique of the child and adult populations at a point in time and to evaluate time trends within the population by comparison with earlier and later surveys. Weight-height data are used in studies of nutritional status or requirements. (Researchers in nutritional monitoring or surveillance programs are referred to two publications of the World Health Organization[7,8] that recommend the use of NCHS growth curves[9] of weight and stature as a reference for international as well as racial and ethnic comparisons of prepubescent children.) These data also serve as an index for estimating overweight, a recognized risk factor for noninsulin dependent diabetes, hypertension, and coronary artery heart disease.[10] The body measurement distributions tabulated from NHANES data have also been found useful in the areas of human engineering and clothing manufacturing.

As previously mentioned, NCHS collected body measurement data during Cycles I, II, and III of the National Health Examination Survey[2-4] and the first National

Health and Nutrition Examination Survey. [5,6] Data were collected in 1960-62 for adults ages 18-79 years (Cycle I), in 1963-65 for children ages 6-11 years (Cycle II), in 1966-70 for youths ages 12-17 years (Cycle III), and in 1971-75 for persons ages 1-74 years (NHANES I). Readers interested in acquiring any of the NCHS reports relating to information from these surveys should consult the *Current Listing and Topical Index to the Vital and Health Statistics Series, 1962-78*[11] and the NCHS catalogs of publications for 1979-83[12] and 1983-84.[13]

The anthropometric data from the Health Examination Survey and National Health and Nutrition Examination Survey have been coded, edited, and released on microdata tapes. Persons interested in more detailed analysis can purchase these tapes from the National Technical Information Service.[14]

Sources of data and analytical issues

Sources

The second National Health and Nutrition Examination Survey, conducted from February 1976 through February 1980, is the most recent in a series of national health examination surveys conducted by NCHS. The target population for the survey was the civilian noninstitutionalized population 6 months-74 years of age of the United States (including Alaska and Hawaii). The entire NHANES II sample consisted of 27,801 persons, 91 percent of whom were interviewed. Of these, 20,322 were interviewed and examined, resulting in a response rate of 73.1 percent. More detail on the sample design and conduct of the survey is presented in appendix I. (Other data collection and analytic issues are presented in appendixes II-V.)

All interviews, examinations, tests, procedures, and laboratory determinations were performed following standardized protocols. NHANES II, like previous examination surveys, consisted of two components. Household interviews comprised the first component and the second consisted of physical examinations and additional interviews in examination centers.

The household interview component involved collecting socioeconomic and demographic information from the family and sample persons within the family and completing a medical history questionnaire for sample persons. The U.S. Bureau of the Census performed the initial household interviews and aided in the scheduling of appointments for examination.

The examination component was performed in mobile examination centers specially designed for this study. The examination, environment, and equipment were standardized to minimize differences in findings among sample locations. The full-time examination teams were specifically trained to follow the study protocols, which provided for standardization and evaluation of their performance. The examination consisted of a series of standardized tests and procedures that included the following:

- A general medical examination and screening by a physician, including additional medical history information.
- Body measurements.
- A dietary interview.
- Selected diagnostic tests, such as electrocardiograms and x rays, speech and hearing, allergies, and pulmonary function.
- Laboratory tests on whole blood, serum, and urine specimens.

Thus, NHANES II provided the opportunity to assess key aspects of the population's health and nutritional status during a 4-year period and to assess changes over time in the U.S. population.

Methods of measurement

NHANES II was staffed by two highly trained examination teams and equipped with three mobile examination centers, which could be moved to a central location in each of the primary sampling units. Selected sample persons for whom appointments could be made were brought into the examination centers. There, examinees changed from their street clothing into disposable paper examination uniforms and foam rubber slippers designed to facilitate and standardize various elements of the examination.

Body measurements were made at various times of the day and in different seasons of the year. Thus diurnal and seasonal variations in body measurements were not standardized. One's weight may vary between winter and summer and may fluctuate with recency of food and water intake and other daily activities.

When possible, measurements of elbow breadth, upper arm girth, and skinfolds were taken on the right side of the body. Additional measurements on the left side were done on a systematic sample of approximately 20 percent of the examined persons. These measurements were collected for quality control purposes and were not intended to be representative of the U.S. population. Left-side measurements were also taken if the right side could not be used because of casts, amputations, or other reasons.

Detailed explanations of the procedures used to determine the body measurements included in this report, which are described briefly in this section, are found in appendix V.

Standing height

Standing height was measured with the examinee wearing disposable foam rubber slippers, standing erectly with feet together, back and heels against the upright bar of the height scale, and head in the Frankfort Horizontal Plane. Assistance and demonstration were provided when necessary ("Look straight ahead," "Stand up tall," or "Stand up

real straight"). The examiner exerted gentle upward pressure on the subject's mastoid process, as recommended by some.

The equipment consisted of a level platform to which was attached a vertical bar with a steel tape. Attached perpendicularly to the vertical bar was a horizontal measuring bar, which was brought down snugly on the examinee's head. A Polaroid camera was attached to another sliding bar in the same plane as the horizontal measuring bar. The camera recorded the subject's identification number next to the pointer on the scale, thereby giving a precise reading. The camera not only gave a permanent record, minimizing observer and recording errors, but, by always being in the same plane as the measuring bar, completely eliminated parallax. (An observer reading a pointer in the space in front of the scale could read it too high if looking up at the scale from below or too low if reading down from above.)

Weight

Examinees were weighed on a Toledo self-balancing scale that mechanically printed weight (exact to quarter-pound intervals) directly onto the permanent record. Direct printing was used to minimize observer and recording errors. The scale was calibrated with a set of known weights and any necessary fine adjustments were made at the beginning of each new examination location, approximately every month. The recorded weight was later transferred onto a punched card. The weight of clothing worn, ranging from 0.20 to 0.62 pound, was not deducted from weights presented in this report. Thus, weights shown here are 0.20 to 0.62 pound above nude weight recorded to the nearest quarter pound. The same examination clothing was used throughout the year, thus eliminating seasonal variation.

Skinfolds

As recommended by the Committee on Nutritional Anthropometry of the National Research Council,[15] skinfolds were measured with a Lange skinfold caliper. (See appendix V for a description of the calibration procedure.)

The measurement of skinfold thickness is one of a number of methods used to determine the body fatness of individuals.[16-18] In a field survey, the use of skinfold measurements has distinct advantages over more sophisticated laboratory techniques. Skinfold measurements do not require elaborate, expensive, or time-consuming procedures, and they are recommended as an integral element in body composition research, particularly for field studies.[19] The skinfold measurement approach involves measuring a double fold of subcutaneous tissue plus skin, which is pulled away from the underlying muscle tissue at a predetermined site on the body. It is the easiest approach to estimating body fat.

An evaluation of the NHANES II measurement error for triceps and subscapular skinfolds (two measures of upper body fat) has shown the data to have an acceptable level of reliability. However, reliability is less for large skinfolds (more than 30 millimeters) than for smaller skinfolds.[20]

Breadths and circumferences

Two direct anthropometric measures of skeletal structure were taken—elbow and bitrochanteric breadth. Mid-upper-arm circumference, a composite measure of bone, muscle, and fat, was also included. Head and chest circumferences were included for children 6 months-7 years of age as reference data in identifying early protein-calorie deficiency. See appendix V for further details regarding measurement protocol.

Analytical issues

Weighting procedures

The estimates presented in this report were weighted to be national population estimates. Weighting was accomplished by inflating examination findings for each examined person by the reciprocal of selection probabilities adjusted to account for persons who were not examined and post-stratifying by race, sex, and age. As a result of poststratification adjustments, the population estimates closely approximate the independent U.S. Bureau of the Census estimates for the civilian noninstitutionalized population of the United States at the midpoint of the survey (March 1, 1978).

Population estimates

The age, sex, and race distributions of the U.S. civilian noninstitutionalized population at the midpoint of the survey and the distribution of the probability sample drawn from the survey are presented in appendix I. The prevalence estimates shown in the detailed tables can be applied to the population distribution given in tables III and IV of appendix I to obtain the corresponding population estimates. For example, an estimate of 24.2 percent for men ages 20-74 years who are overweight (table 1), when expressed as a proportion and multiplied by the number of men ages 20-74 years (63,611,000 from table IV in appendix I), gives an estimate of 15.4 million overweight men.

Reliability of estimates

Estimates of percents, means, standard deviations, and nine selected percentiles (5th, 10th, 15th, 25th, 50th, 75th, 85th, 90th, and 95th) are presented for each measurment. Estimates of percentiles are stable only if the sample size is sufficiently large. The sample size was sufficiently large for most subgroups; the few exceptions are indicated with an asterisk. See appendix II for a discussion of data presentation and reliability.

Cross-sectional nature of data

The cross-sectional data on body measurements were obtained from persons of different ages who represent different birth cohorts. The age trends show the body measurement values for successive birth cohorts of persons who were of different ages when examined and, thus, reflect the effect of different enviromental and hereditary influences. The limitations of cross-sectional data in contrast to longitudinal data are recognized in considering changes with age.

Age of examinee

The chronologic age at the time of interview was the age criterion for inclusion in the sample. The value used as a label for each age group in the tables is the integer referring to age at last birthday at the time of interview. Hence, "10 years" refers to all children 10.00 through 10.99 years, with an approximate mean value of 10.50 years.

Selected findings

Some important anthropometric findings by age and sex for children and by age, sex, and race for adults are summarized in this section. Comparisons in this report are based on medians because the marked skewness of many of the distributions shown here suggests that use of the median gives a better measure of central tendency than use of the mean. In tables showing cumulative percent distributions of height and weight and distributions of height by weight, magnitudes are shown for cells when the sample size is so small that the sampling error may be several times as great as the statistic itself. In such instances, the statistic has no meaning except to indicate that the true quantity is small. Such numbers, if shown, have been included to convey an impression of the overall table.

Overweight was defined in terms of the body mass index (BMI), which was determined by dividing weight in kilograms by height in meters squared. Overweight was defined as a BMI equal to or greater than that at the 85th percentile of men and women ages 20-29 years. Severe overweight was defined as a BMI equal to or greater than that at the 95th percentile. Men fell into the overweight category when their BMI equaled or exceeded 27.8; they fell into the severely overweight category when the index equaled or exceeded 31.1. For women, these cutoff points were 27.3 and 32.3, respectively. The rationale for using persons 20-29 years of age as the reference population was that most young adults are relatively lean; the increase in body weight that usually occurs as men and women age is due almost entirely to fat accumulation.[21,22]

Although the criteria used here for overweight and severe overweight were not derived from the morbidity or mortality experience of the surveyed population, they are fairly consistent with other criteria that do have a basis in morbidity or mortality data. The NHANES II criterion values of overweight correspond approximately to 20 percent above desirable weight in the 1983 Metropolitan Life Insurance Company tables (using the midpoint of the range for a medium-build person).[23,24] The criterion values of severe overweight correspond approximately to 40 percent above desirable weight. A National Institutes of Health Consensus Development Panel has stated that a body weight 20 percent or more above desirable body weight constitutes an established health hazard.[10]

The following statements highlight the findings for overweight and severe overweight in adults 20-74 years of age (tables 1, 2, and IV):

- About 34 million U.S. adults (25.7 percent) are overweight.
- Approximately 15 million men (24.2 percent) and 19 million women (27.1 percent) are overweight.
- The prevalence of overweight is much higher for black women than for white women (43.8 percent versus 25.1 percent). However, the prevalence is about the same for black men and white men (25.7 percent and 24.4 percent, respectively).
- About 13 million adults (9.4 percent) are severely overweight.
- Approximately 5 million men (8.0 percent) and 8 million women (10.8 percent) are severely overweight.
- The percent of black women who are severely overweight is almost twice that for white women (19.3 percent versus 9.8 percent). The prevalence for black men (10.2 percent) is somewhat greater than that for white men (7.8 percent).

Findings for selected anthropometric measures are also presented (tables 3-47). These findings do not constitute an exhaustive attempt to describe the detailed tables in this report.

- The median weights for males and females ages 18-74 years are 169.6 pounds and 137.8 pounds, respectively (tables 4 and 5).
- Median weight is greater for white than black males (170.6 pounds versus 166.1 pounds). However, median weight is greater for black than white females (149.6 pounds versus 137.0 pounds).
- The median heights for men and women 18-74 years of age are 69.1 inches and 63.7 inches, respectively (tables 13 and 14).
- Median height is similar for white and black men (69.2 inches, compared with 69.1 inches) and for white and black women (63.7 inches, compared with 63.8 inches).
- Median sitting height, shown in tables 20 and 21, is greater in white men than black men—92.6 centimeters (cm) and 89.7 cm, respectively. Similarly, it is greater in white women (86.5 cm) than black women (84.1 cm).
- After age 12, median triceps skinfold values for females substantially exceed those for males (tables 29-31). The difference ranges from 6.0 to 15.0 millimeters (mm).
- Median triceps skinfold for white men ages 18-74 years is greater than that for black men—12.0 mm versus 10.0 mm. However, median triceps skinfold for black women

exceeds that for white women—25.5 mm versus 23.5 mm (tables 30 and 31).

- Median subscapular skinfold for females exceeds that for males in each age group 2 through 74 years (tables 32-34).
- For adults 18-74 years, the difference between the sexes in median subscapular skinfold is about one-fourth the difference observed in median triceps skinfold (tables 29-34).
- Median subscapular skinfold for white men 18-74 years is greater than that for black men—15.5 mm versus 14.0 mm. However, median skinfold for black women exceeds that for white women—25.0 mm versus 17.0 mm (tables 33 and 34).
- For the age range 6-74 years, the percent of persons reporting that they are left handed decreases with each succeeding age category (table 47).

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List of detailed tables

Weight and height

Skinfolds

Circumferences and breadths

Handedness

Table 1. Percent of overweight persons 20-74 years of age and number examined, by race, sex, and age: United States, 1976-80

Sex and age	All races 1/		White		Black	
	Number of examined persons	Percent	Number of examined persons	Percent	Number of examined persons	Percent
Both sexes						
20-74 years	11,765	25.7	10,214	24.8	1,326	35.7
20-74 years, age adjusted 2/	...	25.6	...	24.6	...	36.6
20-29 years	2,551	14.9	2,155	14.1	334	20.6
20-24 years	1,372	11.7	1,169	11.2	168	15.3
25-34 years	2,188	20.2	1,858	19.4	279	26.3
35-44 years	1,581	27.9	1,371	26.4	173	40.8
45-54 years	1,453	31.7	1,264	30.2	162	52.1
55-64 years	2,556	32.8	2,262	31.9	264	44.2
65-74 years	2,615	32.7	2,290	31.9	280	46.0
Male						
20-74 years	5,604	24.2	4,883	24.4	607	25.7
20-74 years, age adjusted 2/	...	24.4	...	24.4	...	26.3
20-29 years	1,261	15.1	1,072	15.3	160	12.1
20-24 years	676	12.1	581	12.7	79	5.5
25-34 years	1,067	20.4	901	20.9	139	17.5
35-44 years	745	28.9	653	28.2	70	40.9
45-54 years	690	31.0	617	30.5	62	41.4
55-64 years	1,227	28.1	1,086	28.6	129	26.0
65-74 years	1,199	25.2	1,045	25.8	128	26.4
Female						
20-74 years	6,161	27.1	5,331	25.1	719	43.8
20-74 years, age adjusted 2/	...	26.7	...	24.6	...	45.1
20-29 years	1,290	14.8	1,083	12.9	174	27.4
20-24 years	696	11.4	588	9.6	89	23.7
25-34 years	1,121	20.0	957	17.9	140	33.5
35-44 years	836	27.0	718	24.8	103	40.8
45-54 years	763	32.5	647	29.9	100	61.2
55-64 years	1,329	37.0	1,176	34.8	135	59.4
65-74 years	1,416	38.5	1,245	36.5	152	60.8

1/ Includes all other races not shown as separate categories.
2/ Age adjusted by the direct method to the midpoint of the total 1976-80 survey population 20-74 years of age using 6 age groups.

NOTES: Excludes pregnant women.
Overweight is defined as a sex-specific body mass index (kilograms divided by height in meters squared) equal to or higher than the 85th percentile for examinees 20-29 years of age.

Table 2. Percent of severely overweight persons 20-74 years of age and number examined, by race, sex, and age: United States, 1976-80

Sex and age	All races 1/		White		Black	
	Number of examined persons	Percent	Number of examined persons	Percent	Number of examined persons	Percent
Both sexes						
20-74 years	11,765	9.4	10,214	8.9	1,326	15.2
20-74 years, age adjusted 2/	...	9.3	...	8.8	...	15.5
20-29 years	2,551	4.9	2,155	4.7	334	7.5
20-24 years	1,372	3.8	1,169	3.9	168	4.6
25-34 years	2,188	7.7	1,858	7.1	279	12.2
35-44 years	1,581	10.6	1,371	9.3	173	22.2
45-54 years	1,453	11.8	1,264	11.5	162	17.3
55-64 years	2,556	11.8	2,262	11.2	264	18.5
65-74 years	2,615	11.1	2,290	10.5	280	19.3
Male						
20-74 years	5,604	8.0	4,883	7.8	607	10.2
20-74 years, age adjusted 2/	...	8.0	...	7.8	...	10.4
20-29 years	1,261	4.9	1,072	5.0	160	5.5
20-24 years	676	4.2	581	4.3	79	4.2
25-34 years	1,067	6.7	901	6.7	139	6.5
35-44 years	745	8.9	653	8.3	70	17.1
45-54 years	690	10.7	617	10.7	62	12.0
55-64 years	1,227	9.2	1,086	8.7	129	12.8
65-74 years	1,199	8.4	1,045	8.4	128	10.4
Female						
20-74 years	6,161	10.8	5,331	9.8	719	19.3
20-74 years, age adjusted 2/	...	10.6	...	9.6	...	19.7
20-29 years	1,290	4.9	1,083	4.5	174	9.0
20-24 years	696	3.5	588	3.4	89	4.9
25-34 years	1,121	8.8	957	7.5	140	16.9
35-44 years	836	12.1	718	10.3	103	26.3
45-54 years	763	12.9	647	12.2	100	21.9
55-64 years	1,329	14.2	1,176	13.5	135	23.3
65-74 years	1,416	13.3	1,245	12.2	152	26.1

1/ Includes all other races not shown as separate categories.
2/ Age adjusted by the direct method to the midpoint of the total 1976-80 survey population 20-74 years of age using 6 age groups.

NOTES: Excludes pregnant women.
Severe overweight is defined as a sex-specific body mass index (kilograms divided by height in meters squared) equal to or higher than the 95th percentile for examinees 20-29 years of age.

Table 3. Weight in pounds for persons 6 months-19 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
6-11 months	179	20.7	2.8	16.5	16.8	18.0	19.0	20.8	22.3	23.5	24.0	25.3
1 year	370	26.0	4.2	21.3	22.0	22.8	23.8	25.8	27.8	29.0	30.0	31.8
2 years	375	29.9	3.7	24.5	25.5	26.0	27.8	29.8	32.0	33.5	34.8	36.5
3 years	418	34.5	4.3	28.5	29.8	30.8	31.8	34.1	37.0	38.3	39.6	42.0
4 years	404	39.2	5.6	31.0	33.0	33.8	35.3	38.8	42.0	44.0	46.0	49.0
5 years	397	43.7	6.5	35.3	37.0	37.8	39.0	42.8	47.0	50.5	52.3	56.0
6 years	133	50.6	8.8	41.0	42.3	43.8	44.8	48.6	53.1	58.3	62.5	66.4
7 years	148	55.3	8.5	43.5	45.8	46.8	49.0	54.8	59.3	62.3	65.3	74.8
8 years	147	62.3	13.7	45.1	50.0	52.0	54.3	60.8	66.0	72.8	78.4	86.3
9 years	145	68.7	13.9	53.0	56.5	57.3	59.8	66.5	72.8	78.0	85.3	95.1
10 years	157	80.3	17.0	60.0	62.3	65.3	69.4	76.8	86.6	96.0	102.0	117.8
11 years	155	88.7	22.3	59.1	63.5	70.0	73.8	82.3	102.5	114.8	125.8	134.6
12 years	145	97.5	22.3	67.8	71.8	78.1	83.3	93.8	107.6	115.9	130.0	149.1
13 years	173	110.0	27.2	78.0	81.6	84.5	88.4	106.8	124.1	132.0	141.6	154.4
14 years	186	125.9	24.3	90.3	98.1	102.4	109.8	124.3	139.7	145.9	152.0	170.0
15 years	184	134.5	24.2	101.9	108.3	111.6	119.6	132.6	143.3	151.7	160.5	179.4
16 years	178	148.0	27.3	113.4	119.8	123.6	129.4	142.1	162.5	172.2	181.3	201.2
17 years	173	147.0	25.3	111.8	117.8	120.8	129.7	145.1	159.0	169.3	181.6	196.0
18 years	164	156.6	28.0	119.3	124.8	133.1	136.6	155.3	169.0	176.4	184.2	210.1
19 years	148	158.1	25.6	123.3	127.8	133.6	140.9	153.2	171.7	185.9	191.4	203.2
Female												
6-11 months	177	19.4	2.7	14.5	16.0	16.5	17.5	19.5	20.8	22.3	23.0	24.0
1 year	336	23.8	3.1	19.5	20.0	20.8	21.8	23.5	25.8	27.3	28.0	29.5
2 years	336	28.6	3.4	23.8	24.8	25.5	26.5	28.0	30.5	32.0	32.8	35.0
3 years	366	32.8	4.6	25.8	27.0	28.5	29.5	32.6	35.5	37.5	38.5	40.5
4 years	396	37.4	5.2	30.3	31.5	32.1	33.5	36.8	40.5	42.5	44.5	46.6
5 years	364	43.2	7.2	33.8	35.6	36.8	38.1	41.8	46.8	50.3	54.5	58.5
6 years	135	48.8	8.9	37.6	39.3	41.0	42.5	47.0	52.5	58.5	63.8	65.3
7 years	157	54.5	11.0	42.3	43.0	43.8	47.3	52.5	59.8	63.3	66.8	75.0
8 years	123	61.4	12.5	47.3	49.3	51.3	53.8	60.8	66.5	69.1	73.3	80.5
9 years	149	70.4	18.4	50.6	55.1	57.0	59.5	65.5	74.1	86.8	95.5	106.9
10 years	136	79.6	17.7	56.8	60.5	64.0	68.3	76.1	87.0	97.5	101.0	109.5
11 years	140	92.2	24.0	65.8	66.9	69.1	74.8	89.0	101.1	112.6	124.8	132.4
12 years	147	102.4	22.2	71.3	77.3	81.1	86.3	100.1	116.1	128.2	133.4	141.9
13 years	162	112.3	25.9	78.1	86.1	88.9	97.3	108.1	121.8	134.3	146.6	168.3
14 years	178	120.8	24.5	88.8	94.5	96.3	104.6	117.1	133.1	145.0	149.1	165.8
15 years	145	121.5	21.5	97.1	99.5	102.6	106.3	117.6	131.6	137.2	144.5	168.9
16 years	170	128.0	22.3	97.3	104.3	107.8	113.1	122.6	137.8	152.0	161.6	169.4
17 years	134	131.4	25.0	98.1	107.8	111.3	115.1	128.8	139.8	150.8	157.9	180.3
18 years	170	130.0	24.5	99.8	109.3	112.0	116.6	124.5	139.0	145.5	154.7	172.1
19 years	158	132.6	24.3	107.0	109.6	114.0	118.9	126.0	142.1	155.8	165.1	172.3

NOTE: Includes clothing weight, estimated as ranging from 0.20 to 0.62 pound.

Table 4. Weight in pounds for males 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	5,916	172.2	29.8	129.2	137.3	143.3	151.6	169.6	188.8	201.4	211.1	226.5
18-24 years	988	162.7	28.0	125.3	133.2	136.7	142.9	158.8	177.0	187.7	199.5	219.5
25-34 years	1,067	173.4	30.1	131.4	138.8	144.2	152.9	170.9	188.8	201.0	209.7	226.5
35-44 years	745	178.4	29.5	131.7	143.6	149.4	159.0	176.3	194.5	209.1	217.8	230.1
45-54 years	690	178.4	30.0	134.2	143.9	148.1	158.2	174.2	197.4	208.4	219.4	232.3
55-64 years	1,227	173.7	28.2	132.2	140.9	146.6	154.9	171.3	188.9	199.5	209.0	225.6
65-74 years	1,199	164.9	28.3	119.9	129.1	135.1	146.0	163.7	182.3	193.8	201.2	213.1
White												
18-74 years	5,148	173.0	29.0	131.0	138.6	144.6	153.1	170.6	189.0	201.5	210.8	225.7
18-24 years	846	163.5	28.1	125.3	133.6	136.9	143.5	159.8	177.7	188.5	200.8	220.5
25-34 years	901	174.3	28.9	132.2	140.6	145.3	154.1	172.0	189.0	201.4	210.3	226.4
35-44 years	653	179.4	28.2	137.3	146.9	151.8	160.9	176.7	194.6	208.7	217.6	229.6
45-54 years	617	178.6	29.5	136.9	146.0	148.4	158.6	174.3	197.2	207.9	218.5	230.5
55-64 years	1,086	174.0	27.3	133.7	142.2	146.9	155.7	172.3	188.7	199.4	208.6	224.4
65-74 years	1,045	166.2	27.3	122.3	131.4	138.0	147.8	164.9	182.9	193.9	201.1	211.8
Black												
18-74 years	649	171.6	33.6	128.2	134.8	140.2	148.2	166.1	188.4	205.0	216.9	232.5
18-24 years	121	159.3	26.5	128.7	134.3	137.4	143.0	156.4	169.9	180.4	184.6	206.5
25-34 years	139	172.5	36.0	129.5	139.9	143.3	150.8	166.0	186.2	199.9	203.4	234.3
35-44 years	70	181.9	34.0	*	136.2	143.9	153.6	183.5	209.1	221.5	229.9	*
45-54 years	62	181.7	32.0	*	142.7	147.7	161.3	180.4	205.2	220.5	226.0	*
55-64 years	129	173.3	32.3	125.4	135.5	141.8	149.9	170.1	190.8	206.8	217.4	230.9
65-74 years	128	161.7	33.7	115.8	125.1	128.1	134.6	157.2	178.9	200.4	214.5	232.0

1/ Includes all other races not shown as separate categories.

NOTE: Includes clothing weight, estimated as ranging from 0.20 to 0.62 pound.

Table 5. Weight in pounds for females 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	6,588	144.2	32.3	105.3	111.1	115.1	122.1	137.8	159.1	174.7	186.3	205.4
18-24 years	1,066	133.6	26.3	102.8	108.3	111.6	117.4	128.0	143.5	155.3	166.0	182.9
25-34 years	1,170	141.6	33.0	104.6	109.5	113.5	119.8	134.3	153.8	173.0	185.4	206.2
35-44 years	844	147.8	33.6	108.6	114.6	117.5	125.5	139.8	163.1	180.2	193.1	218.0
45-54 years	763	149.9	33.8	107.1	113.3	117.6	126.3	144.5	167.0	181.2	193.2	211.7
55-64 years	1,329	149.6	32.5	107.3	113.0	119.3	126.3	143.9	166.1	181.6	193.0	209.8
65-74 years	1,416	146.8	30.5	103.9	112.1	117.3	126.6	143.0	162.8	176.1	186.3	201.3
White												
18-74 years	5,686	143.0	31.1	105.3	111.0	115.1	121.8	137.0	157.0	171.9	183.8	201.7
18-24 years	892	133.2	25.5	104.3	109.1	112.1	117.6	127.6	142.8	153.9	163.9	181.8
25-34 years	1,000	140.2	32.0	104.3	109.3	113.1	119.1	133.7	152.0	168.4	179.8	197.9
35-44 years	726	145.6	32.0	108.8	114.3	116.6	124.3	137.7	158.6	175.9	189.4	209.3
45-54 years	647	148.4	31.8	107.3	113.3	117.8	125.8	143.6	165.1	178.9	188.8	208.5
55-64 years	1,176	148.1	31.7	107.1	111.8	118.3	126.0	142.6	164.3	180.3	190.2	204.7
65-74 years	1,245	145.9	30.3	104.1	111.8	116.8	126.1	141.9	160.7	174.7	185.9	201.1
Black												
18-74 years	782	157.0	38.1	107.6	113.9	121.5	130.4	149.6	177.8	192.8	209.3	232.0
18-24 years	147	139.2	30.6	101.8	108.1	111.5	118.8	133.2	154.4	167.0	174.5	197.1
25-34 years	145	152.7	36.8	106.6	112.1	117.1	127.5	144.1	176.8	192.2	201.8	226.5
35-44 years	103	165.9	40.5	111.8	121.8	126.1	138.8	154.9	188.0	210.4	228.3	249.5
45-54 years	100	171.2	41.5	121.5	133.1	134.1	142.2	163.8	184.4	208.4	216.7	259.2
55-64 years	135	167.2	36.2	119.5	121.8	127.1	144.3	164.4	184.1	202.8	210.8	239.3
65-74 years	152	159.6	29.9	116.8	124.5	133.1	141.1	154.5	181.5	186.3	190.7	216.5

1/ Includes all other races not shown as separate categories.

NOTE: Includes clothing weight, estimated as ranging from 0.20 to 0.62 pound.

Table 6. Weight in kilograms for persons 6 months-19 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
6-11 months	179	9.4	1.3	7.5	7.6	8.2	8.6	9.4	10.1	10.7	10.9	11.4
1 year	370	11.8	1.9	9.6	10.0	10.3	10.8	11.7	12.6	13.1	13.6	14.4
2 years	375	13.6	1.7	11.1	11.6	11.8	12.6	13.5	14.5	15.2	15.8	16.5
3 years	418	15.7	2.0	12.9	13.5	13.9	14.4	15.4	16.8	17.4	17.9	19.1
4 years	404	17.8	2.5	14.1	15.0	15.3	16.0	17.6	19.0	19.9	20.9	22.2
5 years	397	19.8	3.0	16.0	16.8	17.1	17.7	19.4	21.3	22.9	23.7	25.4
6 years	133	23.0	4.0	18.6	19.2	19.8	20.3	22.0	24.1	26.4	28.3	30.1
7 years	148	25.1	3.9	19.7	20.8	21.2	22.2	24.8	26.9	28.2	29.6	33.9
8 years	147	28.2	6.2	20.4	22.7	23.6	24.6	27.5	29.9	33.0	35.5	39.1
9 years	145	31.1	6.3	24.0	25.6	26.0	27.1	30.2	33.0	35.4	38.6	43.1
10 years	157	36.4	7.7	27.2	28.2	29.6	31.4	34.8	39.2	43.5	46.3	53.4
11 years	155	40.3	10.1	26.8	28.8	31.8	33.5	37.3	46.4	52.0	57.0	61.0
12 years	145	44.2	10.1	30.7	32.5	35.4	37.8	42.5	48.8	52.6	58.9	67.5
13 years	173	49.9	12.3	35.4	37.0	38.3	40.1	48.4	56.3	59.8	64.2	69.9
14 years	186	57.1	11.0	41.0	44.5	46.4	49.8	56.4	63.3	66.1	68.9	77.0
15 years	184	61.0	11.0	46.2	49.1	50.6	54.2	60.1	64.9	68.7	72.8	81.3
16 years	178	67.1	12.4	51.4	54.3	56.1	58.7	64.4	73.6	78.1	82.2	91.2
17 years	173	66.7	11.5	50.7	53.4	54.8	58.7	65.8	72.0	76.8	82.3	88.9
18 years	164	71.1	12.7	54.1	56.6	60.3	61.9	70.4	76.6	80.0	83.5	95.3
19 years	148	71.7	11.6	55.9	57.9	60.5	63.8	69.5	77.9	84.3	86.8	92.1
Female												
6-11 months	177	8.8	1.2	6.6	7.3	7.5	7.9	8.9	9.4	10.1	10.4	10.9
1 year	336	10.8	1.4	8.8	9.1	9.4	9.9	10.7	11.7	12.4	12.7	13.4
2 years	336	13.0	1.5	10.8	11.2	11.6	12.0	12.7	13.8	14.5	14.9	15.9
3 years	366	14.9	2.1	11.7	12.3	12.9	13.4	14.7	16.1	17.0	17.4	18.4
4 years	396	17.0	2.4	13.7	14.3	14.5	15.2	16.7	18.4	19.3	20.2	21.1
5 years	364	19.6	3.3	15.3	16.1	16.7	17.2	19.0	21.2	22.8	24.7	26.6
6 years	135	22.1	4.0	17.0	17.8	18.6	19.3	21.3	23.8	26.6	28.9	29.6
7 years	157	24.7	5.0	19.2	19.5	19.8	21.4	23.8	27.1	28.7	30.3	34.0
8 years	123	27.9	5.7	21.4	22.3	23.3	24.4	27.5	30.2	31.3	33.2	36.5
9 years	149	31.9	8.4	22.9	25.0	25.8	27.0	29.7	33.6	39.3	43.3	48.4
10 years	136	36.1	8.0	25.7	27.5	29.0	31.0	34.5	39.5	44.2	45.8	49.6
11 years	140	41.8	10.9	29.8	30.3	31.3	33.9	40.3	45.8	51.0	56.6	60.0
12 years	147	46.4	10.1	32.3	35.0	36.7	39.1	45.4	52.6	58.0	60.5	64.3
13 years	162	50.9	11.8	35.4	39.0	40.3	44.1	49.0	55.2	60.9	66.4	76.3
14 years	178	54.8	11.1	40.3	42.8	43.7	47.4	53.1	60.3	65.7	67.6	75.2
15 years	145	55.1	9.8	44.0	45.1	46.5	48.2	53.3	59.6	62.2	65.5	76.6
16 years	170	58.1	10.1	44.1	47.3	48.9	51.3	55.6	62.5	68.9	73.3	76.8
17 years	134	59.6	11.4	44.5	48.9	50.5	52.2	58.4	63.4	68.4	71.6	81.8
18 years	170	59.0	11.1	45.3	49.5	50.8	52.8	56.4	63.0	66.0	70.1	78.0
19 years	158	60.2	11.0	48.5	49.7	51.7	53.9	57.1	64.4	70.7	74.8	78.1

NOTE: Includes clothing weight, estimated as ranging from 0.09 to 0.28 kilogram.

Table 7. Weight in kilograms for males 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	5,916	78.1	13.5	58.6	62.3	64.9	68.7	76.9	85.6	91.3	95.7	102.7
18-24 years	988	73.8	12.7	56.8	60.4	61.9	64.8	72.0	80.3	85.1	90.4	99.5
25-34 years	1,067	78.7	13.7	59.5	62.9	65.4	69.3	77.5	85.6	91.1	95.1	102.7
35-44 years	745	80.9	13.4	59.7	65.1	67.7	72.1	79.9	88.1	94.8	98.8	104.3
45-54 years	690	80.9	13.6	60.8	65.2	67.2	71.7	79.0	89.4	94.5	99.5	105.3
55-64 years	1,227	78.8	12.8	59.9	63.8	66.4	70.2	77.7	85.6	90.5	94.7	102.3
65-74 years	1,199	74.8	12.8	54.4	58.5	61.2	66.1	74.2	82.7	87.9	91.2	96.6
White												
18-74 years	5,148	78.5	13.1	59.3	62.8	65.5	69.4	77.3	85.6	91.4	95.5	102.3
18-24 years	846	74.2	12.8	56.8	60.5	62.0	65.0	72.4	80.6	85.5	91.0	100.0
25-34 years	901	79.0	13.1	59.9	63.7	65.9	69.8	78.0	85.6	91.3	95.3	102.7
35-44 years	653	81.4	12.8	62.3	66.6	68.8	72.9	80.1	88.2	94.6	98.7	104.1
45-54 years	617	81.0	13.4	62.0	66.1	67.3	71.9	79.0	89.4	94.2	99.0	104.5
55-64 years	1,086	78.9	12.4	60.5	64.5	66.6	70.6	78.2	85.6	90.4	94.5	101.7
65-74 years	1,045	75.4	12.4	55.5	59.5	62.5	67.0	74.7	83.0	87.9	91.2	96.0
Black												
18-74 years	649	77.9	15.2	58.0	61.1	63.6	67.2	75.3	85.4	92.9	98.3	105.4
18-24 years	121	72.2	12.0	58.3	60.9	62.3	64.9	70.8	77.1	81.8	83.7	93.6
25-34 years	139	78.2	16.3	58.7	63.4	64.9	68.4	75.3	84.4	90.6	92.2	106.3
35-44 years	70	82.5	15.4	*	61.7	65.2	69.7	83.1	94.8	100.4	104.2	*
45-54 years	62	82.4	14.5	*	64.7	67.0	73.2	81.8	93.0	100.0	102.5	*
55-64 years	129	78.6	14.7	56.8	61.4	64.3	68.0	77.0	86.5	93.8	98.6	104.7
65-74 years	128	73.3	15.3	52.5	56.7	58.0	61.0	71.2	81.1	90.8	97.3	105.1

1/ Includes all other races not shown as separate categories.

NOTE: Includes clothing weight, estimated as ranging from 0.09 to 0.28 kilogram.

Table 8. Weight in kilograms for females 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	6,588	65.4	14.6	47.7	50.3	52.2	55.4	62.4	72.1	79.2	84.4	93.1
18-24 years	1,066	60.6	11.9	46.6	49.1	50.6	53.2	58.0	65.0	70.4	75.3	82.9
25-34 years	1,170	64.2	15.0	47.4	49.6	51.4	54.3	60.9	69.6	78.4	84.1	93.5
35-44 years	844	67.1	15.2	49.2	52.0	53.3	56.9	63.4	73.9	81.7	87.5	98.9
45-54 years	763	68.0	15.3	48.5	51.3	53.3	57.3	65.5	75.7	82.1	87.6	96.0
55-64 years	1,329	67.9	14.7	48.6	51.3	54.1	57.3	65.2	75.3	82.3	87.5	95.1
65-74 years	1,416	66.6	13.8	47.1	50.8	53.2	57.4	64.8	73.8	79.8	84.4	91.3
White												
18-74 years	5,686	64.8	14.1	47.7	50.3	52.2	55.2	62.1	71.1	77.9	83.3	91.5
18-24 years	892	60.4	11.6	47.3	49.5	50.8	53.3	57.9	64.8	69.7	74.3	82.4
25-34 years	1,000	63.6	14.5	47.3	49.5	51.3	54.0	60.6	68.9	76.3	81.5	89.7
35-44 years	726	66.1	14.5	49.3	51.8	52.9	56.3	62.4	71.9	79.7	85.8	94.9
45-54 years	647	67.3	14.4	48.6	51.3	53.4	57.0	65.0	74.8	81.1	85.6	94.5
55-64 years	1,176	67.2	14.4	48.5	50.7	53.7	57.1	64.7	74.5	81.8	86.2	92.8
65-74 years	1,245	66.2	13.7	47.2	50.7	52.9	57.2	64.3	72.9	79.2	84.3	91.2
Black												
18-74 years	782	71.2	17.3	48.8	51.6	55.1	59.1	67.8	80.6	87.4	94.9	105.1
18-24 years	147	63.1	13.9	46.2	49.0	50.6	53.8	60.4	70.0	75.8	79.1	89.3
25-34 years	145	69.3	16.7	48.3	50.8	53.1	57.8	65.3	80.2	87.1	91.5	102.7
35-44 years	103	75.3	18.4	50.7	55.2	57.2	63.0	70.2	85.2	95.3	103.5	113.1
45-54 years	100	77.7	18.8	55.1	60.3	60.8	64.5	74.3	83.6	94.5	98.2	117.5
55-64 years	135	75.8	16.4	54.2	55.2	57.6	65.4	74.6	83.4	91.9	95.5	108.5
65-74 years	152	72.4	13.6	52.9	56.4	60.3	64.0	70.0	82.2	84.4	86.5	98.1

1/ Includes all other races not shown as separate categories.

NOTE: Includes clothing weight, estimated as ranging from 0.09 to 0.28 kilogram.

Table 9. Body mass index (kilograms divided by height in meters squared) for persons 2-19 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years	375	16.3	1.3	14.4	14.7	15.0	15.4	16.3	17.0	17.4	17.7	18.4
3 years	418	15.9	1.2	14.2	14.5	14.7	15.1	15.8	16.5	16.9	17.1	17.8
4 years	404	15.8	1.4	14.0	14.4	14.6	14.9	15.6	16.4	16.8	17.2	18.1
5 years	397	15.6	1.5	13.7	14.0	14.3	14.7	15.4	16.3	16.8	17.2	18.0
6 years	133	16.0	2.2	14.0	14.3	14.5	14.8	15.3	16.7	17.5	18.0	21.1
7 years	148	16.0	1.7	13.7	14.1	14.5	14.9	15.7	16.7	17.3	18.0	19.8
8 years	147	16.6	2.5	13.7	14.3	14.7	15.1	16.2	17.3	18.7	19.2	20.8
9 years	145	16.8	2.4	13.7	14.4	14.9	15.5	16.4	17.6	18.6	19.8	21.8
10 years	157	18.0	2.9	14.6	15.2	15.6	16.1	17.3	19.1	20.4	21.8	24.4
11 years	155	18.7	3.6	14.8	15.4	15.6	16.2	17.5	20.7	22.5	24.3	26.4
12 years	145	18.8	3.2	15.0	15.8	16.3	16.7	18.0	19.9	21.6	24.0	25.0
13 years	173	19.6	3.7	15.9	16.4	16.7	17.2	18.9	21.0	22.2	23.6	24.8
14 years	186	20.2	3.0	16.6	17.3	17.7	18.2	19.6	21.5	23.1	23.9	25.1
15 years	184	20.8	3.1	16.8	17.7	18.3	19.0	20.5	21.9	23.0	23.9	26.6
16 years	178	22.1	3.5	18.1	18.5	19.0	19.6	21.6	23.9	25.4	26.0	28.0
17 years	173	21.7	3.2	17.8	18.0	18.7	19.6	21.3	23.3	24.6	25.9	28.3
18 years	164	22.7	3.7	18.1	18.9	19.4	20.2	22.1	24.5	26.0	27.0	29.9
19 years	148	23.0	3.5	18.8	19.3	19.8	20.8	22.6	24.7	25.9	27.7	30.2
Female												
2 years	336	16.1	1.3	14.1	14.5	14.8	15.2	16.0	16.9	17.5	17.8	18.5
3 years	366	15.6	1.3	13.6	14.1	14.4	14.8	15.4	16.4	16.7	17.1	17.7
4 years	396	15.5	1.4	13.7	13.9	14.2	14.6	15.3	16.2	16.8	17.3	18.0
5 years	364	15.6	1.8	13.5	13.8	14.0	14.4	15.3	16.6	17.2	18.4	19.6
6 years	135	15.7	1.8	13.6	13.9	14.1	14.4	15.3	16.3	17.3	18.4	19.3
7 years	157	16.1	2.2	13.8	13.9	14.1	14.6	15.7	17.0	17.8	18.4	19.9
8 years	123	16.4	2.5	13.9	14.1	14.4	14.9	15.9	17.3	18.1	18.7	20.3
9 years	149	17.5	3.5	14.2	14.7	15.0	15.5	16.5	18.1	19.6	22.7	25.2
10 years	136	17.8	3.2	13.7	14.5	15.1	15.7	17.0	19.3	20.9	22.6	24.1
11 years	140	18.9	3.8	14.9	15.3	15.7	16.4	18.1	20.4	21.6	22.5	26.2
12 years	147	19.4	3.4	14.9	15.6	16.3	17.0	18.8	20.9	22.7	23.6	26.3
13 years	162	20.1	4.1	15.2	15.9	16.5	17.6	19.3	21.4	23.2	23.9	28.5
14 years	178	21.1	3.9	16.4	17.0	17.8	18.6	20.4	22.7	24.5	26.2	28.8
15 years	140	20.6	3.0	17.1	17.6	17.9	18.5	19.9	21.7	22.6	25.4	26.6
16 years	168	21.8	3.6	17.7	18.3	18.6	19.4	21.0	23.0	25.4	26.4	29.1
17 years	132	22.3	4.6	17.4	18.4	18.9	19.7	21.4	23.7	25.1	26.8	31.3
18 years	162	22.3	3.8	17.8	18.5	19.1	20.0	21.6	23.8	25.5	26.7	30.7
19 years	152	22.5	3.9	18.3	18.9	19.2	19.8	21.6	23.7	25.9	27.4	29.0

NOTE: Excludes pregnant women.

Table 10. Body mass index (kilograms divided by height in meters squared) for males 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	5,916	25.3	4.0	19.6	20.7	21.4	22.6	24.9	27.5	29.3	30.4	32.6
20-29 years	1,261	24.3	3.8	19.4	20.2	20.7	21.7	23.7	26.3	27.8	29.2	31.1
18-24 years	988	23.5	3.6	18.9	19.6	20.2	21.0	23.0	25.3	27.0	28.0	30.8
25-34 years	1,067	25.2	4.0	19.7	20.7	21.5	22.4	24.7	27.1	28.7	30.0	32.6
35-44 years	745	26.0	3.9	20.5	21.4	22.1	23.3	25.6	28.2	29.7	30.8	33.1
45-54 years	690	26.3	4.1	20.6	21.6	22.5	23.7	25.9	28.8	30.3	31.3	33.7
55-64 years	1,227	26.1	3.8	20.5	21.7	22.3	23.6	25.8	28.1	29.6	30.7	33.0
65-74 years	1,199	25.5	3.9	19.0	20.6	21.6	22.9	25.4	27.8	29.6	30.8	32.3
White												
18-74 years	5,148	25.4	3.9	19.7	20.8	21.5	22.7	25.0	27.5	29.3	30.4	32.5
20-29 years	1,072	24.4	3.7	19.4	20.3	20.8	21.8	23.8	26.3	27.9	29.2	31.1
18-24 years	846	23.6	3.6	18.9	19.6	20.2	21.0	23.1	25.5	27.1	28.1	30.8
25-34 years	901	25.2	3.8	19.8	20.8	21.6	22.5	24.8	27.2	28.7	30.0	32.4
35-44 years	653	26.1	3.7	20.7	21.7	22.3	23.6	25.7	28.1	29.6	30.5	32.7
45-54 years	617	26.3	4.0	20.8	21.7	22.6	23.7	25.8	28.7	30.2	31.3	33.7
55-64 years	1,086	26.1	3.7	20.6	21.7	22.5	23.8	25.8	28.2	29.5	30.7	32.8
65-74 years	1,045	25.6	3.9	19.2	20.8	21.8	23.1	25.5	27.9	29.6	30.8	32.3
Black												
18-74 years	649	25.3	4.7	19.3	20.2	20.8	21.8	24.5	27.8	29.9	31.1	33.7
20-29 years	160	24.1	4.5	19.2	19.9	20.3	21.3	23.2	25.7	27.5	29.0	31.5
18-24 years	121	23.1	3.6	19.0	19.8	20.2	20.6	22.5	24.6	26.2	27.5	30.8
25-34 years	139	25.1	5.1	19.2	20.2	20.7	21.8	24.3	27.1	28.2	29.8	32.3
35-44 years	70	26.4	4.5	*	21.3	21.7	23.0	25.9	29.4	31.5	32.3	*
45-54 years	62	27.2	4.5	*	21.6	22.2	25.1	26.9	29.9	31.0	32.6	*
55-64 years	129	25.9	4.5	19.8	21.3	21.7	22.3	25.4	28.0	30.4	31.3	34.7
65-74 years	128	24.9	4.6	18.5	20.1	20.6	21.8	24.2	28.2	29.9	31.5	34.1

1/ Includes all other races not shown as separate categories.

Table 11. Body mass index (kilograms divided by height in meters squared) for females 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	6,475	25.0	5.6	18.5	19.3	20.0	21.1	23.7	27.6	30.4	32.5	36.0
20-29 years	1,290	23.1	4.7	17.9	18.6	19.1	20.0	22.0	24.9	27.3	29.1	32.3
18-24 years	1,010	22.6	4.2	17.9	18.5	19.1	20.0	21.6	23.8	26.1	27.6	31.0
25-34 years	1,121	24.1	5.5	18.3	19.0	19.5	20.3	22.6	26.1	29.0	31.5	35.4
35-44 years	836	25.3	5.8	18.8	19.7	20.3	21.3	23.8	28.0	30.9	33.5	36.7
45-54 years	763	26.1	5.8	19.1	20.2	20.9	22.3	24.8	28.9	31.6	33.3	37.0
55-64 years	1,329	26.5	5.6	19.3	20.6	21.3	22.5	25.3	29.5	32.1	33.7	37.9
65-74 years	1,416	26.7	5.4	19.4	20.6	21.6	23.0	25.9	29.2	31.7	33.5	36.6
White												
18-74 years	5,591	24.8	5.4	18.5	19.3	20.0	21.0	23.4	27.2	29.9	32.0	35.5
20-29 years	1,083	22.9	4.5	17.9	18.6	19.1	20.0	21.9	24.6	26.8	28.5	31.7
18-24 years	848	22.4	4.0	18.1	18.6	19.1	19.9	21.5	23.6	25.7	27.2	30.4
25-34 years	957	23.8	5.3	18.1	18.9	19.4	20.2	22.4	25.7	28.5	30.8	34.5
35-44 years	718	24.9	5.6	18.8	19.6	20.3	21.2	23.3	27.2	30.4	32.5	36.2
45-54 years	647	25.8	5.5	19.0	20.1	20.9	22.2	24.6	28.4	31.1	33.2	36.7
55-64 years	1,176	26.2	5.5	19.3	20.5	21.3	22.4	25.1	29.1	31.9	33.4	37.0
65-74 years	1,245	26.5	5.4	19.3	20.5	21.5	22.9	25.7	28.9	31.5	33.3	36.7
Black												
18-74 years	766	27.1	6.5	18.8	20.0	20.8	22.2	26.3	30.8	33.2	35.3	39.3
20-29 years	174	24.8	5.9	18.2	18.9	19.8	20.5	23.4	28.0	31.0	31.8	37.2
18-24 years	136	23.7	5.0	17.8	18.5	19.5	20.3	22.1	25.7	29.0	30.9	32.2
25-34 years	140	26.2	6.3	18.8	19.8	20.1	21.5	24.8	28.7	33.6	35.4	37.8
35-44 years	103	28.2	6.6	18.9	20.8	21.9	24.3	26.7	32.7	35.2	37.4	41.7
45-54 years	100	29.7	7.2	21.9	22.8	23.7	25.3	28.2	32.1	34.1	36.5	43.7
55-64 years	135	29.3	6.4	20.1	22.1	23.1	24.8	28.8	31.7	35.0	39.1	42.9
65-74 years	152	28.7	5.1	21.2	22.5	23.5	25.6	28.2	32.6	33.6	35.1	37.1

1/ Includes all other races not shown as separate categories.

NOTE: Excludes pregnant women.

Table 12. Height in inches for persons 2-19 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years	375	35.9	1.7	33.3	33.8	34.1	34.7	35.9	37.1	37.7	38.1	38.5
3 years	418	39.1	1.8	36.2	37.1	37.3	38.0	38.9	40.2	40.9	41.3	42.1
4 years	404	41.7	2.0	38.5	39.1	39.6	40.3	41.9	43.0	43.7	44.3	45.2
5 years	397	44.3	2.1	40.9	41.7	42.2	43.1	44.3	45.5	46.5	47.1	47.7
6 years	133	47.0	2.0	43.8	44.3	45.1	45.6	47.2	48.3	49.1	49.4	49.9
7 years	148	49.2	2.3	45.4	46.3	46.9	48.0	49.6	50.4	51.2	51.8	52.6
8 years	147	51.2	2.7	46.7	48.0	48.7	49.3	51.4	52.8	53.7	54.4	56.0
9 years	145	53.4	2.3	49.6	50.5	50.9	51.7	53.6	54.9	55.6	56.3	56.9
10 years	157	55.8	2.9	51.3	52.3	52.8	53.9	55.7	57.6	58.9	59.3	60.3
11 years	155	57.5	3.1	52.4	53.5	54.3	55.5	57.3	59.6	60.6	61.1	63.0
12 years	145	60.1	3.1	54.6	56.2	57.0	58.1	59.8	62.2	63.1	63.7	64.7
13 years	173	62.6	3.3	56.8	58.1	58.9	60.1	62.8	65.0	66.5	66.7	67.6
14 years	186	66.0	3.3	60.6	61.7	62.6	64.0	66.0	68.1	69.5	70.4	71.1
15 years	184	67.2	2.7	63.0	63.7	64.1	65.2	67.3	69.1	69.9	70.1	71.6
16 years	178	68.4	2.5	64.1	64.8	66.0	66.9	68.4	70.1	71.0	71.9	73.2
17 years	173	68.9	2.8	64.6	65.9	66.3	67.1	68.9	70.7	72.0	72.6	73.7
18 years	164	69.6	2.6	65.6	66.5	67.0	67.9	69.6	71.2	72.4	72.9	74.7
19 years	148	69.5	2.6	64.7	66.2	66.7	67.5	69.6	71.3	72.2	72.8	73.6
Female												
2 years	336	35.3	1.6	32.7	33.2	33.7	34.1	35.4	36.3	36.9	37.3	38.3
3 years	366	38.4	1.9	35.3	35.9	36.5	37.2	38.4	39.7	40.3	40.7	41.1
4 years	396	41.2	2.0	37.8	38.7	39.1	39.9	41.1	42.6	43.2	43.6	44.3
5 years	364	43.9	2.1	40.6	41.3	41.9	42.6	43.9	45.4	45.8	46.8	47.4
6 years	135	46.6	2.4	43.3	43.8	43.9	44.6	46.6	48.1	49.0	49.8	50.7
7 years	157	48.7	2.6	44.6	45.9	46.2	47.1	48.9	50.4	51.2	52.0	53.1
8 years	123	51.3	2.3	47.6	48.6	48.9	49.5	51.4	52.4	53.3	54.2	55.3
9 years	149	52.9	3.0	48.8	49.8	50.2	50.7	53.1	54.7	55.4	56.2	57.9
10 years	136	55.9	2.5	51.8	52.6	53.2	54.2	55.7	57.6	58.3	59.2	60.6
11 years	140	58.2	3.1	53.0	54.9	55.4	56.0	58.2	59.9	60.9	61.7	64.1
12 years	147	60.8	2.8	56.6	57.4	57.8	58.7	61.0	62.4	63.7	64.8	65.3
13 years	162	62.5	2.6	58.7	59.2	60.1	61.1	62.6	64.2	64.8	65.7	67.0
14 years	178	63.3	2.5	59.5	60.1	60.8	61.7	63.3	65.0	65.7	66.2	67.9
15 years	145	64.3	2.5	60.2	61.1	61.9	62.6	64.2	65.8	67.1	68.0	68.3
16 years	170	64.1	2.4	59.8	60.8	61.9	62.6	64.3	65.6	66.7	67.4	68.2
17 years	134	64.4	2.3	60.6	61.7	62.4	63.1	64.2	65.6	66.7	67.2	67.8
18 years	170	64.0	2.7	59.3	60.7	61.3	62.2	64.1	65.5	66.6	67.5	68.5
19 years	158	64.4	2.2	60.6	61.7	62.1	62.9	64.5	65.9	66.7	67.1	67.8

NOTE: Height without shoes.

Table 13. Height in inches for males 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	5,916	69.1	2.8	64.5	65.5	66.2	67.3	69.1	71.0	72.0	72.6	73.6
18-24 years	988	69.7	2.8	65.3	66.3	66.9	67.8	69.7	71.5	72.4	73.2	74.6
25-34 years	1,067	69.6	2.7	65.1	66.1	67.0	67.8	69.6	71.4	72.2	73.0	73.8
35-44 years	745	69.4	2.9	64.6	65.5	66.5	67.8	69.5	71.3	72.2	73.0	74.0
45-54 years	690	69.0	2.6	64.7	65.8	66.3	67.2	69.0	70.8	71.9	72.5	73.1
55-64 years	1,227	68.4	2.7	63.8	65.1	65.6	66.6	68.4	70.3	71.1	71.7	72.7
65-74 years	1,199	67.4	2.8	62.7	63.9	64.6	65.5	67.5	69.4	70.3	71.0	72.1
White												
18-74 years	5,148	69.2	2.8	64.6	65.6	66.4	67.4	69.2	71.1	72.1	72.7	73.7
18-24 years	846	69.8	2.8	65.5	66.4	67.0	67.9	69.7	71.6	72.5	73.4	74.7
25-34 years	901	69.7	2.6	65.3	66.2	67.1	67.9	69.7	71.4	72.4	73.0	73.9
35-44 years	653	69.6	2.9	64.7	65.6	66.8	68.0	69.6	71.5	72.3	73.1	74.0
45-54 years	617	69.1	2.6	64.8	65.9	66.5	67.4	69.0	70.8	71.9	72.5	73.1
55-64 years	1,086	68.4	2.7	64.2	65.2	65.7	66.7	68.4	70.3	71.1	71.7	72.6
65-74 years	1,045	67.6	2.7	62.8	64.1	64.8	65.7	67.6	69.5	70.4	71.1	72.1
Black												
18-74 years	649	69.1	2.7	64.6	65.6	66.2	67.4	69.1	71.0	72.0	72.6	73.4
18-24 years	121	69.6	2.7	65.1	66.0	67.0	67.9	70.1	71.3	72.4	72.8	73.3
25-34 years	139	69.6	2.7	65.1	66.3	66.7	67.9	69.7	71.5	72.1	72.7	73.7
35-44 years	70	69.5	2.5	*	66.0	67.2	68.1	69.0	70.8	71.6	72.9	*
45-54 years	62	68.6	2.6	*	66.0	66.1	66.5	68.1	70.2	72.1	72.6	*
55-64 years	129	68.6	2.7	64.1	65.1	65.6	66.4	68.7	70.4	71.1	72.0	73.5
65-74 years	128	67.4	2.6	63.5	64.0	64.5	65.3	67.6	69.0	70.0	71.1	71.7

1/ Includes all other races not shown as separate categories.

NOTE: Height without shoes.

Table 14. Height in inches for females 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	6,588	63.7	2.6	59.4	60.5	61.1	62.0	63.7	65.5	66.4	67.0	68.0
18-24 years	1,066	64.3	2.6	60.2	61.1	61.7	62.6	64.5	66.0	67.0	67.5	68.5
25-34 years	1,170	64.2	2.5	60.3	61.1	61.7	62.5	64.2	66.0	66.9	67.5	68.4
35-44 years	844	64.1	2.5	60.1	61.2	61.7	62.4	64.0	65.7	66.6	67.3	68.3
45-54 years	763	63.5	2.5	59.2	60.2	60.9	61.7	63.5	65.2	66.0	66.7	67.6
55-64 years	1,329	63.0	2.5	58.7	59.8	60.5	61.4	63.1	64.7	65.6	66.1	67.1
65-74 years	1,416	62.2	2.5	58.2	59.1	59.7	60.7	62.4	63.9	64.7	65.4	66.1
White												
18-74 years	5,686	63.8	2.6	59.6	60.6	61.2	62.0	63.7	65.5	66.4	67.1	68.0
18-24 years	892	64.4	2.5	60.3	61.3	61.9	62.8	64.5	66.0	67.0	67.6	68.5
25-34 years	1,000	64.3	2.5	60.4	61.2	61.7	62.6	64.3	66.1	67.0	67.5	68.4
35-44 years	726	64.1	2.5	60.1	61.3	61.7	62.3	64.0	65.8	66.7	67.4	68.4
45-54 years	647	63.6	2.4	59.6	60.5	61.1	61.9	63.5	65.2	66.0	66.7	67.6
55-64 years	1,176	63.0	2.5	58.9	59.8	60.6	61.4	63.1	64.7	65.6	66.0	67.0
65-74 years	1,245	62.3	2.5	58.2	59.1	59.7	60.7	62.4	63.9	64.7	65.4	66.0
Black												
18-74 years	782	63.8	2.6	59.3	60.7	61.1	62.0	63.8	65.6	66.5	67.1	68.1
18-24 years	147	64.3	2.7	60.2	61.1	61.6	62.4	64.2	66.2	67.0	67.3	68.8
25-34 years	145	63.9	2.5	59.6	61.0	61.5	62.3	64.0	65.5	66.4	67.1	68.5
35-44 years	103	64.3	2.2	61.1	61.7	61.9	62.8	64.0	65.8	66.5	67.0	67.6
45-54 years	100	63.7	2.7	59.2	60.0	60.7	61.1	63.8	65.9	66.6	67.0	67.7
55-64 years	135	63.4	2.9	58.6	58.7	60.4	61.3	63.7	65.5	66.6	67.2	68.7
65-74 years	152	62.5	2.4	58.3	59.2	60.1	61.3	62.6	64.1	64.9	65.5	66.7

1/ Includes all other races not shown as separate categories.

NOTE: Height without shoes.

Table 15. Height in centimeters for persons 2-19 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years	375	91.2	4.3	84.5	85.8	86.5	88.2	91.3	94.2	95.8	96.6	97.6
3 years	418	99.2	4.5	92.0	94.3	94.9	96.5	98.8	102.0	103.9	105.0	107.0
4 years	404	106.0	5.2	97.8	99.5	100.5	102.5	106.4	109.2	111.0	112.4	115.0
5 years	397	112.6	5.4	104.0	105.8	107.2	109.4	112.6	115.6	118.1	119.6	121.2
6 years	133	119.5	5.1	111.2	112.6	114.5	115.9	120.1	122.6	124.7	125.5	126.8
7 years	148	125.1	5.9	115.4	117.6	119.1	121.8	125.9	128.1	130.2	131.5	133.6
8 years	147	129.9	7.0	118.6	122.0	123.5	125.3	130.6	134.1	136.5	138.0	142.0
9 years	145	135.5	5.8	125.9	128.4	129.4	131.2	136.1	139.6	141.2	143.1	144.7
10 years	157	141.6	7.3	130.3	132.8	134.0	137.0	141.5	146.4	149.6	150.6	153.0
11 years	155	146.0	7.8	133.1	135.9	138.0	141.1	145.6	151.2	153.9	155.2	160.2
12 years	145	152.6	7.9	139.0	142.6	144.9	147.5	152.0	158.0	160.5	162.0	164.4
13 years	173	158.9	8.3	144.4	147.6	149.7	152.6	159.7	165.0	168.7	169.5	171.6
14 years	186	167.5	8.3	153.9	156.5	159.1	162.5	167.5	173.1	176.5	178.7	180.6
15 years	184	170.8	6.7	160.1	162.0	162.6	165.7	171.1	175.5	177.5	178.2	181.9
16 years	178	173.8	6.4	163.0	164.7	167.4	169.8	173.7	178.1	180.3	182.6	186.1
17 years	173	175.1	7.1	164.1	167.3	168.4	170.6	174.9	179.7	182.8	184.3	187.5
18 years	164	176.9	6.7	166.5	168.8	169.9	172.3	176.9	180.9	183.9	185.1	189.6
19 years	148	176.5	6.7	164.5	168.2	169.4	171.8	176.9	181.1	183.5	184.8	187.2
Female												
2 years	336	89.7	4.2	83.1	84.4	85.5	86.7	89.8	92.2	93.6	94.9	97.2
3 years	366	97.5	4.8	89.6	91.1	92.5	94.5	97.6	100.8	102.5	103.4	104.5
4 years	396	104.6	5.0	96.1	98.2	99.5	101.5	104.5	108.2	109.8	110.7	112.4
5 years	364	111.6	5.3	103.0	105.1	106.4	108.1	111.6	115.2	116.5	118.8	120.3
6 years	135	118.4	6.1	109.9	111.1	111.5	113.3	118.5	122.2	124.5	126.5	128.7
7 years	157	123.7	6.7	113.3	116.6	117.4	119.6	124.1	128.1	130.1	132.2	134.7
8 years	123	130.2	5.7	120.8	123.4	124.4	125.8	130.6	133.2	135.4	137.5	140.5
9 years	149	134.4	7.6	124.0	126.4	127.6	129.0	134.8	139.0	140.7	142.6	147.1
10 years	136	141.9	6.5	131.6	133.6	135.1	137.6	141.6	146.3	148.1	150.4	153.8
11 years	140	147.9	7.8	134.7	139.3	140.6	142.2	147.9	152.2	154.7	156.9	162.7
12 years	147	154.4	7.2	143.9	145.7	146.7	149.2	154.8	158.6	161.9	164.7	165.9
13 years	162	158.9	6.6	149.0	150.3	152.7	155.3	159.0	163.0	164.5	166.9	170.3
14 years	178	160.8	6.4	151.0	152.7	154.5	156.7	160.9	165.1	166.9	168.2	172.3
15 years	145	163.2	6.2	153.0	155.2	157.1	159.1	163.1	167.1	170.2	172.4	173.5
16 years	170	162.9	6.1	152.0	154.5	157.2	159.1	163.2	166.4	169.4	171.4	173.3
17 years	134	163.5	5.7	153.8	156.8	158.5	160.4	163.1	166.7	169.7	170.7	172.2
18 years	170	162.4	6.8	150.7	154.2	155.6	158.0	162.7	166.2	169.1	171.5	174.0
19 years	158	163.5	5.6	153.8	156.8	157.7	159.7	163.7	167.2	169.5	170.4	172.1

NOTE: Height without shoes.

Table 16. Height in centimeters for males 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	5,916	175.5	7.2	163.9	166.4	168.2	171.1	175.7	180.4	182.9	184.5	187.0
18-24 years	988	177.0	7.1	165.8	168.3	169.8	172.2	177.0	181.6	183.9	186.0	189.6
25-34 years	1,067	176.7	6.7	165.5	167.9	170.0	172.2	176.8	181.2	183.6	185.3	187.4
35-44 years	745	176.3	7.3	164.1	166.4	168.8	172.2	176.5	181.2	183.6	185.2	188.0
45-54 years	690	175.2	6.6	164.5	167.2	168.3	170.7	175.1	179.8	182.5	184.3	185.7
55-64 years	1,227	173.7	6.9	162.1	165.4	166.8	169.2	173.7	178.5	180.6	182.2	184.6
65-74 years	1,199	171.3	7.1	159.3	162.3	164.1	166.3	171.5	176.1	178.6	180.4	183.1
White												
18-74 years	5,148	175.7	7.1	164.2	166.7	168.6	171.2	175.9	180.5	183.0	184.6	187.2
18-24 years	846	177.2	7.0	166.3	168.6	170.1	172.4	177.1	181.9	184.1	186.4	189.7
25-34 years	901	177.0	6.6	165.8	168.2	170.6	172.5	177.0	181.4	183.8	185.4	187.7
35-44 years	653	176.7	7.3	164.5	166.7	169.6	172.6	176.8	181.7	183.7	185.8	188.0
45-54 years	617	175.4	6.6	164.6	167.3	168.9	171.2	175.3	179.8	182.5	184.3	185.7
55-64 years	1,086	173.8	6.8	163.1	165.6	167.2	169.5	173.6	178.5	180.7	182.2	184.5
65-74 years	1,045	171.6	6.9	159.6	162.9	164.6	166.9	171.6	176.4	178.7	180.5	183.3
Black												
18-74 years	649	175.5	7.0	164.3	166.5	168.1	171.1	175.7	180.3	183.0	184.5	186.5
18-24 years	121	176.7	7.0	165.1	167.6	169.9	172.5	177.9	181.0	183.8	185.0	186.4
25-34 years	139	176.7	6.9	165.5	168.5	169.6	172.4	177.1	181.8	183.2	184.7	187.1
35-44 years	70	176.5	6.4	*	167.6	170.7	172.8	175.2	179.9	181.9	185.1	*
45-54 years	62	174.2	6.7	*	167.6	167.7	169.1	172.8	178.4	183.2	184.5	*
55-64 years	129	174.2	6.9	162.7	165.3	166.8	168.6	174.6	178.8	180.7	182.8	186.8
65-74 years	128	171.2	6.5	161.2	162.6	163.8	165.9	171.6	175.3	177.7	180.8	182.2

1/ Includes all other races not shown as separate categories.

NOTE: Height without shoes.

Table 17. Height in centimeters for females 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	6,588	161.8	6.6	150.9	153.6	155.2	157.4	161.7	166.3	168.6	170.3	172.6
18-24 years	1,066	163.4	6.6	152.9	155.2	156.7	159.0	163.7	167.6	170.0	171.6	174.0
25-34 years	1,170	163.1	6.3	153.2	155.2	156.6	158.7	163.1	167.6	169.9	171.3	173.7
35-44 years	844	162.8	6.3	152.6	155.5	156.7	158.5	162.5	167.0	169.3	171.0	173.5
45-54 years	763	161.3	6.4	150.5	152.9	154.5	156.8	161.3	165.6	167.7	169.4	171.8
55-64 years	1,329	160.1	6.4	149.2	151.8	153.7	155.9	160.3	164.5	166.7	168.0	170.3
65-74 years	1,416	158.1	6.2	147.9	150.0	151.7	154.1	158.4	162.2	164.5	166.0	167.7
White												
18-74 years	5,686	161.9	6.5	151.3	153.8	155.4	157.6	161.9	166.4	168.7	170.3	172.7
18-24 years	892	163.7	6.4	153.1	155.7	157.1	159.4	163.9	167.7	170.1	171.8	174.0
25-34 years	1,000	163.3	6.2	153.5	155.4	156.8	158.9	163.3	167.8	170.1	171.5	173.7
35-44 years	726	162.9	6.3	152.6	155.6	156.7	158.4	162.6	167.0	169.4	171.2	173.6
45-54 years	647	161.5	6.2	151.5	153.6	155.2	157.2	161.3	165.7	167.6	169.4	171.7
55-64 years	1,176	160.1	6.3	149.6	151.9	153.9	156.1	160.3	164.4	166.5	167.7	170.1
65-74 years	1,245	158.1	6.2	147.8	150.1	151.7	154.1	158.5	162.2	164.5	166.0	167.7
Black												
18-74 years	782	162.1	6.7	150.6	154.2	155.2	157.6	162.2	166.6	168.9	170.4	173.0
18-24 years	147	163.2	6.9	152.8	155.1	156.4	158.6	163.0	168.1	170.2	171.1	174.8
25-34 years	145	162.3	6.3	151.3	154.8	156.3	158.1	162.5	166.2	168.6	170.4	174.1
35-44 years	103	163.3	5.5	155.2	156.9	157.3	159.7	162.5	167.0	168.7	170.1	171.7
45-54 years	100	161.7	6.9	150.4	152.6	154.4	155.2	162.1	167.5	169.3	170.5	171.9
55-64 years	135	161.0	7.4	148.7	149.2	153.4	155.8	161.8	166.5	169.1	171.0	174.5
65-74 years	152	158.8	6.2	148.2	150.4	152.6	155.6	159.1	163.0	164.7	166.4	169.4

1/ Includes all other races not shown as separate categories.

NOTE: Height without shoes.

Table 18. Recumbent length in centimeters for persons 6 months-3 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
6-11 months	176	72.9	3.8	66.8	68.4	69.5	70.5	73.3	75.5	76.1	77.1	78.8
1 year	366	82.4	5.0	75.7	76.7	77.8	79.3	82.1	85.5	87.2	88.1	89.9
2 years	373	91.6	4.3	84.3	86.5	87.4	88.7	91.5	94.6	96.0	96.9	98.4
3 years	397	99.5	4.4	92.9	94.6	95.5	96.6	99.2	102.4	103.9	105.4	106.7
Female												
6-11 months	176	71.2	4.5	64.5	66.2	66.8	68.4	71.3	74.2	75.5	76.5	77.5
1 year	333	80.3	4.5	73.1	74.7	76.0	77.0	80.1	83.2	85.3	86.5	87.8
2 years	333	90.2	4.2	83.8	84.9	85.8	87.4	90.3	92.8	94.1	95.4	97.6
3 years	357	97.7	4.9	89.9	91.8	93.0	94.8	98.0	101.1	102.9	104.1	105.1

Table 19. Sitting height in centimeters for persons 2-19 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years	375	54.0	2.6	50.0	51.0	51.0	52.0	54.0	56.0	57.0	57.0	58.0
3 years	418	57.1	2.6	52.1	54.0	54.1	56.0	57.0	59.0	60.0	60.0	61.0
4 years	404	60.0	3.3	55.1	56.0	57.0	58.0	60.0	62.0	63.0	63.1	64.1
5 years	397	62.5	3.0	58.0	59.0	59.1	60.1	63.0	64.1	65.1	66.1	67.1
6 years	133	65.3	2.7	61.0	62.0	63.0	64.0	65.1	67.1	68.1	69.0	69.1
7 years	148	67.4	2.9	63.0	64.0	64.1	66.0	67.1	69.1	70.1	71.1	71.1
8 years	147	69.5	3.8	64.1	65.1	66.1	68.0	69.1	72.0	73.1	74.0	75.1
9 years	145	71.4	3.0	66.1	68.0	68.1	69.1	72.0	74.0	74.1	75.1	76.1
10 years	157	74.1	3.5	69.0	69.1	70.1	72.0	74.0	77.0	78.1	79.0	80.1
11 years	155	75.9	4.0	69.1	71.0	72.0	73.1	76.1	78.1	80.1	81.3	82.6
12 years	145	78.6	4.2	72.1	73.1	74.1	76.0	78.6	81.1	82.3	84.7	85.9
13 years	173	81.8	5.2	74.1	75.1	76.0	77.1	82.1	85.7	88.0	88.8	89.7
14 years	186	86.0	5.2	76.1	79.1	80.4	83.0	86.5	90.0	91.5	92.1	93.1
15 years	184	88.4	4.2	81.2	83.5	84.5	85.6	88.6	91.3	92.8	93.7	95.5
16 years	178	90.2	5.4	84.4	85.8	86.5	88.0	91.0	93.1	94.1	95.0	96.0
17 years	173	91.3	3.9	84.4	86.2	87.9	89.1	91.5	93.9	95.4	96.4	97.3
18 years	164	92.2	3.7	86.5	87.1	88.0	89.4	92.3	94.5	96.0	97.3	98.0
19 years	148	92.6	3.7	86.6	87.3	88.4	90.4	92.4	95.4	96.7	97.3	98.8
Female												
2 years	336	52.7	2.4	49.0	50.0	50.1	51.0	53.0	54.0	55.0	56.0	56.1
3 years	366	55.7	2.8	51.0	52.0	53.0	54.0	56.0	58.0	59.0	59.0	60.0
4 years	396	58.8	2.7	54.0	55.0	56.0	57.0	59.0	61.0	61.1	62.0	63.0
5 years	364	61.6	3.1	57.0	58.0	59.0	60.0	62.0	64.0	64.1	65.1	66.1
6 years	135	64.3	3.5	60.0	60.0	61.0	62.0	64.1	66.1	68.0	68.1	70.0
7 years	157	66.7	3.2	62.0	63.0	64.0	65.0	67.0	69.0	70.0	70.1	72.0
8 years	123	69.3	3.0	64.1	66.0	67.0	67.1	69.1	71.1	72.0	73.1	74.1
9 years	149	70.9	3.9	65.0	66.1	68.0	68.1	71.0	73.0	74.1	76.2	77.3
10 years	136	73.9	3.5	68.1	70.0	70.1	72.0	74.0	76.0	78.0	78.6	81.0
11 years	140	77.0	4.1	70.1	72.0	73.1	74.9	77.0	79.1	81.1	82.1	84.4
12 years	147	80.6	4.2	73.9	75.0	76.0	78.0	81.0	83.7	85.4	85.9	86.8
13 years	162	82.7	4.1	76.1	78.0	78.1	80.1	83.0	85.5	86.6	87.5	89.8
14 years	178	84.8	3.8	78.1	79.1	80.6	82.0	85.2	87.5	88.9	89.5	90.6
15 years	145	85.9	3.3	80.1	81.1	82.2	84.0	86.1	87.6	89.2	90.4	91.7
16 years	170	86.1	3.4	80.0	81.5	82.3	84.5	86.4	88.2	89.1	90.4	91.8
17 years	134	86.7	3.5	81.0	82.5	83.0	84.5	86.4	88.8	90.4	91.4	93.1
18 years	170	86.5	3.6	80.1	81.6	83.1	84.1	86.7	88.6	90.0	90.6	92.3
19 years	158	86.6	2.9	81.9	82.8	83.9	85.0	86.8	88.2	89.1	90.2	91.0

Table 20. Sitting height in centimeters for males 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	5,916	92.2	3.8	85.9	87.3	88.3	89.8	92.3	94.7	96.0	97.0	98.3
18-24 years	988	92.8	3.7	87.0	88.3	89.0	90.3	92.7	95.1	96.7	97.6	98.9
25-34 years	1,067	93.1	3.5	87.6	88.6	89.5	90.7	93.1	95.4	96.6	97.7	99.0
35-44 years	745	92.8	3.7	86.5	87.9	89.1	90.3	92.9	95.3	96.5	97.1	98.6
45-54 years	690	92.0	3.4	86.3	87.6	88.5	90.0	92.2	94.3	95.5	96.5	97.5
55-64 years	1,227	91.0	3.6	85.1	86.5	87.1	88.5	91.1	93.5	94.8	95.7	96.7
65-74 years	1,199	89.4	3.8	83.2	84.5	85.6	86.8	89.6	92.1	93.6	94.2	95.5
White												
18-74 years	5,148	92.5	3.7	86.5	87.9	88.8	90.1	92.6	95.0	96.3	97.2	98.5
18-24 years	846	93.3	3.5	87.6	88.9	89.8	90.9	93.1	95.5	97.1	97.8	99.2
25-34 years	901	93.5	3.4	88.2	89.3	90.0	91.3	93.5	95.6	97.1	98.0	99.4
35-44 years	653	93.2	3.6	86.9	88.6	89.5	90.9	93.2	95.6	96.6	97.4	98.8
45-54 years	617	92.3	3.3	86.6	88.1	89.0	90.4	92.5	94.5	95.7	96.7	97.6
55-64 years	1,086	91.2	3.6	85.4	86.7	87.4	88.8	91.4	93.6	94.9	95.9	97.1
65-74 years	1,045	89.8	3.7	83.6	85.1	86.1	87.4	89.9	92.3	93.7	94.5	95.6
Black												
18-74 years	649	89.6	3.6	83.6	85.0	86.1	87.1	89.7	92.0	93.7	94.4	95.5
18-24 years	121	89.7	3.4	84.3	85.2	86.3	87.3	90.1	91.9	93.5	94.1	94.8
25-34 years	139	90.5	3.4	85.0	85.9	87.0	88.1	90.3	93.1	94.3	94.6	96.2
35-44 years	70	90.2	3.9	*	85.6	86.6	87.6	90.2	93.0	94.8	95.0	*
45-54 years	62	89.3	3.0	*	85.2	86.4	86.7	89.2	91.7	92.7	93.8	*
55-64 years	129	89.0	3.5	82.5	84.8	85.8	86.8	89.1	91.7	92.4	93.5	96.2
65-74 years	128	86.8	3.5	81.3	82.5	82.9	84.6	86.5	89.6	90.7	91.3	92.6

1/ Includes all other races not shown as separate categories.

Table 21. Sitting height in centimeters for females 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	6,588	86.1	3.7	80.0	81.4	82.5	83.8	86.1	88.5	89.8	90.6	91.9
18-24 years	1,066	86.9	3.4	81.1	82.8	83.5	84.7	87.0	89.2	90.4	91.2	92.3
25-34 years	1,170	87.0	3.6	81.3	82.8	83.6	84.8	87.0	89.4	90.4	91.4	92.5
35-44 years	844	86.9	3.4	81.4	82.6	83.6	84.8	87.0	89.1	90.4	91.1	92.4
45-54 years	763	86.0	3.4	80.3	81.6	82.5	83.8	86.0	88.1	89.5	90.5	91.7
55-64 years	1,329	84.8	3.4	79.1	80.5	81.3	82.6	85.0	87.3	88.5	89.4	90.1
65-74 years	1,416	83.1	3.4	77.3	78.5	79.5	81.0	83.3	85.5	86.7	87.5	88.5
White												
18-74 years	5,686	86.4	3.6	80.4	81.8	82.8	84.1	86.5	88.7	90.0	90.7	92.0
18-24 years	892	87.4	3.2	82.2	83.3	84.1	85.3	87.4	89.5	90.6	91.5	92.5
25-34 years	1,000	87.4	3.3	81.9	83.3	84.1	85.4	87.3	89.6	90.6	91.6	92.6
35-44 years	726	87.2	3.3	82.0	83.2	84.1	85.1	87.2	89.4	90.6	91.4	92.6
45-54 years	647	86.2	3.3	80.6	82.0	83.0	84.3	86.2	88.3	89.8	90.5	91.9
55-64 years	1,176	85.0	3.4	79.5	80.7	81.6	82.9	85.1	87.5	88.6	89.5	90.1
65-74 years	1,245	83.3	3.4	77.5	78.8	79.9	81.1	83.5	85.6	86.8	87.6	88.6
Black												
18-74 years	782	84.1	3.4	78.5	79.6	80.4	81.8	84.1	86.2	87.5	88.4	89.5
18-24 years	147	84.5	3.5	79.1	80.1	81.1	82.6	84.4	86.4	87.6	89.0	90.6
25-34 years	145	84.5	3.2	78.9	80.1	81.0	82.5	84.4	86.5	88.0	88.4	89.5
35-44 years	103	84.7	3.1	79.5	80.6	81.1	82.5	85.1	87.2	88.1	88.5	89.4
45-54 years	100	84.0	3.3	78.5	79.4	80.4	81.7	84.1	86.7	87.7	88.3	89.4
55-64 years	135	83.2	3.3	78.2	78.9	79.6	80.5	83.4	85.5	86.7	86.9	88.8
65-74 years	152	81.6	3.2	76.5	77.2	77.8	79.1	81.6	84.0	85.1	85.5	86.8

1/ Includes all other races not shown as separate categories.

Table 22. Crown-rump length in centimeters for persons 6 months-3 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
6-11 months	178	45.5	2.3	41.6	42.9	43.4	44.2	45.5	46.8	48.2	48.6	49.0
1 year	364	50.3	2.8	45.9	46.9	47.7	48.3	50.3	52.2	53.0	53.5	54.6
2 years	373	53.8	2.6	49.7	50.6	51.2	52.1	53.7	55.3	56.6	57.2	58.3
3 years	401	56.7	2.8	51.8	53.0	54.1	55.3	56.7	58.4	59.6	60.1	61.1
Female												
6-11 months	174	44.5	2.6	39.8	40.3	41.4	42.9	44.8	46.2	46.9	47.5	48.9
1 year	331	48.8	2.8	44.3	45.6	46.2	47.2	48.7	50.4	51.3	52.4	53.6
2 years	332	52.7	2.3	49.1	49.9	50.4	51.2	52.8	54.3	54.8	55.6	57.0
3 years	356	55.6	2.8	51.0	52.0	52.6	53.7	55.7	57.6	58.6	59.3	60.1

Table 23. Cumulative percent distribution of weight in pounds for males 18-74 years of age, according to age: United States, 1976-80

Weight	20-74 years	18-74 years	18-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years
	Cumulative percent distribution							
Less than 100 pounds	0.1	0.1	0.2	-	-	-	0.1	0.5
Less than 110 pounds	0.5	0.5	0.6	0.2	0.7	-	0.7	1.4
Less than 120 pounds	1.6	1.8	2.3	1.0	1.3	1.3	1.4	5.0
Less than 130 pounds	4.9	5.3	7.7	4.1	4.3	3.2	4.1	10.5
Less than 140 pounds	11.4	12.2	20.4	10.9	8.1	7.6	9.5	18.5
Less than 150 pounds	22.1	23.2	35.9	21.8	15.5	17.1	19.5	30.3
Less than 160 pounds	34.8	36.3	52.4	35.1	26.7	27.2	32.3	44.7
Less than 170 pounds	49.2	50.7	66.7	48.0	41.2	43.4	47.9	57.7
Less than 180 pounds	63.2	64.4	78.7	62.1	54.9	57.6	62.5	71.9
Less than 190 pounds	75.6	76.4	86.2	77.5	68.4	68.7	75.8	82.0
Less than 200 pounds	83.5	84.1	90.3	84.6	79.2	77.4	85.2	89.0
Less than 210 pounds	89.4	89.7	93.3	90.1	85.8	85.7	90.6	94.2
Less than 220 pounds	93.0	93.2	95.2	93.5	91.0	90.7	93.4	96.4
Less than 230 pounds	95.8	95.9	97.0	95.4	94.9	94.6	96.3	98.2
Less than 240 pounds	97.6	97.6	98.8	96.5	97.3	96.9	98.1	99.2
Less than 250 pounds	98.6	98.6	99.2	97.8	98.8	98.4	98.4	99.6
All weight categories	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

NOTE: Includes clothing weight, estimated as ranging from 0.20 to 0.62 pound.

Table 24. Cumulative percent distribution of weight in pounds for females 18-74 years of age, according to age: United States, 1976-80

Weight	20-74 years	18-74 years	18-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years
	Cumulative percent distribution							
Less than 90 pounds	0.5	0.5	0.7	0.4	0.1	0.7	0.5	0.5
Less than 100 pounds	2.7	2.7	3.6	3.3	1.7	2.4	2.1	3.1
Less than 110 pounds	8.8	8.9	12.7	10.7	6.1	6.9	6.9	8.4
Less than 120 pounds	21.0	21.5	30.6	25.6	17.8	17.0	15.7	17.3
Less than 130 pounds	35.7	36.9	52.7	41.3	32.3	29.0	29.0	29.5
Less than 140 pounds	52.2	53.6	69.7	59.1	50.4	44.5	43.4	45.3
Less than 150 pounds	65.1	66.3	80.8	71.7	63.6	56.7	56.9	60.4
Less than 160 pounds	74.9	75.7	86.8	79.1	73.0	69.3	67.8	73.3
Less than 170 pounds	81.9	82.6	91.7	84.2	80.2	77.3	77.4	81.3
Less than 180 pounds	86.9	87.4	94.2	88.6	84.5	84.3	83.8	86.9
Less than 190 pounds	90.8	91.1	96.2	91.3	88.8	89.1	88.7	91.5
Less than 200 pounds	93.7	93.9	97.5	94.1	91.9	92.5	92.5	94.6
Less than 210 pounds	95.5	95.6	97.8	95.4	94.0	94.6	95.3	96.4
Less than 220 pounds	96.7	96.8	98.4	96.9	95.2	96.1	96.7	97.4
Less than 230 pounds	97.6	97.6	98.7	97.8	96.5	97.2	97.6	98.0
Less than 240 pounds	98.3	98.3	99.0	98.7	97.5	97.8	98.2	98.8
Less than 250 pounds	98.9	98.9	99.2	98.9	98.5	98.7	98.9	99.3
Less than 260 pounds	99.3	99.3	99.6	99.2	99.0	99.1	99.4	99.7
Less than 270 pounds	99.5	99.5	100.0	99.3	99.3	99.3	99.5	99.8
Less than 280 pounds	99.6	99.6	100.0	99.4	99.7	99.3	99.7	99.8
All weight categories	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

NOTE: Includes clothing weight, estimated as ranging from 0.20 to 0.62 pound.

Table 25. Cumulative percent distribution of height in inches for males 18-74 years of age, according to age: United States, 1976-80

Height	20-74 years	18-74 years	18-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years
	Cumulative percent distribution							
Less than 60 inches	0.2	0.2	0.2	0.1	0.3	-	0.3	0.2
Less than 61 inches	0.4	0.4	0.2	0.3	0.3	0.2	0.7	1.2
Less than 62 inches	0.8	0.8	0.3	0.4	0.9	0.7	0.9	2.7
Less than 63 inches	1.9	1.8	0.6	0.5	2.1	1.5	2.8	6.0
Less than 64 inches	3.7	3.6	2.4	1.5	3.7	2.6	5.3	10.5
Less than 65 inches	7.0	6.8	3.8	4.4	6.4	5.7	9.3	18.3
Less than 66 inches	13.4	13.1	8.2	9.5	12.4	11.4	17.5	29.4
Less than 67 inches	21.6	21.2	16.2	15.2	17.6	21.2	29.1	41.6
Less than 68 inches	33.4	33.1	26.7	26.7	26.4	33.6	43.5	57.8
Less than 69 inches	47.7	47.2	38.9	39.7	42.5	50.4	58.2	70.0
Less than 70 inches	61.9	61.4	53.7	55.4	57.0	63.4	71.5	82.0
Less than 71 inches	74.7	74.5	68.2	69.7	70.7	76.9	83.1	89.6
Less than 72 inches	84.6	84.5	80.1	81.6	81.1	85.8	91.0	94.5
Less than 73 inches	92.0	91.9	88.5	90.0	90.0	93.4	96.3	97.8
Less than 74 inches	96.1	96.0	92.7	95.6	95.1	98.0	97.7	99.2
Less than 75 inches	98.2	98.1	96.2	98.0	97.8	99.4	98.9	99.9
Less than 76 inches	99.3	99.3	98.4	99.2	99.2	99.7	99.8	100.0
All height categories	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

NOTE: Height without shoes.

Table 26. Cumulative percent distribution of height in inches for females 18-74 years of age, according to age: United States, 1976-80

Height	20-74 years	18-74 years	18-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years
	Cumulative percent distribution							
Less than 55 inches	0.1	0.1	0.1	-	-	0.1	0.3	0.4
Less than 56 inches	0.3	0.3	0.1	-	0.1	0.3	0.5	1.0
Less than 57 inches	0.7	0.7	0.4	0.2	0.3	0.3	1.1	2.3
Less than 58 inches	1.6	1.6	0.9	0.6	1.0	1.2	3.0	4.2
Less than 59 inches	3.8	3.8	2.2	1.7	1.9	4.2	6.4	9.3
Less than 60 inches	7.5	7.4	4.2	3.7	4.6	8.9	11.4	17.2
Less than 61 inches	13.9	13.6	9.1	8.6	7.8	16.2	19.7	29.0
Less than 62 inches	25.1	24.7	17.8	19.1	18.2	27.7	31.7	44.3
Less than 63 inches	38.6	38.1	29.1	33.0	33.1	39.8	45.9	59.2
Less than 64 inches	54.5	53.9	41.8	47.4	49.9	57.2	63.9	76.4
Less than 65 inches	68.1	67.8	58.1	61.4	63.9	70.5	77.4	87.0
Less than 66 inches	81.3	81.2	74.8	74.9	78.1	84.6	88.9	94.6
Less than 67 inches	89.6	89.5	85.4	85.7	87.9	91.2	94.6	97.9
Less than 68 inches	95.0	94.9	92.3	93.3	93.4	96.3	97.7	99.2
Less than 69 inches	97.8	97.8	96.2	97.2	97.2	98.2	99.4	99.8
Less than 70 inches	99.3	99.3	98.3	99.5	99.2	99.6	99.8	99.9
Less than 71 inches	99.7	99.7	99.4	99.7	99.4	99.8	99.8	100.0
All height categories	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

NOTE: Height without shoes.

Table 27. Number of males 18-74 years of age, by weight and height: United States, 1976-80

Height	Total	Less than 110 pounds	110-119 pounds	120-129 pounds	130-139 pounds	140-149 pounds	150-159 pounds	160-169 pounds	170-179 pounds	180-189 pounds	190-199 pounds	200-209 pounds	210-219 pounds	220-229 pounds	230 pounds or more
	Number of persons in thousands														
Total	67,555	334	869	2,378	4,693	7,402	8,843	9,723	9,257	8,106	5,217	3,806	2,356	1,801	2,770
Less than 62 inches	544	41	70	100	42	110	38	69	24	8	19	-	10	11	-
62 inches	668	38	34	94	102	196	73	35	33	48	-	15	-	-	-
63 inches	1,222	66	65	195	197	286	136	113	98	33	29	-	3	-	-
64 inches	2,174	33	110	237	381	376	413	181	231	106	62	7	8	30	-
65 inches	4,211	53	191	177	578	806	820	556	363	269	161	154	30	30	25
66 inches	5,536	50	131	457	555	843	910	986	547	515	252	105	58	43	83
67 inches	7,980	12	102	324	780	1,087	1,237	1,174	1,181	801	429	319	135	154	245
68 inches	9,566	29	77	319	743	1,127	1,351	1,625	1,328	1,152	686	390	284	250	205
69 inches	9,578	7	11	322	488	960	1,169	1,547	1,436	1,286	747	750	390	155	310
70 inches	8,867	4	37	104	455	900	1,041	1,450	1,313	1,334	710	479	441	252	347
71 inches	6,717	-	32	22	242	453	911	818	1,103	868	692	481	377	217	500
72 inches	5,019	-	9	19	67	217	392	716	831	765	696	436	216	251	404
73 inches	2,745	-	-	-	20	41	228	356	322	483	370	306	190	203	226
74 inches	1,466	-	-	7	42	-	76	73	203	270	243	191	156	84	119
75 inches or more	1,263	-	-	-	-	-	47	24	245	168	121	173	58	121	306

NOTE: Height without shoes. Includes clothing weight, estimated as ranging from 0.20 to 0.62 pound.

Table 28. Number of females 18-74 years of age, by weight and height: United States, 1976-80

Height	Total	Less than 90 pounds	90-99 pounds	100-109 pounds	110-119 pounds	120-129 pounds	130-139 pounds	140-149 pounds	150-159 pounds	160-169 pounds	170-179 pounds	180-189 pounds	190-199 pounds	200-209 pounds	210-219 pounds	220 pounds or more
	Number of persons in thousands															
Total	74,173	362	1,677	4,571	9,364	11,421	12,329	9,435	7,023	5,049	3,623	2,751	2,081	1,232	889	2,367
Less than 55 inches	80	-	7	8	11	25	-	7	7	15	-	-	-	-	-	-
55 inches	108	-	-	13	-	4	26	12	31	13	8	-	-	-	-	-
56 inches	295	31	57	12	41	55	25	44	25	-	-	-	6	-	-	-
57 inches	693	44	91	107	90	55	115	76	26	24	-	9	18	-	4	36
58 inches	1,612	93	164	132	338	317	147	78	120	35	68	27	14	34	3	42
59 inches	2,681	50	196	262	552	342	365	297	201	123	116	69	46	30	-	31
60 inches	4,648	86	267	538	621	722	775	451	334	261	239	128	99	54	30	40
61 inches	8,203	12	368	754	1,286	1,355	1,089	877	807	439	308	269	240	123	110	164
62 inches	9,947	14	258	938	1,660	1,899	1,306	1,117	728	583	448	305	227	130	117	218
63 inches	11,735	32	165	843	1,729	1,776	1,600	1,565	1,006	817	655	477	357	277	151	283
64 inches	10,270	-	30	531	1,168	1,653	1,936	1,475	950	741	513	404	274	117	198	280
65 inches	9,942	-	64	283	873	1,582	2,162	1,183	1,201	693	396	455	269	156	109	516
66 inches	6,182	-	10	76	705	804	1,365	902	696	509	255	193	213	116	84	253
67 inches	3,991	-	-	32	188	514	740	605	336	338	381	275	155	106	67	253
68 inches	2,131	-	-	10	85	213	488	369	336	193	41	99	95	82	14	106
69 inches	1,154	-	-	33	-	98	135	266	125	214	119	43	28	-	-	93
70 inches	245	-	-	-	-	6	38	56	52	19	46	-	25	3	-	-
71 inches or more	257	-	-	-	16	-	16	55	42	30	28	-	15	4	-	51

NOTE: Height without shoes. Includes clothing weight, estimated as ranging from 0.20 to 0.62 pound.

Table 29. Triceps skinfold in millimeters for persons 6 months-19 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
6-11 months	179	10.4	3.1	6.5	7.0	7.0	8.0	10.0	12.0	14.0	15.0	16.0
1 year	370	10.4	2.7	6.5	7.0	7.5	8.5	10.0	12.0	13.0	14.0	15.5
2 years	375	10.2	2.9	6.0	7.0	7.0	8.0	10.0	12.0	13.0	14.5	15.0
3 years	418	10.0	2.6	6.5	7.0	7.5	8.0	9.5	11.5	12.5	13.0	15.0
4 years	404	9.6	3.0	6.0	6.5	7.0	7.5	9.0	11.0	12.0	13.0	15.0
5 years	397	8.9	2.9	5.5	6.0	6.5	7.0	8.0	10.5	11.5	12.5	14.5
6 years	133	9.3	4.4	5.0	5.5	6.0	6.5	8.0	10.5	12.0	13.0	17.5
7 years	148	9.2	4.0	5.0	5.5	6.0	6.5	8.5	11.0	12.0	15.0	17.5
8 years	147	10.5	4.9	5.5	6.0	6.0	7.0	9.0	12.0	16.5	17.0	22.0
9 years	145	10.6	5.7	5.0	5.0	6.0	7.0	9.0	12.5	16.0	19.0	23.0
10 years	157	12.6	6.6	5.0	6.0	6.5	7.5	11.0	16.5	20.0	22.0	26.0
11 years	155	13.3	7.7	4.5	5.5	6.0	7.5	10.5	17.0	22.0	25.0	30.0
12 years	145	12.4	6.4	5.0	6.0	6.0	8.0	11.0	15.0	18.0	21.5	26.5
13 years	173	11.2	7.0	5.0	5.5	6.0	7.0	9.0	12.5	16.5	20.5	22.5
14 years	186	10.4	5.8	4.0	5.0	5.5	6.0	9.0	13.0	15.0	17.0	23.0
15 years	184	10.1	7.2	5.0	5.0	6.0	6.0	7.5	11.0	14.5	18.0	22.0
16 years	178	10.9	6.6	4.5	5.0	5.5	6.5	8.0	13.0	18.5	20.5	25.5
17 years	173	8.5	4.6	4.0	4.5	5.0	5.5	7.0	10.5	12.5	15.0	18.0
18 years	164	11.1	6.6	4.0	5.0	5.0	6.0	9.5	14.5	17.5	19.0	22.5
19 years	148	10.9	6.1	5.0	5.5	6.0	6.5	9.0	13.0	16.0	18.5	23.0
Female												
6-11 months	177	9.9	2.6	6.5	7.0	7.0	8.0	10.0	11.5	12.5	13.0	14.5
1 year	336	10.6	3.3	6.0	7.0	7.5	8.0	10.5	12.0	13.5	15.0	16.5
2 years	336	10.6	3.0	6.0	7.0	7.5	8.0	10.5	12.5	13.5	15.0	16.0
3 years	366	10.3	2.9	6.0	7.0	7.0	8.0	10.0	12.0	12.5	13.5	16.5
4 years	396	10.4	3.1	6.0	6.5	7.5	8.0	10.0	12.0	13.0	14.0	15.5
5 years	364	10.6	3.2	6.0	7.0	7.5	8.5	10.5	12.5	14.0	14.5	16.0
6 years	135	11.0	3.9	6.0	7.0	7.5	8.0	10.0	12.0	14.5	16.0	18.5
7 years	157	11.5	4.5	6.0	7.0	7.5	9.0	10.5	13.0	15.0	18.0	20.0
8 years	123	11.9	5.2	6.0	6.5	7.0	8.5	11.0	14.0	16.0	18.0	21.0
9 years	149	14.3	6.5	7.0	7.5	8.5	10.0	13.0	16.0	20.0	23.0	27.0
10 years	136	14.5	5.9	7.0	8.0	8.0	10.0	13.5	18.0	21.0	22.5	24.5
11 years	140	15.7	6.9	8.0	8.5	9.0	11.0	14.0	19.5	21.5	23.0	29.5
12 years	147	15.1	6.0	7.5	8.0	9.0	11.5	13.5	18.5	21.5	23.0	27.0
13 years	162	15.9	7.9	6.0	7.5	9.0	10.5	15.0	19.0	22.0	25.0	30.0
14 years	178	17.6	7.5	8.0	10.0	10.5	12.0	17.0	21.5	25.0	29.5	32.0
15 years	145	17.1	7.1	8.5	9.5	10.0	11.5	16.5	20.5	24.5	26.0	32.1
16 years	170	19.5	7.2	11.0	11.5	12.0	14.0	18.0	23.0	27.0	30.5	33.1
17 years	134	19.8	7.8	9.5	11.0	11.5	14.0	20.0	24.5	26.5	28.5	34.5
18 years	170	19.9	7.6	11.0	12.0	12.5	14.0	18.0	23.5	27.0	32.5	35.0
19 years	158	20.4	7.6	10.5	11.5	13.0	15.0	19.0	25.0	28.0	30.0	33.5

Table 30. Triceps skinfold in millimeters for males 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	5,916	12.9	6.7	5.0	6.0	6.5	8.0	12.0	16.0	19.5	22.0	25.5
18-24 years	988	11.6	6.5	4.5	5.0	6.0	6.5	10.0	15.0	17.5	20.0	24.5
25-34 years	1,067	12.9	7.0	4.5	5.5	6.5	7.5	11.5	16.5	20.0	23.0	26.0
35-44 years	745	13.8	7.1	5.0	6.0	7.0	9.0	12.5	17.0	20.0	23.0	27.0
45-54 years	690	13.5	6.7	5.5	6.5	7.0	9.0	12.0	16.5	20.0	22.0	25.5
55-64 years	1,227	13.2	6.3	5.0	6.0	7.5	9.0	12.0	16.0	19.5	21.5	25.5
65-74 years	1,199	12.7	6.1	5.0	6.0	7.0	8.0	11.5	16.0	18.5	21.0	25.0
White												
18-74 years	5,148	13.0	6.6	5.0	6.0	7.0	8.0	12.0	16.0	19.5	22.0	25.5
18-24 years	846	11.9	6.5	4.5	5.0	6.0	7.0	10.0	15.0	18.0	20.0	25.0
25-34 years	901	13.1	6.9	5.0	6.0	7.0	8.0	12.0	16.5	20.0	22.5	26.0
35-44 years	653	13.9	7.0	5.5	6.5	7.0	9.0	12.5	17.0	21.0	23.0	27.0
45-54 years	617	13.4	6.5	5.5	6.5	7.5	9.0	12.0	16.5	20.0	21.0	25.0
55-64 years	1,086	13.1	5.9	5.5	6.5	7.5	9.0	12.0	16.0	19.0	21.0	24.5
65-74 years	1,045	12.9	6.0	5.0	6.5	7.0	8.0	12.0	16.0	19.0	21.0	25.0
Black												
18-74 years	649	12.1	7.8	4.0	4.5	5.0	6.5	10.0	16.0	19.0	23.0	27.0
18-24 years	121	9.7	6.4	4.0	4.0	4.5	5.0	7.5	13.0	15.0	18.5	21.5
25-34 years	139	11.5	7.5	3.5	4.0	5.0	6.0	10.0	15.5	19.0	23.0	24.5
35-44 years	70	13.0	8.1	*	5.0	6.5	9.0	11.0	16.0	18.5	20.0	*
45-54 years	62	15.0	8.7	*	5.5	6.0	9.0	13.0	18.0	25.5	27.5	*
55-64 years	129	12.9	7.8	3.5	4.5	5.5	7.0	10.5	17.5	22.0	25.0	29.0
65-74 years	128	11.6	6.7	4.0	4.5	5.5	7.0	10.0	14.5	16.0	19.5	27.5

1/ Includes all other races not shown as separate categories.

Table 31. Triceps skinfold in millimeters for females 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	6,588	24.9	9.8	11.0	13.0	15.0	17.5	24.0	31.0	35.1	38.0	43.0
18-24 years	1,066	20.7	8.6	10.0	11.5	12.5	15.0	19.0	25.0	29.5	32.0	37.0
25-34 years	1,170	23.6	9.9	10.0	13.0	14.0	16.5	22.0	29.0	33.5	36.6	43.5
35-44 years	844	26.3	9.8	12.0	14.5	16.5	19.5	25.0	32.6	37.0	40.5	44.5
45-54 years	763	27.5	9.7	12.5	15.0	17.0	20.5	27.0	34.0	38.0	40.5	45.0
55-64 years	1,329	27.2	9.5	12.0	15.0	17.5	21.0	26.5	33.0	37.0	40.0	43.6
65-74 years	1,416	25.7	9.0	12.0	14.5	16.5	19.0	25.0	31.0	35.0	37.6	42.0
White												
18-74 years	5,686	24.7	9.5	11.5	13.5	15.0	17.5	23.5	30.5	35.0	37.5	42.5
18-24 years	892	20.8	8.5	10.5	11.5	13.0	15.0	19.0	25.0	29.0	32.0	37.1
25-34 years	1,000	23.3	9.4	10.5	13.0	14.0	16.5	22.0	28.5	33.0	36.0	42.1
35-44 years	726	26.1	9.6	12.0	14.5	16.0	19.0	24.5	32.0	36.5	40.0	44.0
45-54 years	647	27.2	9.4	13.0	15.0	16.5	20.5	27.0	33.0	37.0	40.0	43.1
55-64 years	1,176	27.0	9.4	12.5	15.0	17.5	21.0	26.0	32.6	36.5	39.1	43.1
65-74 years	1,245	25.5	8.8	12.0	14.5	16.5	19.0	25.0	30.5	34.0	37.0	41.1
Black												
18-74 years	782	26.6	11.6	10.0	12.0	14.0	17.5	25.5	35.0	39.0	42.5	48.0
18-24 years	147	20.6	8.8	8.0	10.0	11.0	14.0	19.0	27.0	31.0	35.0	37.0
25-34 years	145	25.5	12.2	8.0	11.0	13.0	16.0	24.0	32.0	37.0	47.0	49.5
35-44 years	103	28.7	11.4	9.0	14.0	15.5	20.5	29.5	36.6	40.5	45.0	48.0
45-54 years	100	31.6	11.8	10.5	16.0	20.0	23.5	31.5	40.0	43.5	48.5	53.1
55-64 years	135	29.5	10.8	12.0	14.0	18.0	22.0	28.5	38.5	42.0	43.0	46.0
65-74 years	152	29.0	10.5	11.5	14.5	17.0	21.5	29.0	37.0	38.6	44.0	47.5

1/ Includes all other races not shown as separate categories.

Table 32. Subscapular skinfold in millimeters for persons 6 months-19 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
6-11 months	179	6.5	1.9	4.0	5.0	5.0	5.5	6.0	7.5	8.0	8.5	9.0
1 year	370	6.6	1.9	4.0	4.5	5.0	5.0	6.5	7.5	8.0	9.0	10.5
2 years	375	6.1	2.2	3.5	4.0	4.0	5.0	5.5	7.0	7.5	9.0	10.0
3 years	418	5.7	1.6	4.0	4.0	4.0	4.5	5.5	6.5	7.0	7.5	9.0
4 years	404	5.5	2.2	3.5	3.5	4.0	4.0	5.0	6.0	7.0	7.5	9.0
5 years	397	5.3	2.4	3.0	3.5	4.0	4.0	5.0	6.0	6.5	7.0	8.0
6 years	133	6.0	3.9	3.5	3.5	4.0	4.0	5.0	6.0	8.0	10.0	16.0
7 years	148	5.8	3.1	3.5	4.0	4.0	4.0	5.0	6.0	7.0	7.5	11.5
8 years	147	6.7	4.9	3.5	4.0	4.0	4.5	5.0	6.5	8.0	11.0	21.0
9 years	145	7.0	5.0	3.5	4.0	4.0	4.5	6.0	7.0	10.0	12.0	15.0
10 years	157	8.6	6.6	4.0	4.0	4.5	5.0	6.0	9.5	11.5	17.0	22.0
11 years	155	10.0	8.5	4.0	4.0	4.5	5.0	6.5	10.0	17.5	25.0	31.0
12 years	145	9.2	6.8	4.0	4.5	4.5	5.0	6.5	10.0	15.5	19.0	22.5
13 years	173	9.1	7.3	4.0	4.5	5.0	5.0	7.0	9.0	13.0	15.0	24.0
14 years	186	8.9	5.3	4.5	5.0	5.5	6.0	7.0	9.0	12.0	13.5	20.0
15 years	184	10.0	8.2	5.0	5.5	6.0	6.0	7.5	10.0	12.0	16.0	24.5
16 years	178	10.8	6.4	5.0	6.0	6.5	6.5	9.0	12.5	14.5	21.5	25.0
17 years	173	10.1	5.3	5.5	6.0	6.5	7.0	8.5	11.5	14.0	17.0	20.5
18 years	164	11.9	6.7	6.0	7.0	7.0	8.0	10.0	14.0	16.0	18.0	24.0
19 years	148	12.5	6.9	7.0	7.0	7.5	8.0	10.5	13.5	16.5	22.0	29.0
Female												
6-11 months	177	6.7	1.7	4.5	5.0	5.0	5.5	6.5	7.5	8.0	9.0	10.0
1 year	336	6.7	2.0	4.0	4.0	5.0	5.0	6.5	8.0	8.5	9.5	10.5
2 years	336	6.5	2.2	4.0	4.5	4.5	5.0	6.0	7.5	8.5	9.5	11.0
3 years	366	6.3	2.2	3.5	4.0	4.5	5.0	6.0	7.0	8.0	9.0	11.0
4 years	396	6.2	2.2	3.5	4.0	4.5	5.0	5.5	7.0	8.0	9.0	10.5
5 years	364	6.5	3.5	4.0	4.0	4.5	5.0	5.5	7.0	8.0	10.0	12.0
6 years	135	6.8	3.8	4.0	4.0	4.0	5.0	6.0	7.5	9.0	10.5	14.0
7 years	157	7.0	3.7	3.5	4.0	4.0	4.5	6.0	7.5	9.0	12.0	16.5
8 years	123	7.4	4.9	3.5	4.0	4.5	5.0	6.0	8.0	10.5	12.0	15.0
9 years	149	9.6	7.5	4.0	5.0	5.0	5.5	7.0	9.5	13.0	21.0	29.0
10 years	136	10.4	6.6	4.5	5.0	5.0	6.0	8.0	13.5	18.0	19.5	23.0
11 years	140	11.4	8.1	4.5	5.0	5.5	6.5	8.0	12.0	17.0	22.0	29.0
12 years	147	11.5	7.5	5.0	5.5	6.0	6.5	9.0	13.0	17.0	22.0	29.0
13 years	162	11.9	8.5	4.5	5.5	6.0	7.0	9.5	14.0	17.5	20.0	29.0
14 years	178	13.2	7.7	6.0	6.5	7.0	7.5	10.5	16.0	22.0	26.0	31.0
15 years	145	13.1	6.9	6.0	7.0	7.5	8.5	10.5	16.0	20.5	22.5	27.5
16 years	170	15.2	9.2	6.5	7.5	8.5	9.5	12.0	16.5	23.5	26.0	36.6
17 years	134	15.9	9.2	6.5	7.0	8.0	9.5	13.0	19.5	27.0	29.0	37.0
18 years	170	15.3	8.6	7.0	7.5	8.0	10.0	13.0	18.5	22.0	27.5	34.5
19 years	158	16.0	9.5	7.0	7.5	8.5	9.5	13.0	18.5	23.5	26.5	35.5

Table 33. Subscapular skinfold in millimeters for males 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	5,916	17.4	8.8	7.0	8.0	9.0	10.5	15.0	22.5	26.0	30.0	34.6
18-24 years	988	13.7	7.5	6.5	7.0	7.5	8.5	11.5	16.0	20.0	23.0	30.0
25-34 years	1,067	16.9	8.6	7.0	8.0	9.0	10.0	15.0	22.0	25.5	29.0	34.0
35-44 years	745	18.7	9.2	7.0	8.5	10.0	12.0	17.0	24.0	28.0	30.5	37.0
45-54 years	690	19.4	8.9	7.5	9.0	10.0	12.5	18.0	25.0	29.0	31.0	36.0
55-64 years	1,227	18.9	8.4	7.5	9.0	10.0	12.5	18.0	24.0	27.0	30.0	34.5
65-74 years	1,199	17.9	8.7	7.0	8.0	9.5	11.0	16.0	23.0	27.5	30.5	35.1
White												
18-74 years	5,148	17.3	8.5	7.0	8.0	9.0	11.0	15.5	22.0	26.0	29.5	34.0
18-24 years	846	13.8	7.5	6.5	7.0	7.5	8.5	11.5	16.5	20.5	24.0	30.0
25-34 years	901	16.9	8.3	7.0	8.0	9.0	10.5	15.0	22.0	25.5	29.0	32.5
35-44 years	653	18.5	8.7	7.0	9.0	10.0	12.0	17.0	23.5	27.0	30.0	35.0
45-54 years	617	19.1	8.6	8.0	9.0	10.0	12.5	17.5	24.0	28.5	30.5	35.1
55-64 years	1,086	18.9	8.3	7.5	9.5	10.5	12.5	18.0	24.0	27.0	29.5	34.0
65-74 years	1,045	18.0	8.5	7.0	8.0	9.5	11.5	16.0	23.0	27.5	30.0	35.0
Black												
18-74 years	649	17.8	10.5	6.5	7.5	8.5	10.0	14.0	24.0	30.0	32.1	38.1
18-24 years	121	12.6	6.6	6.5	7.5	8.0	9.0	10.5	14.5	16.5	19.5	25.0
25-34 years	139	17.2	10.1	7.0	8.0	8.5	9.0	13.0	23.0	27.0	34.0	38.0
35-44 years	70	20.3	12.2	*	8.5	9.5	11.0	17.0	26.0	35.0	40.0	*
45-54 years	62	22.8	11.1	*	8.0	10.0	13.0	21.5	30.0	37.0	37.0	*
55-64 years	129	18.7	9.9	6.0	7.0	8.0	9.5	18.0	26.0	30.0	32.1	37.0
65-74 years	128	18.4	10.4	5.5	7.0	8.0	10.0	15.0	26.5	30.5	33.0	37.0

1/ Includes all other races not shown as separate categories.

Table 34. Subscapular skinfold in millimeters for females 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	6,588	21.2	12.0	7.0	8.0	9.5	11.5	18.0	29.0	35.0	38.5	45.0
18-24 years	1,066	16.6	9.9	7.0	7.5	8.0	10.0	13.0	20.5	26.0	31.0	38.0
25-34 years	1,170	20.0	12.2	7.0	8.0	8.5	10.5	16.0	27.0	33.5	38.0	45.0
35-44 years	844	22.3	12.4	7.0	8.5	10.0	12.0	19.0	31.0	36.6	40.1	46.5
45-54 years	763	24.1	12.2	7.0	10.0	11.0	14.5	22.0	32.5	37.5	40.5	47.6
55-64 years	1,329	23.7	12.3	7.5	9.0	11.0	13.5	22.0	32.0	37.0	41.0	47.0
65-74 years	1,416	22.3	11.1	7.0	8.5	10.0	13.0	21.0	30.0	35.0	37.1	43.0
White												
18-74 years	5,686	20.5	11.7	7.0	8.0	9.0	11.0	17.0	27.5	34.0	37.5	43.5
18-24 years	892	16.1	9.6	7.0	7.5	8.0	10.0	13.0	19.0	25.0	29.5	37.5
25-34 years	1,000	19.1	11.7	7.0	7.5	8.5	10.5	15.0	25.0	32.0	36.0	43.0
35-44 years	726	21.4	12.1	7.0	8.0	9.5	11.5	17.5	30.0	36.0	39.5	46.0
45-54 years	647	23.1	11.8	7.0	9.5	11.0	14.0	20.5	31.0	36.6	40.0	45.0
55-64 years	1,176	23.0	12.0	7.0	9.0	11.0	13.0	21.5	31.0	36.0	39.5	45.6
65-74 years	1,245	21.8	10.9	6.5	8.5	10.0	13.0	20.5	29.5	34.0	36.1	41.1
Black												
18-74 years	782	26.1	13.3	8.0	9.5	11.0	14.0	25.0	35.5	40.6	45.0	50.0
18-24 years	147	19.1	10.6	7.0	8.0	9.0	11.0	15.0	26.0	31.0	34.0	37.0
25-34 years	145	25.4	13.3	8.5	9.5	11.0	14.0	22.5	35.5	40.6	44.5	48.1
35-44 years	103	27.9	13.0	7.0	10.5	12.0	17.0	28.0	36.5	42.5	46.5	52.0
45-54 years	100	32.0	13.1	11.0	15.0	17.0	22.5	30.5	39.5	45.6	50.5	56.0
55-64 years	135	30.0	13.5	8.0	12.5	13.0	19.5	31.0	40.6	45.0	47.5	50.5
65-74 years	152	27.1	12.1	7.5	9.5	12.0	18.0	27.0	35.5	41.0	44.5	47.0

1/ Includes all other races not shown as separate categories.

Table 35. Mid-upper arm circumference in centimeters for persons 6 months-19 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
6-11 months	179	15.4	1.2	13.4	13.8	14.1	14.6	15.3	16.2	16.6	17.0	17.4
1 year	370	16.2	1.1	14.4	14.8	15.1	15.4	16.2	16.8	17.3	17.7	18.2
2 years	375	16.5	1.2	14.6	15.0	15.2	15.6	16.5	17.2	17.6	17.9	18.6
3 years	418	16.9	1.3	15.1	15.4	15.5	16.0	16.9	17.7	18.1	18.4	18.7
4 years	404	17.3	1.4	15.3	15.7	16.0	16.4	17.3	18.0	18.6	19.0	19.5
5 years	397	17.6	1.6	15.6	16.0	16.2	16.5	17.4	18.4	19.1	19.6	20.5
6 years	133	18.6	2.1	16.1	16.5	16.8	17.3	18.3	19.4	20.0	21.3	22.7
7 years	148	19.1	1.9	16.6	16.8	17.0	17.5	18.8	20.1	21.0	21.4	22.7
8 years	147	20.0	2.4	17.0	17.5	18.1	18.6	19.6	20.9	22.1	23.1	24.9
9 years	145	20.9	2.7	17.5	18.2	18.8	19.3	20.2	21.9	23.0	24.3	26.2
10 years	157	22.2	2.9	18.4	19.1	19.4	20.1	21.9	23.3	25.0	26.0	28.0
11 years	155	23.3	3.6	18.6	19.4	20.0	20.8	22.3	26.0	27.6	28.7	30.6
12 years	145	23.9	3.1	19.7	20.3	21.0	21.9	23.2	25.6	27.0	28.0	30.2
13 years	173	25.1	3.5	20.2	20.8	21.4	22.5	24.9	27.1	28.5	29.6	31.2
14 years	186	26.3	3.1	21.6	22.7	23.4	24.1	26.2	28.0	28.8	29.5	32.3
15 years	184	27.6	3.2	23.0	23.5	24.6	25.6	27.4	29.1	30.2	31.2	33.3
16 years	178	29.1	3.2	24.1	25.5	26.1	27.1	28.7	31.1	32.4	34.0	34.7
17 years	173	29.1	3.3	24.3	25.0	26.0	27.2	29.0	30.6	31.9	33.1	34.7
18 years	164	30.3	3.7	25.4	26.4	27.1	27.9	30.0	32.3	33.4	34.3	36.3
19 years	148	30.4	3.5	25.8	26.5	27.4	28.2	30.2	32.4	33.7	34.4	36.4
Female												
6-11 months	177	14.9	1.2	12.8	13.2	13.7	14.1	14.9	15.7	16.1	16.6	17.0
1 year	336	15.8	1.3	13.7	14.2	14.6	15.0	15.7	16.5	17.1	17.3	17.7
2 years	336	16.3	1.2	14.3	14.8	15.1	15.5	16.2	17.0	17.4	18.0	18.4
3 years	366	16.7	1.6	14.5	15.0	15.3	15.8	16.6	17.5	18.2	18.5	19.0
4 years	396	17.2	1.5	15.1	15.4	15.7	16.2	17.0	18.1	18.7	19.1	19.7
5 years	364	17.9	1.8	15.4	15.9	16.2	16.8	17.6	19.0	19.9	20.7	21.0
6 years	135	18.5	2.0	15.7	16.3	16.5	17.2	18.2	19.3	20.1	21.4	22.7
7 years	157	19.2	2.3	16.4	16.7	17.1	17.6	18.9	20.3	21.4	22.2	23.5
8 years	123	19.9	2.3	17.0	17.4	17.6	18.4	19.8	21.1	22.0	22.3	23.8
9 years	149	21.4	3.0	17.9	18.7	19.0	19.5	20.7	22.1	24.0	25.5	27.8
10 years	136	22.1	3.0	18.0	18.9	19.3	20.0	21.7	24.0	25.4	27.1	27.5
11 years	140	23.4	3.5	19.2	19.6	20.0	20.7	22.5	25.5	26.5	28.2	29.6
12 years	147	24.1	3.4	19.4	20.3	20.8	21.6	23.6	26.2	27.6	28.3	30.5
13 years	162	24.8	3.8	19.3	20.5	21.2	22.1	24.2	26.5	27.8	29.9	32.3
14 years	178	26.2	3.6	21.2	22.2	23.0	24.1	25.3	28.1	30.0	31.0	33.3
15 years	145	25.8	3.0	21.8	22.5	23.1	23.7	25.1	27.3	28.3	30.0	31.7
16 years	170	26.8	3.1	23.0	23.5	24.0	24.4	26.4	28.4	29.9	31.3	32.8
17 years	134	27.5	3.7	23.1	23.7	24.3	25.0	27.1	29.0	30.2	32.1	34.7
18 years	170	27.5	3.7	22.2	23.8	24.4	25.2	27.0	28.9	30.4	31.9	34.1
19 years	158	27.5	3.4	22.8	24.0	24.3	25.1	26.8	29.0	30.9	32.1	33.4

Table 36. Mid-upper arm circumference in centimeters for males 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	5,916	32.4	3.4	27.0	28.2	29.0	30.1	32.3	34.5	35.7	36.7	38.1
18-24 years	988	31.1	3.4	26.2	27.3	27.9	28.9	30.9	33.1	34.4	35.4	36.6
25-34 years	1,067	32.7	3.4	27.5	28.6	29.3	30.4	32.5	34.8	35.9	37.1	38.4
35-44 years	745	33.2	3.3	27.7	29.2	30.0	31.1	33.2	35.3	36.5	37.3	38.8
45-54 years	690	33.1	3.3	28.0	29.0	29.9	31.0	32.9	35.2	36.4	37.2	38.5
55-64 years	1,227	32.5	3.2	27.4	28.7	29.4	30.4	32.3	34.3	35.5	36.3	37.9
65-74 years	1,199	31.3	3.4	25.4	26.8	28.0	29.2	31.5	33.5	34.8	35.6	37.0
White												
18-74 years	5,148	32.4	3.3	27.1	28.3	29.1	30.2	32.3	34.5	35.7	36.6	38.0
18-24 years	846	31.2	3.3	26.3	27.3	28.0	29.0	31.0	33.2	34.6	35.6	36.6
25-34 years	901	32.7	3.3	27.7	28.8	29.3	30.5	32.6	34.7	35.9	37.0	38.2
35-44 years	653	33.3	3.1	28.3	29.5	30.1	31.3	33.1	35.1	36.4	37.1	38.4
45-54 years	617	33.0	3.2	28.1	29.2	29.9	31.0	32.8	35.1	36.1	37.1	38.2
55-64 years	1,086	32.5	3.1	27.5	28.9	29.5	30.5	32.3	34.3	35.4	36.2	37.6
65-74 years	1,045	31.4	3.4	25.5	27.0	28.1	29.3	31.6	33.6	34.8	35.6	36.8
Black												
18-74 years	649	32.7	4.2	26.5	27.7	28.7	30.0	32.6	35.3	37.0	38.2	39.5
18-24 years	121	30.7	3.5	26.1	26.9	27.6	28.7	30.7	32.6	33.3	34.4	35.9
25-34 years	139	33.1	4.2	27.5	28.3	29.0	30.2	32.6	35.3	36.6	38.1	39.8
35-44 years	70	34.4	3.9	*	30.0	30.2	31.6	33.9	37.5	38.2	39.3	*
45-54 years	62	34.3	3.9	*	28.8	30.5	31.9	34.6	36.4	38.5	39.5	*
55-64 years	129	32.8	3.8	27.2	28.4	29.2	30.1	32.6	34.4	37.1	37.9	39.6
65-74 years	128	31.1	4.1	24.6	26.1	27.4	28.4	30.6	33.6	35.6	36.9	38.2

1/ Includes all other races not shown as separate categories.

Table 37. Mid-upper arm circumference in centimeters for females 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	6,588	30.1	4.7	23.9	24.9	25.6	26.7	29.3	32.6	34.8	36.4	38.7
18-24 years	1,066	27.7	3.8	23.0	23.8	24.4	25.3	27.1	29.2	31.2	32.4	34.8
25-34 years	1,170	29.2	4.4	23.6	24.5	25.2	26.2	28.3	31.3	33.4	35.6	37.9
35-44 years	844	30.7	4.9	24.4	25.5	26.2	27.2	29.6	33.3	35.8	37.5	39.6
45-54 years	763	31.3	4.8	24.9	25.8	26.5	28.2	30.6	34.1	36.1	37.5	39.7
55-64 years	1,329	31.5	4.7	25.1	26.3	27.1	28.3	30.9	34.1	36.3	37.6	39.7
65-74 years	1,416	31.1	4.4	24.4	26.0	27.0	28.3	30.8	33.6	35.4	36.8	38.8
White												
18-74 years	5,686	29.9	4.5	23.9	24.9	25.6	26.6	29.2	32.3	34.5	36.2	38.4
18-24 years	892	27.7	3.7	23.0	23.9	24.5	25.4	27.1	29.2	30.8	32.2	34.7
25-34 years	1,000	29.0	4.3	23.5	24.5	25.1	26.2	28.1	31.1	33.1	35.1	37.3
35-44 years	726	30.4	4.7	24.3	25.5	26.1	27.1	29.4	32.7	35.4	37.3	39.1
45-54 years	647	31.1	4.6	24.8	25.7	26.3	28.0	30.3	33.8	35.8	37.2	39.3
55-64 years	1,176	31.3	4.5	25.1	26.2	27.0	28.1	30.8	34.0	35.7	37.3	39.4
65-74 years	1,245	31.0	4.4	24.3	26.0	26.8	28.2	30.5	33.3	35.2	36.4	38.8
Black												
18-74 years	782	31.7	5.5	24.1	25.0	25.9	27.6	31.2	34.9	37.1	38.5	41.9
18-24 years	147	28.2	4.2	23.0	23.9	24.3	25.2	27.1	30.5	32.2	34.3	36.4
25-34 years	145	30.8	5.2	24.1	25.1	25.9	27.4	29.7	33.9	36.2	37.8	40.4
35-44 years	103	33.0	5.7	24.5	25.1	27.0	29.2	32.1	36.4	37.6	40.6	44.4
45-54 years	100	34.4	5.4	27.0	28.4	28.5	31.1	34.0	36.4	38.5	40.4	45.8
55-64 years	135	33.9	5.5	25.5	28.2	28.9	30.2	33.5	36.9	38.6	41.8	45.1
65-74 years	152	33.1	4.1	26.1	27.5	28.8	30.4	32.7	36.3	37.1	37.4	39.1

1/ Includes all other races not shown as separate categories.

Table 38. Chest circumference (erect) in centimeters for persons 2-7 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
2 years	369	51.1	2.7	46.6	47.8	48.4	49.3	50.7	52.7	53.7	54.4	55.7
3 years	413	52.8	3.0	48.1	49.2	50.1	51.0	52.7	54.5	55.4	56.3	57.4
4 years	398	54.7	2.9	49.9	51.0	51.8	52.8	54.6	56.6	57.4	58.3	59.2
5 years	393	56.6	3.4	51.8	52.6	53.4	54.3	56.3	58.6	59.6	60.5	62.1
6 years	129	59.3	4.1	53.8	55.0	55.5	56.6	58.9	60.9	62.4	65.1	66.6
7 years	145	60.4	3.8	54.6	55.9	56.7	57.9	60.2	62.8	63.6	64.4	66.4
Female												
2 years	331	49.9	2.6	46.1	46.6	47.1	48.2	49.8	51.6	52.5	53.2	54.4
3 years	365	51.6	2.9	47.4	48.2	48.8	49.6	51.3	53.4	54.6	55.5	57.1
4 years	389	53.2	3.1	48.4	49.7	50.2	51.2	53.0	55.2	56.4	57.1	58.5
5 years	357	55.3	3.7	49.9	50.8	51.6	53.1	55.1	57.5	59.1	60.1	61.8
6 years	133	57.6	4.6	51.2	52.8	53.5	54.5	56.8	58.8	61.4	63.3	67.1
7 years	149	59.1	4.1	53.0	54.2	55.2	55.8	58.7	62.3	63.4	63.8	66.6

Table 39. Chest circumference (supine) in centimeters for persons 6 months-3 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
6-11 months	176	45.8	2.6	41.2	42.6	43.3	44.2	45.7	47.8	48.2	48.7	50.1
1 year	366	49.1	2.8	45.1	46.1	46.5	47.5	49.2	50.7	51.7	52.1	53.3
2 years	369	51.2	2.7	47.1	48.0	48.6	49.5	51.1	52.8	53.8	54.6	55.6
3 years	404	53.4	2.9	48.6	49.9	50.5	51.4	53.3	55.1	56.3	57.1	57.9
Female												
6-11 months	172	44.9	3.0	40.2	41.6	42.3	43.1	44.7	46.2	47.6	48.3	49.1
1 year	333	47.8	2.7	43.6	44.6	45.1	46.0	47.9	49.7	50.3	51.0	52.0
2 years	335	50.2	2.7	46.3	47.0	47.6	48.3	50.1	51.8	52.8	53.7	54.4
3 years	357	52.1	3.0	47.3	48.4	49.3	50.1	52.0	54.0	55.0	55.6	57.3

Table 40. Head circumference in centimeters for persons 6 months-7 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
6-11 months	173	45.3	1.5	42.7	43.5	43.7	44.2	45.2	46.2	47.1	47.4	47.8
1 year	364	47.7	1.7	45.5	46.1	46.3	46.7	47.6	48.5	49.0	49.4	50.1
2 years	372	49.1	1.7	46.4	47.1	47.4	48.0	49.1	50.1	50.5	51.0	51.6
3 years	412	50.0	1.4	47.7	48.2	48.6	49.2	50.1	50.8	51.3	51.7	52.4
4 years	399	50.5	1.6	48.1	48.7	49.1	49.6	50.5	51.5	52.1	52.3	53.0
5 years	392	51.0	1.7	48.8	49.1	49.3	49.8	51.1	52.1	52.5	52.8	53.6
6 years	131	51.6	1.8	49.2	49.6	49.9	50.3	51.3	52.8	53.1	53.6	54.0
7 years	145	51.9	1.7	49.5	50.0	50.4	50.8	51.7	52.9	53.7	54.1	55.3
Female												
6-11 months	175	44.0	1.6	40.8	42.1	42.6	43.2	44.1	45.1	45.5	45.8	46.3
1 year	333	46.2	1.7	43.9	44.2	44.6	45.2	46.2	47.1	47.7	48.1	48.5
2 years	333	47.9	1.8	45.7	46.2	46.5	47.0	47.9	48.6	49.1	49.5	50.1
3 years	363	48.6	1.9	45.8	46.6	47.1	47.7	48.7	49.7	50.3	50.8	51.2
4 years	393	49.5	1.8	47.1	47.7	47.8	48.5	49.4	50.4	51.0	51.5	51.9
5 years	357	49.8	1.7	47.2	48.1	48.4	48.9	49.9	50.8	51.2	51.4	52.0
6 years	133	50.7	1.8	48.4	48.8	49.2	49.6	50.5	51.6	52.3	52.7	53.4
7 years	150	50.7	2.0	47.4	48.7	49.2	49.8	50.7	51.9	52.5	52.8	53.4

Table 41. Bitrochanteric breadth in centimeters for persons 6 months-19 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
6-11 months	179	13.1	1.2	11.0	11.6	11.9	12.3	13.2	13.8	14.2	14.6	15.4
1 year	370	14.6	2.8	12.2	12.8	13.2	13.7	14.5	15.3	15.8	16.1	16.5
2 years	375	15.7	1.1	13.8	14.3	14.6	15.0	15.7	16.3	16.7	16.9	17.4
3 years	418	16.7	1.2	14.8	15.2	15.5	16.0	16.7	17.4	17.8	18.1	18.5
4 years	404	17.6	1.2	15.5	16.2	16.4	16.8	17.6	18.3	18.7	19.1	19.5
5 years	397	18.4	1.2	16.6	16.9	17.2	17.6	18.4	19.2	19.6	20.1	20.4
6 years	133	19.5	1.4	17.2	17.8	18.3	18.7	19.5	20.3	21.1	21.4	22.4
7 years	148	20.3	1.2	18.3	18.8	18.9	19.5	20.3	21.1	21.6	21.8	22.4
8 years	147	21.3	1.7	19.0	19.5	19.6	20.0	21.3	22.3	22.6	23.0	24.2
9 years	145	22.2	1.6	20.0	20.3	20.7	21.2	22.2	23.1	23.5	23.9	24.9
10 years	157	23.7	1.9	21.0	21.4	22.0	22.5	23.4	24.8	25.4	26.1	26.8
11 years	155	24.7	2.3	21.4	22.0	22.5	23.2	24.4	26.0	26.8	27.9	28.8
12 years	145	25.7	2.2	22.6	23.1	23.5	24.2	25.4	27.0	27.9	28.6	30.0
13 years	173	27.1	2.4	23.1	23.8	24.4	25.4	27.0	28.9	29.4	29.9	30.7
14 years	186	28.9	2.2	24.9	26.3	26.9	27.3	29.0	30.4	31.3	31.8	32.3
15 years	184	29.6	2.0	26.3	27.0	27.4	28.3	29.5	30.7	31.5	32.1	33.6
16 years	178	30.5	1.9	27.2	28.2	28.5	29.3	30.4	31.8	32.4	32.6	34.0
17 years	173	30.7	1.8	27.8	28.4	28.9	29.5	30.6	32.0	32.5	33.0	34.0
18 years	164	30.9	1.8	28.3	28.8	29.3	29.7	30.7	31.9	32.6	33.4	34.2
19 years	148	31.1	2.1	28.0	28.5	29.1	29.7	31.1	32.6	33.2	33.4	34.6
Female												
6-11 months	177	12.8	1.2	10.7	11.3	11.6	12.1	12.8	13.5	14.2	14.4	14.6
1 year	336	14.1	1.2	12.3	12.6	13.0	13.3	14.2	14.8	15.2	15.4	15.9
2 years	336	15.5	1.0	13.9	14.3	14.5	14.8	15.5	16.2	16.5	16.7	17.3
3 years	366	16.5	1.2	14.3	14.9	15.2	15.7	16.5	17.5	17.8	18.2	18.5
4 years	396	17.4	1.1	15.6	16.1	16.3	16.7	17.4	18.2	18.4	18.9	19.3
5 years	364	18.4	1.3	16.4	16.9	17.2	17.6	18.4	19.4	19.7	20.2	20.7
6 years	135	19.6	1.4	17.4	18.0	18.1	18.6	19.6	20.7	21.3	21.6	22.3
7 years	157	20.5	1.8	17.5	18.6	19.2	19.6	20.5	21.5	21.8	22.2	23.4
8 years	123	21.5	1.4	19.5	20.0	20.3	20.6	21.3	22.2	22.7	23.1	23.6
9 years	149	22.6	2.0	19.9	20.8	21.0	21.3	22.3	23.5	24.4	25.5	26.5
10 years	136	24.0	2.1	21.1	21.5	21.9	22.8	23.7	25.5	26.0	26.9	28.1
11 years	140	25.6	2.4	22.0	22.5	22.9	23.7	25.7	27.0	28.4	28.9	29.9
12 years	147	27.2	2.3	23.3	24.1	24.6	25.7	27.2	28.8	29.6	30.3	30.9
13 years	162	28.3	2.3	24.6	25.6	26.0	26.9	28.5	29.7	30.6	31.3	31.8
14 years	178	29.2	2.3	25.7	26.7	27.3	28.0	29.3	30.5	31.5	32.0	32.5
15 years	145	29.5	1.6	26.7	27.4	27.7	28.4	29.5	30.5	31.2	31.5	31.8
16 years	170	30.3	1.9	27.6	28.0	28.5	28.9	30.0	31.3	32.3	32.7	34.1
17 years	134	30.5	1.8	27.3	28.0	28.5	29.4	30.4	31.5	32.3	32.8	33.9
18 years	170	30.5	1.9	27.7	28.3	28.7	29.2	30.4	31.4	32.2	32.5	33.8
19 years	158	30.6	1.9	28.0	28.4	29.0	29.5	30.3	31.5	32.4	32.9	33.7

Table 42. Bitrochanteric breadth in centimeters for males 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	5,916	32.2	2.0	29.2	29.8	30.3	31.0	32.2	33.4	34.1	34.6	35.3
18-24 years	988	31.4	1.9	28.5	29.0	29.4	30.2	31.4	32.6	33.2	33.7	34.4
25-34 years	1,067	32.0	2.0	29.0	29.6	30.0	30.8	31.9	33.1	33.7	34.2	35.2
35-44 years	745	32.4	1.8	29.4	30.0	30.6	31.2	32.4	33.7	34.1	34.6	35.4
45-54 years	690	32.7	1.9	29.8	30.4	30.8	31.4	32.6	33.8	34.4	35.0	35.8
55-64 years	1,227	32.7	1.9	29.8	30.4	30.9	31.6	32.7	33.8	34.5	34.8	35.7
65-74 years	1,199	32.7	1.8	29.8	30.4	30.8	31.5	32.7	33.9	34.5	35.1	35.7
White												
18-74 years	5,148	32.4	1.9	29.4	30.0	30.5	31.2	32.4	33.5	34.2	34.6	35.4
18-24 years	846	31.5	1.8	28.6	29.2	29.6	30.3	31.5	32.7	33.3	33.8	34.5
25-34 years	901	32.1	1.9	29.4	29.8	30.3	31.0	32.0	33.2	33.7	34.4	35.2
35-44 years	653	32.5	1.7	29.8	30.5	30.8	31.3	32.6	33.8	34.1	34.6	35.5
45-54 years	617	32.8	1.9	30.1	30.5	31.1	31.6	32.7	33.9	34.5	35.0	35.9
55-64 years	1,086	32.8	1.8	29.9	30.5	31.1	31.8	32.8	33.9	34.5	34.9	35.7
65-74 years	1,045	32.9	1.8	30.2	30.7	31.1	31.8	32.9	34.0	34.6	35.2	35.8
Black												
18-74 years	649	31.3	2.1	28.3	29.1	29.4	30.1	31.2	32.5	33.3	34.0	34.6
18-24 years	121	30.3	1.9	28.0	28.3	28.8	29.5	30.6	31.5	31.7	32.0	32.7
25-34 years	139	31.3	2.2	28.6	29.2	29.3	29.9	31.0	32.4	33.2	33.7	34.2
35-44 years	70	31.8	1.9	*	29.4	29.6	30.3	31.7	33.2	33.6	34.1	*
45-54 years	62	32.0	2.1	*	29.2	29.7	30.7	31.9	33.0	34.4	34.6	*
55-64 years	129	31.8	1.7	29.2	29.8	30.2	30.7	31.6	32.8	33.4	34.1	34.5
65-74 years	128	31.7	2.1	28.5	29.2	29.8	30.3	31.6	33.0	33.9	34.2	35.1

1/ Includes all other races not shown as separate categories.

Table 43. Bitrochanteric breadth in centimeters for females 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	6,588	31.8	2.2	28.5	29.1	29.6	30.3	31.6	33.1	33.9	34.6	35.6
18-24 years	1,066	30.9	2.0	28.1	28.5	28.9	29.5	30.7	32.1	32.9	33.3	34.4
25-34 years	1,170	31.6	2.2	28.4	29.1	29.5	30.2	31.3	32.7	33.8	34.4	35.3
35-44 years	844	32.1	2.1	28.9	29.6	30.0	30.6	31.8	33.3	34.2	34.8	35.9
45-54 years	763	32.1	2.3	28.7	29.5	30.0	30.6	32.0	33.4	34.2	34.9	35.9
55-64 years	1,329	32.1	2.0	29.0	29.5	30.0	30.9	32.1	33.4	34.1	34.7	35.4
65-74 years	1,416	32.1	2.1	28.8	29.5	29.9	30.7	32.1	33.4	34.2	34.9	35.9
White												
18-74 years	5,686	31.8	2.1	28.7	29.3	29.7	30.4	31.7	33.1	33.9	34.6	35.5
18-24 years	892	31.0	1.9	28.2	28.7	29.0	29.6	30.8	32.1	32.9	33.3	34.3
25-34 years	1,000	31.7	2.1	28.6	29.2	29.7	30.3	31.4	32.8	33.8	34.4	35.3
35-44 years	726	32.1	2.1	29.0	29.7	30.1	30.6	31.9	33.4	34.2	34.9	35.9
45-54 years	647	32.2	2.2	29.0	29.6	30.1	30.8	32.1	33.4	34.2	34.9	35.8
55-64 years	1,176	32.2	2.0	29.1	29.6	30.2	30.9	32.1	33.4	34.2	34.8	35.4
65-74 years	1,245	32.1	2.1	28.8	29.5	30.1	30.8	32.1	33.4	34.2	34.9	36.0
Black												
18-74 years	782	31.4	2.5	28.2	28.6	29.0	29.6	31.0	32.7	33.7	34.6	36.1
18-24 years	147	30.7	2.3	27.8	28.2	28.4	29.0	30.3	31.9	32.8	33.7	35.7
25-34 years	145	31.1	2.2	28.2	28.3	28.9	29.5	30.8	32.3	33.4	34.2	35.6
35-44 years	103	31.7	2.3	28.7	29.2	29.6	30.0	31.3	32.8	34.1	34.4	35.9
45-54 years	100	32.0	3.1	28.5	28.8	29.3	30.0	31.4	33.1	34.8	36.1	37.3
55-64 years	135	31.8	2.3	28.5	28.8	29.6	30.1	31.8	33.4	34.1	34.9	36.4
65-74 years	152	31.8	2.2	28.5	29.0	29.5	30.4	31.9	33.5	33.7	34.7	35.6

1/ Includes all other races not shown as separate categories.

Table 44. Elbow breadth in centimeters for persons 6 months-19 years of age--number examined, mean, standard deviation, and selected percentiles, by sex and age: United States, 1976-80

Sex and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
Male												
6-11 months	179	3.8	0.3	3.3	3.4	3.5	3.6	3.8	3.9	4.0	4.1	4.2
1 year	370	4.1	0.3	3.7	3.7	3.8	3.9	4.1	4.2	4.3	4.4	4.5
2 years	375	4.3	0.3	3.9	3.9	4.0	4.1	4.2	4.4	4.5	4.6	4.7
3 years	418	4.4	0.3	4.0	4.1	4.2	4.2	4.4	4.6	4.7	4.8	4.9
4 years	404	4.6	0.3	4.2	4.3	4.3	4.4	4.6	4.8	5.0	5.1	5.2
5 years	397	4.8	0.3	4.3	4.4	4.5	4.6	4.8	5.0	5.1	5.2	5.3
6 years	133	5.1	0.3	4.6	4.6	4.7	4.8	5.1	5.3	5.5	5.5	5.6
7 years	148	5.2	0.3	4.7	4.8	4.9	4.9	5.1	5.4	5.6	5.6	5.7
8 years	147	5.4	0.4	4.8	4.9	5.0	5.1	5.4	5.6	5.7	5.8	6.0
9 years	145	5.6	0.4	5.0	5.1	5.2	5.3	5.6	5.8	5.9	6.0	6.2
10 years	157	5.9	0.4	5.2	5.4	5.5	5.6	5.9	6.2	6.3	6.4	6.6
11 years	155	6.0	0.4	5.3	5.5	5.6	5.7	6.0	6.3	6.5	6.6	6.8
12 years	145	6.3	0.5	5.6	5.7	5.8	6.0	6.2	6.6	6.9	7.0	7.2
13 years	173	6.6	0.5	5.9	6.0	6.1	6.2	6.5	6.9	7.1	7.2	7.4
14 years	186	6.9	0.4	6.2	6.4	6.5	6.6	6.9	7.1	7.3	7.5	7.6
15 years	184	7.0	0.4	6.3	6.5	6.6	6.7	7.0	7.2	7.4	7.5	7.7
16 years	178	7.0	0.4	6.4	6.5	6.6	6.8	7.0	7.2	7.4	7.5	7.7
17 years	173	7.1	0.4	6.5	6.6	6.6	6.8	7.0	7.4	7.6	7.7	7.8
18 years	164	7.1	0.4	6.4	6.6	6.6	6.9	7.1	7.4	7.6	7.7	7.8
19 years	148	7.1	0.4	6.5	6.6	6.7	6.8	7.1	7.4	7.5	7.6	7.7
Female												
6-11 months	177	3.6	0.3	3.2	3.2	3.3	3.4	3.6	3.8	3.9	3.9	4.0
1 year	336	3.9	0.3	3.4	3.5	3.6	3.7	3.8	4.0	4.1	4.2	4.3
2 years	336	4.1	0.2	3.6	3.8	3.8	3.9	4.1	4.3	4.3	4.4	4.5
3 years	366	4.2	0.3	3.8	3.9	4.0	4.1	4.2	4.4	4.5	4.6	4.7
4 years	396	4.4	0.3	4.0	4.1	4.1	4.2	4.4	4.6	4.7	4.8	4.9
5 years	364	4.6	0.3	4.2	4.3	4.3	4.4	4.6	4.9	4.9	5.0	5.2
6 years	135	4.8	0.3	4.3	4.4	4.5	4.6	4.8	5.0	5.2	5.3	5.3
7 years	157	5.0	0.3	4.5	4.6	4.7	4.8	5.0	5.2	5.3	5.4	5.5
8 years	123	5.2	0.3	4.7	4.8	4.8	4.9	5.1	5.3	5.5	5.6	5.8
9 years	149	5.4	0.4	4.8	4.9	5.0	5.1	5.4	5.6	5.7	5.9	6.2
10 years	136	5.6	0.4	5.1	5.1	5.2	5.4	5.6	5.9	6.0	6.1	6.2
11 years	140	5.8	0.4	5.2	5.3	5.4	5.5	5.8	6.0	6.2	6.3	6.4
12 years	147	5.9	0.4	5.4	5.5	5.6	5.7	5.9	6.2	6.3	6.5	6.6
13 years	162	6.0	0.4	5.4	5.5	5.6	5.7	6.0	6.3	6.4	6.5	6.6
14 years	178	6.1	0.3	5.6	5.7	5.8	5.9	6.1	6.3	6.4	6.5	6.6
15 years	145	6.1	0.3	5.6	5.7	5.7	5.9	6.1	6.3	6.5	6.5	6.6
16 years	170	6.1	0.4	5.5	5.6	5.8	5.9	6.1	6.3	6.5	6.6	6.7
17 years	134	6.2	0.4	5.5	5.6	5.7	5.9	6.2	6.4	6.6	6.6	6.9
18 years	170	6.1	0.4	5.6	5.6	5.8	5.9	6.1	6.4	6.5	6.6	6.7
19 years	158	6.1	0.3	5.6	5.7	5.8	5.9	6.1	6.3	6.5	6.5	6.7

Table 45. Elbow breadth in centimeters for males 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	5,916	7.3	0.4	6.6	6.7	6.8	7.0	7.3	7.5	7.7	7.8	8.0
18-24 years	988	7.1	0.4	6.5	6.6	6.8	6.9	7.2	7.4	7.5	7.6	7.8
25-34 years	1,067	7.2	0.4	6.5	6.7	6.8	6.9	7.2	7.5	7.6	7.7	7.9
35-44 years	745	7.3	0.4	6.6	6.7	6.9	7.0	7.3	7.5	7.7	7.8	8.0
45-54 years	690	7.4	0.4	6.7	6.8	6.9	7.1	7.4	7.6	7.8	7.8	8.0
55-64 years	1,227	7.4	0.4	6.7	6.9	7.0	7.1	7.4	7.7	7.8	8.0	8.1
65-74 years	1,199	7.4	0.4	6.7	6.8	6.9	7.1	7.3	7.6	7.8	8.0	8.1
White												
18-74 years	5,148	7.3	0.4	6.6	6.8	6.9	7.0	7.3	7.5	7.7	7.8	8.0
18-24 years	846	7.2	0.4	6.5	6.7	6.8	6.9	7.2	7.4	7.5	7.6	7.8
25-34 years	901	7.2	0.4	6.6	6.7	6.8	6.9	7.2	7.5	7.6	7.7	7.9
35-44 years	653	7.3	0.4	6.6	6.8	6.9	7.0	7.3	7.5	7.7	7.8	8.0
45-54 years	617	7.4	0.4	6.7	6.8	6.9	7.1	7.4	7.6	7.8	7.8	8.0
55-64 years	1,086	7.4	0.4	6.7	6.9	7.0	7.1	7.4	7.7	7.8	8.0	8.1
65-74 years	1,045	7.4	0.4	6.7	6.8	7.0	7.1	7.3	7.6	7.8	8.0	8.1
Black												
18-74 years	649	7.3	0.5	6.6	6.7	6.9	7.0	7.3	7.6	7.8	7.9	8.1
18-24 years	121	7.1	0.4	6.5	6.6	6.7	6.9	7.2	7.4	7.6	7.7	7.8
25-34 years	139	7.2	0.4	6.5	6.7	6.9	6.9	7.1	7.5	7.6	7.7	7.9
35-44 years	70	7.3	0.5	*	6.7	6.7	7.0	7.3	7.6	7.8	8.2	*
45-54 years	62	7.4	0.4	*	6.9	6.9	7.0	7.4	7.8	7.8	8.0	*
55-64 years	129	7.5	0.4	6.8	6.9	7.0	7.2	7.5	7.7	7.9	8.0	8.1
65-74 years	128	7.3	0.4	6.7	6.9	6.9	7.1	7.3	7.5	7.8	8.0	8.1

1/ Includes all other races not shown as separate categories.

Table 46. Elbow breadth in centimeters for females 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	6,588	6.3	0.4	5.7	5.8	5.9	6.0	6.3	6.5	6.7	6.8	7.1
18-24 years	1,066	6.1	0.4	5.6	5.7	5.8	5.9	6.1	6.4	6.5	6.6	6.7
25-34 years	1,170	6.2	0.4	5.6	5.7	5.8	5.9	6.2	6.4	6.6	6.7	6.9
35-44 years	844	6.3	0.4	5.7	5.8	5.9	6.0	6.3	6.6	6.7	6.8	7.1
45-54 years	763	6.4	0.4	5.7	5.9	5.9	6.1	6.3	6.7	6.9	7.0	7.1
55-64 years	1,329	6.4	0.4	5.8	6.0	6.0	6.1	6.4	6.7	6.9	7.0	7.2
65-74 years	1,416	6.5	0.5	5.8	5.9	6.0	6.2	6.4	6.7	6.9	7.1	7.3
White												
18-74 years	5,686	6.3	0.4	5.7	5.8	5.9	6.0	6.2	6.5	6.7	6.8	7.1
18-24 years	892	6.1	0.3	5.6	5.7	5.8	5.9	6.1	6.4	6.5	6.6	6.7
25-34 years	1,000	6.2	0.4	5.6	5.7	5.8	5.9	6.2	6.4	6.6	6.7	6.8
35-44 years	726	6.3	0.4	5.7	5.8	5.9	6.0	6.2	6.5	6.7	6.8	7.0
45-54 years	647	6.4	0.4	5.8	5.9	5.9	6.1	6.3	6.7	6.8	6.9	7.1
55-64 years	1,176	6.4	0.4	5.8	5.9	6.0	6.1	6.4	6.6	6.9	7.0	7.2
65-74 years	1,245	6.4	0.4	5.8	5.9	6.0	6.1	6.4	6.7	6.9	7.1	7.3
Black												
18-74 years	782	6.4	0.5	5.8	5.9	6.0	6.1	6.4	6.7	6.9	7.1	7.3
18-24 years	147	6.2	0.4	5.7	5.7	5.8	5.9	6.2	6.5	6.6	6.7	6.8
25-34 years	145	6.3	0.5	5.6	5.8	5.9	6.0	6.3	6.6	6.8	7.0	7.2
35-44 years	103	6.5	0.5	5.9	6.0	6.0	6.1	6.4	6.7	6.9	7.0	7.2
45-54 years	100	6.6	0.5	5.9	6.0	6.1	6.2	6.5	6.9	7.0	7.3	7.6
55-64 years	135	6.7	0.5	6.0	6.1	6.2	6.4	6.6	6.9	7.2	7.4	7.4
65-74 years	152	6.7	0.4	6.1	6.1	6.2	6.4	6.7	7.0	7.1	7.3	7.4

1/ Includes all other races not shown as separate categories.

Table 46. Elbow breadth in centimeters for females 18-74 years of age--number examined, mean, standard deviation, and selected percentiles, by race and age: United States, 1976-80

Race and age	Number of examined persons	Mean	Standard deviation	Percentile								
				5th	10th	15th	25th	50th	75th	85th	90th	95th
All races 1/												
18-74 years	6,588	6.3	0.4	5.7	5.8	5.9	6.0	6.3	6.5	6.7	6.8	7.1
18-24 years	1,066	6.1	0.4	5.6	5.7	5.8	5.9	6.1	6.4	6.5	6.6	6.7
25-34 years	1,170	6.2	0.4	5.6	5.7	5.8	5.9	6.2	6.4	6.6	6.7	6.9
35-44 years	844	6.3	0.4	5.7	5.8	5.9	6.0	6.3	6.6	6.7	6.8	7.1
45-54 years	763	6.4	0.4	5.7	5.9	5.9	6.1	6.3	6.7	6.9	7.0	7.1
55-64 years	1,329	6.4	0.4	5.8	6.0	6.0	6.1	6.4	6.7	6.9	7.0	7.2
65-74 years	1,416	6.5	0.5	5.8	5.9	6.0	6.2	6.4	6.7	6.9	7.1	7.3
White												
18-74 years	5,686	6.3	0.4	5.7	5.8	5.9	6.0	6.2	6.5	6.7	6.8	7.1
18-24 years	892	6.1	0.3	5.6	5.7	5.8	5.9	6.1	6.4	6.5	6.6	6.7
25-34 years	1,000	6.2	0.4	5.6	5.7	5.8	5.9	6.2	6.4	6.6	6.7	6.8
35-44 years	726	6.3	0.4	5.7	5.8	5.9	6.0	6.2	6.5	6.7	6.8	7.0
45-54 years	647	6.4	0.4	5.8	5.9	5.9	6.1	6.3	6.7	6.8	6.9	7.1
55-64 years	1,176	6.4	0.4	5.8	5.9	6.0	6.1	6.4	6.6	6.9	7.0	7.2
65-74 years	1,245	6.4	0.4	5.8	5.9	6.0	6.1	6.4	6.7	6.9	7.1	7.3
Black												
18-74 years	782	6.4	0.5	5.8	5.9	6.0	6.1	6.4	6.7	6.9	7.1	7.3
18-24 years	147	6.2	0.4	5.7	5.7	5.8	5.9	6.2	6.5	6.6	6.7	6.8
25-34 years	145	6.3	0.5	5.6	5.8	5.9	6.0	6.3	6.6	6.8	7.0	7.2
35-44 years	103	6.5	0.5	5.9	6.0	6.0	6.1	6.4	6.7	6.9	7.0	7.2
45-54 years	100	6.6	0.5	5.9	6.0	6.1	6.2	6.5	6.9	7.0	7.3	7.6
55-64 years	135	6.7	0.5	6.0	6.1	6.2	6.4	6.6	6.9	7.2	7.4	7.4
65-74 years	152	6.7	0.4	6.1	6.1	6.2	6.4	6.7	7.0	7.1	7.3	7.4

1/ Includes all other races not shown as separate categories.

Table 47. Handedness for persons 6 months-74 years of age--number examined and percent distribution by hand preference, according to sex and age: United States, 1976-80

Sex and age	Examined persons	Hand preference				
		Total	Right	Left	Both	Not sure
Both sexes	Number		Percent distribution			
6-11 months	356	100.0	27.8	5.7	10.0	56.6
1 year	706	100.0	42.5	9.0	11.7	36.9
2 years	711	100.0	63.2	7.9	10.7	18.2
3 years	784	100.0	76.0	10.3	6.3	7.4
4 years	800	100.0	82.4	9.4	3.3	4.9
5 years	761	100.0	89.5	8.4	1.6	0.5
6-11 years	1,725	100.0	87.0	12.4	0.5	0.1
12-17 years	1,975	100.0	87.0	11.7	1.3	0.0
18-24 years	2,054	100.0	88.3	9.8	1.9	0.1
25-34 years	2,237	100.0	89.8	9.2	0.9	0.1
35-44 years	1,589	100.0	91.0	8.1	0.9	-
45-54 years	1,453	100.0	93.4	5.1	1.5	-
55-64 years	2,556	100.0	93.4	4.6	2.0	-
65-74 years	2,615	100.0	94.2	3.8	1.9	0.0
Male						
6-11 months	179	100.0	29.4	4.8	15.2	50.5
1 year	370	100.0	42.5	7.6	10.7	39.1
2 years	375	100.0	62.0	7.5	12.6	17.8
3 years	418	100.0	74.9	10.5	6.8	7.8
4 years	404	100.0	78.9	11.4	4.7	5.0
5 years	397	100.0	88.8	8.8	1.9	0.5
6-11 years	885	100.0	86.9	12.3	0.8	-
12-17 years	1,039	100.0	84.5	13.9	1.6	-
18-24 years	988	100.0	87.2	9.8	2.8	0.2
25-34 years	1,067	100.0	87.9	10.5	1.6	-
35-44 years	745	100.0	89.6	9.4	1.0	-
45-54 years	690	100.0	91.5	6.8	1.7	-
55-64 years	1,227	100.0	91.7	6.0	2.3	-
65-74 years	1,199	100.0	92.3	5.2	2.5	0.1
Female						
6-11 months	177	100.0	26.1	6.5	4.5	62.9
1 year	336	100.0	42.5	10.4	12.6	34.5
2 years	336	100.0	64.5	8.2	8.7	18.6
3 years	366	100.0	77.2	10.1	5.8	7.0
4 years	396	100.0	86.2	7.2	1.8	4.8
5 years	364	100.0	90.2	8.0	1.2	0.6
6-11 years	840	100.0	87.2	12.5	0.1	0.3
12-17 years	936	100.0	89.7	9.3	0.9	0.1
18-24 years	1,066	100.0	89.3	9.7	1.0	-
25-34 years	1,170	100.0	91.6	7.9	0.3	0.1
35-44 years	844	100.0	92.3	6.9	0.8	-
45-54 years	763	100.0	95.2	3.5	1.3	-
55-64 years	1,329	100.0	94.8	3.4	1.8	-
65-74 years	1,416	100.0	95.7	2.8	1.5	-

Appendixes

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Appendix I
Statistical notes

Survey design

The second National Health and Nutrition Examination Survey (NHANES II) utilized a stratified, multistage design that provided for the selection of samples at each stage with a known probability. In hierarchical order, the stages of selection were: primary sampling units (PSU's), which are counties or small groups of contiguous counties; census enumeration districts; segments (clusters of households); households; and finally, sample persons (see figure I).

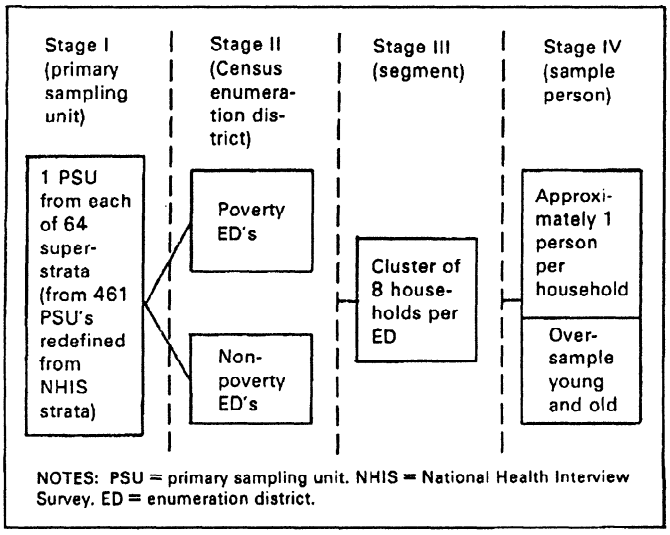

Figure I. Stages of selection for sample in the second National Health and Nutrition Examination Survey

NHANES II is based on a subset of the sample PSU's in the National Health Interview Survey (NHIS)[25] (see figure II). The self-representing PSU's in NHIS were first split along county boundaries. Within each region, each county was classified as either a self-representing or a non-self-representing PSU. The PSU's that were non-self-representing were further combined into homogeneous classes or strata equal in size to the NHIS strata containing non-self-representing PSU's.

Subdividing the 156 self-representing PSU's in NHIS and redefining the PSU's by using county boundaries resulted in a total of 397 PSU's, of which 198 were defined as self-representing and 199 were defined as non-self-representing. The latter were used to form 43 non-self-representing strata, which were combined with the other 220 non-self-representing PSU's in NHIS. The average population of a self-representing PSU was reduced from 838,000 to 584,000. The average area of these PSU's was reduced more than 60 percent, from 2,185 square miles to 855 square miles.

The 461 first-stage units (redefined from NHIS strata) were further stratified into a total of 64 superstrata, and one PSU was selected from each of the superstrata using a modified Goodman-Kish controlled-selection technique.[26] These 64 PSU's were the geographic locations visited by the mobile examination centers during the survey period.

The U.S. Bureau of the Census had the major responsibility for selecting households and sample persons within each PSU. Three sampling frames of housing units were

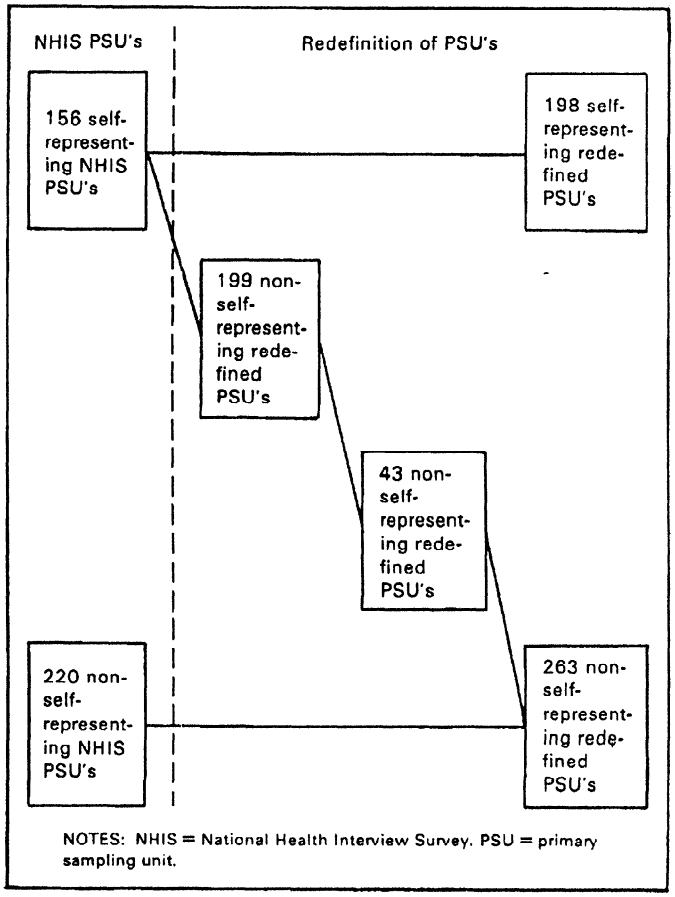

Figure II. Definition of primary sampling units for the second National Health and Nutrition Examination Survey

NOTE: A list of references follows the text.

used to select the sample within each PSU. The list frame consisted of all housing units located in the 1970 Census of the Population.[25]

In the second stage, enumeration districts (ED's) within each stratum were selected proportional to their measures of size. An ED is a geographical area that contains approximately 300 housing units. In order to oversample persons with low incomes, the ED's within each PSU were stratified into a poverty stratum and a nonpoverty stratum. The poverty strata contained ED's with 13 percent or more of persons below the poverty level, and the nonpoverty strata contained ED's with less than 13 percent of persons below the poverty level, as determined by the 1970 census.

The third stage of the design consisted of selection of clusters of households (segments) within ED's. To ensure sampling reliability, clusters of 16 listed addresses were drawn from the sampling frames and then systematically subsampled at a rate of 1 out of 2 to produce a final segment of 8 household address listings.

At the fourth stage of sampling, a list was made of all eligible sample persons within each selected segment. The sample of persons to be examined was selected so that the younger and older age groups were oversampled and approximately one person per sample household was selected. The sampling rates by age are shown in table I.

NOTE: A list of references follows the text.

Table I. Sampling rates by age: Second National Health and Nutrition Examination Survey, 1976-80

Age	Rate
6 months-5 years	3/4
6-59 years	1/4
60-74 years	3/4

Of the 27,801 persons included in the NHANES II sample, 25,286 (91 percent) were interviewed and 20,322 (73 percent) were interviewed and examined. The NHANES II sample size and response rates by age, sex, and race are shown in table II. The number of examined persons and population estimates are shown in tables III and IV. A more complete description of the sample survey design is included in *Vital and Health Statistics*, Series 1, No. 15.[1]

Estimation procedures

Because the design of the National Health and Nutrition Examination Survey (NHANES) is a complex multistage probability sample, national estimates are derived through a multistage estimation procedure. The procedure has three basic components: (a) Inflation by the reciprocal of the probability of selection, (b) adjustment for nonresponse, and (c) poststratification by age, sex, and race. A brief description of each component follows.

- *Inflation by the reciprocal of the probability of selection.* The probability of selection is the product of the probabilities of selection from each stage of selection in the design—PSU, segment, household and sample person.
- *Adjustment for nonresponse.* The estimates are inflated by a multiplication factor that brings estimates based on examined persons up to the level that would have been achieved if all sample persons had been examined. To calculate the nonresponse adjustment factor, the sum of the reciprocals of the probability of selection for all selected *sample* persons within each of five income groups (less than $6,000, $6,000-$9,999, $10,000-$14,999, $15,000-$24,999, and $25,000 or more), three age groups (6 months-5 years, 6-59 years, and 60-74 years), four geographic regions, and within or outside a standard metropolitan statistical area (SMSA) was obtained. This sum was then divided by the sum of the

Table II. Sample size and response rates by age, sex, and race: Second National Health and Nutrition Examination Survey, 1976-80

Age, sex, and race	Total sample size	Interviewed[1]		Examined	
		Number	Percent	Number	Percent
Total	27,801	25,286	90.95	20,322	73.10
Age					
6 months-11 months	444	431	97.07	356	80.18
1-5 years	4,625	4,445	96.11	3,762	81.34
6-11 years	2,085	1,963	94.15	1,725	82.73
12-17 years	2,438	2,304	94.50	1,975	81.01
18-24 years	2,713	2,537	93.51	2,054	75.71
25-34 years	3,031	2,773	91.49	2,237	73.80
35-44 years	236	2,005	89.67	1,589	71.06
45-54 years	2,149	1,866	86.83	1,453	67.61
55-64 years	3,868	3,330	86.09	2,556	66.08
65-74 years	4,212	3,632	86.23	2,615	62.09
Sex					
Female	14,395	13,122	91.16	10,339	71.82
Male	13,406	12,164	90.74	9,983	74.47
Race					
White	23,537	21,350	90.71	17,105	72.67
Black	3,653	3,389	92.77	2,763	75.64
Other	611	547	89.53	454	74.30

[1]Completed medical history interview.

Table III. Number of examined persons 6 months-19 years of age and estimated population, by race, sex, and age of examinee: United States, 1976-80

Sex and age	All races[1]		White		Black	
	Number of examined persons	Estimated population in thousands	Number of examined persons	Estimated population in thousands	Number of examined persons	Estimated population in thousands
Both sexes						
6 months-19 years	8,458	69,949	6,804	57,833	1,427	10,172
6-11 months	356	1,599	285	1,300	62	238
1 year	706	3,103	547	2,511	133	467
2 years	711	2,974	566	2,375	117	458
3 years	784	3,013	625	2,424	131	461
4 years	800	3,034	633	2,480	149	472
5 years	761	3,139	608	2,552	131	488
6 years	268	3,382	214	2,725	43	516
7 years	305	3,570	237	2,941	61	531
8 years	270	3,261	226	2,705	38	468
9 years	294	3,600	244	2,983	43	532
10 years	293	3,501	237	2,898	52	548
11 years	295	3,566	239	3,012	51	498
12 years	292	3,395	238	2,809	46	467
13 years	335	3,939	259	3,149	67	670
14 years	364	4,298	302	3,652	56	561
15 years	329	4,176	277	3,565	48	563
16 years	348	4,337	290	3,687	50	557
17 years	307	3,939	244	3,164	54	617
18 years	334	4,206	277	3,547	50	566
19 years	306	3,916	256	3,354	45	493
Male						
6 months-19 years	4,379	35,451	3,506	29,201	734	5,069
6-11 months	179	819	130	646	42	121
1 year	370	1,586	280	1,279	77	236
2 years	375	1,521	290	1,195	67	232
3 years	418	1,541	324	1,243	79	234
4 years	404	1,550	318	1,268	76	239
5 years	397	1,604	321	1,278	58	246
6 years	133	1,724	114	1,384	13	260
7 years	148	1,823	118	1,524	27	267
8 years	147	1,789	123	1,449	19	260
9 years	145	1,709	121	1,396	19	242
10 years	157	1,817	123	1,471	31	301
11 years	155	1,784	126	1,543	27	224
12 years	145	1,647	120	1,356	21	230
13 years	173	2,086	134	1,655	32	337
14 years	186	2,187	156	1,853	26	285
15 years	184	2,095	160	1,820	22	261
16 years	178	2,115	148	1,800	26	278
17 years	173	2,110	135	1,649	30	328
18 years	164	2,067	139	1,760	23	284
19 years	148	1,877	126	1,630	19	206
Female						
6 months-19 years	4,079	34,498	3,298	28,632	693	5,103
6-11 months	177	780	155	654	20	117
1 year	336	1,517	267	1,232	56	231
2 years	336	1,453	276	1,180	50	226
3 years	366	1,472	301	1,181	52	227
4 years	396	1,484	315	1,212	73	234
5 years	364	1,535	287	1,274	73	242
6 years	135	1,659	100	1,341	30	257
7 years	157	1,747	119	1,417	34	264
8 years	123	1,472	103	1,257	19	208
9 years	149	1,892	123	1,587	24	290
10 years	136	1,684	114	1,427	21	247
11 years	140	1,782	113	1,469	24	274
12 years	147	1,748	118	1,453	25	237
13 years	162	1,854	125	1,494	35	333
14 years	178	2,111	146	1,799	30	276
15 years	145	2,082	117	1,745	26	302
16 years	170	2,222	142	1,887	24	280
17 years	134	1,828	109	1,515	24	289
18 years	170	2,140	138	1,787	27	282
19 years	158	2,039	130	1,724	26	287

[1]Includes all other races not shown as separate categories.

Table IV. Number of examined persons 18-74 years of age and estimated population, by race, sex, and age of examinee: United States, 1976-80

Sex and age	All races[1]		White		Black	
	Number of examined persons	Estimated population in thousands	Number of examined persons	Estimated population in thousands	Number of examined persons	Estimated population in thousands
Both sexes						
18-74 years	12,504	141,728	10,834	123,494	1,431	14,740
20-74 years	11,864	133,605	10,301	116,593	1,336	13,681
18-24 years	2,054	27,448	1,738	23,362	268	3,406
20-24 years	1,414	19,325	1,205	16,461	173	2,347
25-34 years	2,237	32,752	1,901	28,357	284	3,499
35-44 years	1,589	23,651	1,379	20,392	173	2,527
45-54 years	1,453	23,032	1,264	20,235	162	2,259
55-64 years	2,556	20,350	2,262	18,243	264	1,760
65-74 years	2,615	14,496	2,290	12,906	280	1,288
Male						
18-74 years	5,916	67,555	5,148	59,198	649	6,592
20-74 years	5,604	63,611	4,883	55,808	607	6,102
18-24 years	988	13,275	846	11,442	121	1,533
20-24 years	676	9,331	581	8,052	79	1,043
25-34 years	1,067	15,895	901	13,864	139	1,546
35-44 years	745	11,367	653	9,808	70	1,112
45-54 years	690	11,114	617	9,865	62	1,044
55-64 years	1,227	9,607	1,086	8,642	129	801
65-74 years	1,199	6,297	1,045	5,576	128	555
Female						
18-74 years	6,588	74,173	5,686	64,296	782	8,148
20-74 years	6,260	69,994	5,418	60,785	729	7,579
18-24 years	1,066	14,173	892	11,919	147	1,873
20-24 years	738	9,994	624	8,408	94	1,304
25-34 years	1,170	16,856	1,000	14,494	145	1,953
35-44 years	844	12,284	726	10,584	103	1,415
45-54 years	763	11,918	647	10,369	100	1,215
55-64 years	1,329	10,743	1,176	9,601	135	959
65-74 years	1,416	8,198	1,245	7,329	152	733

[1]Includes all other races not shown as separate categories.

reciprocals of the probability of selection for examined sample persons in the same income, age, region, and SMSA groups. The percent distribution of the nonresponse adjustment factors is shown in table V.

- *Poststratification by age, sex, and race.* The estimates of the number of examined persons were ratio adjusted within each of 75 age-sex-race cells to independent estimates, provided by the U.S. Bureau of the Census, of the population as of March 1, 1978, approximate midpoint of the survey. The ratio adjustment used a multiplication factor in which the numerator was the U.S. population and the denominator was the sum of the weights adjusted for nonresponse for examined persons. This ratio estimation process brings the population estimates into close agreement with the U. S. Bureau of the Census estimates of the civilian noninstitutionalized population of the United States. In general, it reduces sampling errors of NHANES II estimates.

Nonresponse bias

In health examination surveys such as NHANES, there exists the potential for three levels of nonresponse: household interview nonresponse, examination nonresponse, and item nonresponse. Household interview nonresponse occurs when the household medical history questionnaire is not completed. Examination nonresponse occurs when sample persons who respond to the household questions do not come to the examination center for an examination. Item nonresponse results when sample persons, interviewers, or examiners do not complete some portion of either the household interview questionnaires or the examination protocol. Intense efforts were undertaken during NHANES II to develop and implement procedures and inducements that would reduce all types of nonresponse and thereby reduce the potential for bias in the survey estimates. These procedures are discussed in *Vital and Health Statistics*, Series 1, No. 15.[1]

Table V. Percent distribution of nonresponse adjustment factors: Second National Health and Nutrition Examination Survey, 1976-80

Size of factor	Percent distribution
Total	100.0
1.00-1.24	26.8
1.25-1.49	54.8
1.50-1.74	10.9
1.75-1.99	4.4
2.00-2.49	2.2
2.50-2.99	0.9

NOTE: A list of references follows the text.

In NHANES II, the medical history interview nonresponse was 9 percent, and, despite intense efforts to reduce the number of examination nonrespondents, an additional 18 percent of the 27,801 persons selected for NHANES II were not examined (table II). However, a comparison of the 1976 National Health Interview Survey and NHANES II[27] suggests that the nonresponse bias for some health-related variables was not large because selected interview items in NHANES II data agree so closely with comparable items in the 1976 NHIS data. The 1976 NHIS was used for comparison because it included data on diabetes, which was also of interest in NHANES II, and because the nonresponse rate was 4 percent. The author assumed that the 4-percent nonresponse was randomly distributed.

Data from earlier studies also suggest that no substantial nonresponse bias exists. An analysis of data on examined and nonexamined (but interviewed) persons was done using the first 35 stands of the first National Health and Nutrition Examination Survey (NHANES I).[28] The two groups were found to be quite similar with respect to the health characteristics that were compared. In another study of examined and nonexamined persons selected for participation in NHANES I, no differences were found between the two groups with respect to health-related variables.[29] In another study,[30] factors relating to response in Cycle I of the National Health Examination Survey of 1960-62 were investigated. It was found that 36 percent of the nonexamined persons in that survey viewed themselves as being in excellent health, compared with 31 percent of examined persons. A self-appraisal of poor health was made by 5 percent of nonexamined persons and by 6 percent of those who were examined.

In a different study of Cycle I,[31] comparisons between two extreme groups—those who participated in the survey with no persuasive effort and those who participated only after a great deal of persuasive effort—indicated that differences between the two groups generally had little effect on estimates based on numerous selected examination and questionnaire items. These findings were interpreted as evidence that no large bias exists between the two groups for the items investigated, and they were offered as further support for the belief that little bias is introduced into the findings because of differences in health characteristics between examined and nonexamined persons. As shown in table II, response rates differ by age; however, the number of interviewed and examined sample persons was poststratified to agree with U.S. Bureau of the Census population estimates to account for such differences.

Missing data

In examination surveys, information is lost not only through the failure to examine all sample persons but also from the failure to obtain and record all items of information for examined persons. Age, sex, and race were known for every examined person. However, one or more of the anthropometric measurements were not available for a number of examinees. The extent of these missing measurements is indicated in table VI.

Table VI. Number of examined persons 6 months-74 years of age with missing anthropometric measurements: Second National Health and Nutrition Examination Survey, 1976-80

Measurement	Number
Bitrochantric breadth	102
Elbow breadth	50
Mid-upper arm circumference	68
Chest circumference:	
Erect	60
Supine	45
Triceps skinfold	163
Subscapular skinfold	281
Sitting height	123
Weight	26
Height	64
Handedness	465

Imputation process

Estimates for missing anthropometric data were generally made on the basis of a multiple-regression type of decision, substituting for the missing measurements those of an individual who was of the same age, sex, and race and who had other dimensions similar to those available for the examinee with incomplete data. When no anthropometric data were available for an examined person, a respondent of the same age-sex-race group was selected at random and his or her measurements were assigned to the nonexamined person. However, handedness, chest circumference, crown-rump length, and recumbent length were not imputed.

Skinfold thickness values were imputed if the skin was so tightly bound to the underlying muscle that the technician could not pick it up into a double fold. The technician recorded that he or she was unable to read the skinfold thickness measurement, rather than implying that the skinfold existed but was so small that it measured zero.

Measures of variability

Because the statistics presented in this report are based on a sample, they may differ from the figures that would have been obtained if a complete census had been taken using the same survey instruments, instructions, interview and examination personnel, and procedures. The probability design of this survey permits the estimation of standard deviations and errors, although the highly clustered, multistage probability sample design must be taken into account. The reader should be aware that estimates of variances and standard errors from this type of design are different from and generally larger than standard errors calculated under the assumption of simple random sampling.

Standard deviations

The standard deviation is a measure of the dispersion of the observations in a population. It is useful in describing the width of the distribution of the values in a population. This measure can usually be estimated from a probability

NOTE: A list of references follows the text.

sample. As estimated in this report, the standard deviation also reflects part of the variation that arises in the measurement process. If the values follow a normal (that is, Gaussian) distribution in a population, as the stature measurements do, then 1 standard deviation above and below the mean encompasses approximately 68 percent of the distribution; 2 standard deviations, about 95 percent; and 2½ standard deviations, about 99 percent. The estimates of standard deviations presented in the detailed tables were calculated using the sample weights.

Variance estimation

Because of the sample design and estimation procedures used in NHANES II, special procedures should be used to analyze data from this survey. The theory for the procedures and a design-based analytic approach to data from NHANES were presented in a monograph designed to aid users of data from NHANES I.[32] The purpose of this section is to provide information and guidance in variance estimation for analysis of NHANES II body measurement data.

A design-based approach is used; that is, the sample design is taken into account in variance estimation procedures. Two aspects of the NHANES design must be taken into account: One is the sample weights, the other is the complex sample design. Sample weights and the strata and pseudo primary sampling units from the sample design are needed to estimate variance and test for statistical significance.

Sample weights and variance estimation—Each person in the sample represents a large number of people in the U.S. population. If each sample person represented the same number of people in the population (that is, if they had equal probabilities of selection), the data could be used without weights to study relationships. Because they do not, the sample weights, which incorporate the selection probabilities, a nonresponse adjustment, and poststratification, must be used to produce correct population estimates.

Sample design and variance estimation—The need for incorporating the sample design is not as readily apparent as the need for incorporating weights. Most methods of statistical analysis taught in classes depend on the assumption of simple random sampling. In surveys with complex sample designs, the assumption of simple random sampling is seldom appropriate. It usually leads to estimating smaller variances than those estimated taking the complex sample design into account. The smaller variances lead to more apparently statistically significant differences than would be found using the complex sample design.

The design effect is defined as the ratio of the variance of a statistic from a complex sample (CS) to the variance of the same statistic from a simple random sample (SRS) of the same size; that is,

$$\text{Design effect} = \frac{\text{Variance}_{CS}}{\text{Variance}_{SRS}}$$

The design effect is often used to show the impact of the complex sample design on variances. If the design effect is near 1, the complex sample design has little effect on the variances, and one could consider assuming simple random sampling for the analysis. However, design effects in NHANES I and II were rarely near 1 and their size was inconsistent.

The design effects shown in table VII are the averages of design effects for the age groups usually presented in Series 11 publications in the *Vital and Health Statistics* series. The computer program SESUDAAN[33] was used to compute the age-specific design effects that are the basis for the average design effects. Estimates for large age

NOTE: A list of references follows the text.

Table VII. Estimated design effects, by demographic classification and anthropometric measurement: Second National Health and Nutrition Examination Survey, 1976-80

Anthropometric measurement[1]	Mean or proportion	Race-sex group						
		Total	All males	White males	Black males	All females	White females	Black females
		Design effect						
Weight (6 months-74 years)	$\bar{x}$	1.4	1.3	1.4	1.0	1.4	1.5	1.3
Body mass index (2-74 years)	$\bar{x}$	1.4	1.3	1.3	1.3	1.5	1.5	1.3
Height (2-74 years)	$\bar{x}$	1.4	1.7	1.7	1.1	1.4	1.5	1.3
Recumbent length (6 months-3 years)	$\bar{x}$	1.3	1.4	1.4	1.0	1.8	1.8	1.0
Sitting height (2-74 years)	$\bar{x}$	1.9	1.9	1.8	1.3	1.8	1.9	1.4
Crown-rump length (6 months-3 years)	$\bar{x}$	1.9	2.4	2.8	1.0	1.5	1.5	1.0
Triceps skinfold (6 months-74 years)	$\bar{x}$	2.0	1.6	1.6	1.4	2.0	1.9	1.4
Subscapular skinfold (6 months-74 years)	$\bar{x}$	2.0	1.7	1.7	1.4	1.7	1.6	1.4
Mid-upper-arm circumference (6 months-74 years)	$\bar{x}$	2.0	1.7	1.8	1.2	1.8	1.7	1.3
Chest circumference:								
2-7 years, erect	$\bar{x}$	5.1	5.7	4.4	3.4	2.0	1.8	1.1
6 months-3 years, supine	$\bar{x}$	3.2	2.7	2.6	1.9	2.3	1.7	1.5
Head circumference (6 months-7 years)	$\bar{x}$	3.3	3.5	2.1	4.3	1.7	2.0	1.1
Bitrochanteric breadth (6 months-74 years)	$\bar{x}$	2.9	2.4	2.3	1.2	2.0	2.0	1.4
Elbow breadth (6 months-74 years)	$\bar{x}$	2.5	2.3	2.3	1.2	2.6	2.5	1.4
Overweight (20-74 years)	p	1.3	1.4	1.4	1.2	1.4	1.3	1.5

[1] Ages in parentheses indicate the age group for which measurement was obtained.

ranges, such as "all ages combined" or "all adults," are not included in these averages.

The statistical approach used for computing the complex sample variances in SESUDAAN is a first-order Taylor approximation of the deviations of estimates from their expected values. This method for obtaining approximations to complex sample variances in large samples is well known.[34] Woodruff[35] presented applications of this technique to sample surveys.

Statistical computing and variance estimation—In order to eliminate the many tables that would be required to present variance estimates for all the statistics in this report, a "variance smoothing" approach has been used for the presentation of estimated variances for the anthropometric measures. By using this approach, a variance estimate for a sample mean ($\bar{x}_i$) is produced in two steps. First, the simple random sample estimate of variance is calculated by squaring the standard deviation of the sample (S_{x_i}) and dividing it by the size of the sample (n_i). This step is summarized by the following equation:

$$\text{Variance (simple random sample)} = (S_{x_i})^2/n_i .$$

Second, the simple random sample estimate of variance is multiplied by a design effect (defined as the effect that the complex sampling design has on the magnitude of the variances) that corresponds to the variable of interest (such as type of body measurement by race and sex) to produce the complex sample variance estimate of ($\bar{x}_i$).

The complex sample variance of a percent can be determined in a similar way. Assuming simple random sampling, the variance for the percent is calculated by converting the percent to a proportion and using the standard formula for the variance of a proportion:

$$\text{Variance (simple random sample)} = pq/n.$$

This variance (simple random sample) multiplied by the design effect provides an estimate of the variance from a complex sample of the same sample size (n).

Example—The following example is illustrative. The variances for the mean sitting heights of black and white males ages 18-24 years (denoted by $\bar{x}_B$ and $\bar{x}_W$, respectively) are estimated using the following calculations:

- For white males 18-24 years,
  Variance (simple random sample) = $(3.5)^2/846 = 0.014$.
- For black males 18-24 years,
  Variance (simple random sample) = $(3.4)^2/121 = 0.096$.

Thus, the estimated complex sample variances are as follows:

- For white males,
  Variance (complex sample) = $(1.8)(.014) = 0.025$.
- For black males,
  Variance (complex sample) = $(1.3)(.096) = 0.125$.

Statistical testing and variance estimation—Once the complex sample variance has been calculated using the design effect, one can proceed with the standard procedures for statistical hypothesis testing.

In order to test the difference in mean sitting height between black males and white males ages 18-24 years, the usual test (in which the estimated variances are treated as constants and the covariance between the means is ignored) is defined as

$$Z = (\bar{x}_W - \bar{x}_B)/\sqrt{\text{VAR}(\bar{x}_W) + \text{VAR}(\bar{x}_B)}.$$

Using the appropriate means (table 20) and the variances described previously, the Z statistic for this example is

$$Z = (93.3 - 89.7)/\sqrt{0.025 + 0.125}$$
$$= 9.3 \ (p < 0.01).$$

The user should recognize that this approach does not incorporate the variance-covariance matrix. In most cases, this leads to a slight overestimate of the variance because the covariance terms that are subtracted in the variance of a ratio are usually positive. Thus, in a borderline case, the null hypothesis would be less likely to be rejected using this approach than using the estimated covariance approach.[36]

Age adjustment

The age-adjusted percents presented in this report were calculated by the direct method and were adjusted to the age distribution of the civilian noninstitutionalized population in the United States at the midpoint of NHANES II. Because age distributions differ by sex and race, comparisons are made using age-adjusted values. Age-adjusted data for sex and race groups can be compared directly because the values assume identical age distributions for all subgroups. These adjusted or standardized values are meaningful only when comparing subgroups of the population to control for confounding by age.

NOTE: A list of references follows the text.

Appendix II
Data presentation and reliability

The estimates in this report are numerical descriptions of the distribution of body measurements and overweight in certain population groups. Among the descriptive measures are means, percentiles, percents, prevalence rates, cumulative percent distributions, and standard deviations.

The mean value for a population group is the sum of each value times its weight in the group divided by the sum of the weights for that group. In calculating age-adjusted means, it is assumed that each group has the same age distribution; thus adjusting for the effect of age allows comparison of combined mean values among population groups.

A percentile is a value that indicates the percentage of people in a population with a value less than or equal to the percentile value. The prevalence rate for a population is the proportion of persons who are believed to be at risk for a particular condition or disease in the population or who exhibit the condition, disease, or risk characteristic at a given time.

The standard deviation is an estimate of the degree to which values vary in a population. A large standard deviation indicates that the distribution of values is broad and flat; a small estimated standard deviation implies a narrow, spiked distribution. For further discussion of these measures, see appendix I.

The statistical guidelines used in this publication for reporting means, standard deviations, and percentiles are as follows.

Means and percents:

- If the sample size in the cell was less than 25, the value of the estimated sample mean or percent is not reported.
- If the sample size was 25-44, the sample mean or percent is reported with an asterisk (*) beside it to indicate that the statistic does not meet the reliability standard.
- If the sample size was 45 or more, the sample mean or percent is presented without caveat.

Standard deviations:

- If the sample size in the cell was less than 25, no estimated values for the standard deviation are presented.

Percentiles:

- The following sample sizes were required for the presentation of percentile estimates given in this report:

Sample size	*Percentile*
10	50th
20	25th and 75th
35	15th and 85th
50	10th and 90th
100	5th and 95th

- If these minimum sample sizes were not met, an asterisk is shown in the cell.

Appendix III
Demographic and socioeconomic terms

Age—Two ages were recorded for each examinee: Age at last birthday prior to the time of examination and age at the time of the Census interview. The age criterion for inclusion in the sample used in this survey was defined as age at the time of Census interview. The adjustment and weighting procedures used to produce national estimates were based on age at time of interview. Data in the detailed tables and text of the report are also shown by age at time of interview.

Race—For each individual, race was observed and recorded by the interviewer as "white," "black," or "other." "Other" includes Japanese, Chinese, American Indian, Korean, Eskimo, and all races other than white and black. Persons of Mexican descent were included with "white" unless definitely known to be American Indian or of another race. Black persons and persons of mixed black and other parentage were recorded as black. When the interviewer was uncertain of the person's racial background, the person was asked about his or her race. If the person was uncertain, the race of the father was recorded.

Appendix IV
Recording form

FORM HRA-12-7
(FORMERLY HRA-12-7A)
(2-19-76)

Form Approved: O.M.B. No. 68-R1502

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
HEALTH RESOURCES ADMINISTRATION
NATIONAL CENTER FOR HEALTH STATISTICS

BODY MEASUREMENTS
HEALTH AND NUTRITION EXAMINATION SURVEY II

NOTICE – All information which would permit identification of the individual will be held in strict confidence, will be used only by persons engaged in and for the purposes of the survey, and will not be disclosed or released to others for any purpose.

a. Deck No.	b. Examiner No.	c. Recorder No.	d. Age
301	(101) — —		Months — — OR Years — —

NOTE – Measurement in cm. unless otherwise specified.
Measure left side also if the last digit of examinee's sample number is 3 or 6.

1. Bitrochanteric breadth	(102) — — .—	
2. Elbow breadth	Right side (103) — — .—	Left side (104) — — .—
3. Upper arm girth	Right side (105) — — .—	Left side (106) — — .—
4. Chest circumference – Midpoint		
a. Erect (*Ages 2 through 7*)	(108) — — .—	
b. Supine (*Ages 3 and under*)	(109) — — .—	
5. Head circumference (*Ages 7 and under*)	(110) — — .—	
6. Triceps skinfold (mm.)	Right side (111) — — .—	Left side (112) — — .—
7. Subscapular skinfold (mm.)	Right side (113) — — .—	Left side (114) — — .—
8a. Sitting height (*Ages 2 and over*)	(115) — — .—	
b. Crown rump (*Ages 3 and under*)	(116) — — .—	
9. Is examinee right or left handed?	(117) 1 ☐ Right handed 2 ☐ Left handed 3 ☐ Uses both hands about the same 4 ☐ Not sure	
10. Weight (lbs.)	(118) — — — .— —	Sample number (100) No. 57191

11a. Standing height (cm.) *(Ages 2 and over)*	(119) ___ ___ ___.___	
b. Standing height (inches) *(Ages 2 and over)*	___ ___ / ___	
c. Recumbent length (cm.) *(Ages 3 and under)*	(120) ___ ___ ___.___	
d. Recumbent length (inches) *(Ages 3 and under)*	___ ___ / ___	
12. Cervical Spine *(Ages 18 and over)*	Right	Left
a. Rotation (degrees)	(121) ___ ___ ___	(122) ___ ___ ___
Severity of pain *(Mark one box in each column)*	(123) 0 ☐ None 1 ☐ Doubtful 2 ☐ Minimal 3 ☐ Moderate 4 ☐ Maximal	(124) 0 ☐ None 1 ☐ Doubtful 2 ☐ Minimal 3 ☐ Moderate 4 ☐ Maximal
	Right	Left
b. Lateral bending (degrees)	(125) ___ ___ ___	(126) ___ ___ ___
Severity of pain *(Mark one box in each column)*	(127) 0 ☐ None 1 ☐ Doubtful 2 ☐ Minimal 3 ☐ Moderate 4 ☐ Maximal	(128) 0 ☐ None 1 ☐ Doubtful 2 ☐ Minimal 3 ☐ Moderate 4 ☐ Maximal
13. Lumbar Spine *(Ages 18 and over)* Flexion C1 to S1 a. Erect (cm.)	(129) ___ ___ ___	
b. Flexed (cm.)	(130) ___ ___ ___	

Notes

Sample number
№ 57191

Appendix V
Body measurement equipment and procedures

The information presented here is excerpted from Examination Staff Procedures Manual for the Health and Nutrition Examination Survey, 1976-1979, Part 15a.[37]

Equipment

Anthropometer parts: 2 sets of four sections each, 4 sliding arms, 1 circular metal base
Footstool
Sliding calipers
Skinfold calipers
Steel tape
Fiberglass tape
Special height scale
Polaroid land camera
Special light attachment for camera
Self-balancing weight scale
Set of weights for calibration of weight scale (one 25-lb weight and five 50-lb weights)
Children's measuring board

General

Two anthropometers are provided, one as a spare. Each anthropometer consists of a rod in four sections with two caliper arms. One of the arms is fixed to the top end of the instrument; the other slides. The lower two sections are used for sitting heights and will be mounted in the circular metal base. The top section is used for bitrochanteric breadth. The remaining section can be used when required for measuring sitting heights of large examinees. The sliding calipers used to measure elbow breadth may become too loose; if so, use candle wax to tighten them.

With these anthropometers there are three sources of error which must be checked daily. The chief technician should see that:

1. The anthropometer numbers read in the proper sequence and the movable arms slide freely without slipping;
2. When mounted in the base, the instrument stands vertically without support; and
3. The bottom end of the anthropometer is perfectly flush with the undersurface of the metal stand. (Do not handle anthropometers by the upper ends alone as this tends to wrench them from their bases.)

NOTE: A list of references follows the text.

Measuring and recording

The examiner takes each measurement and says it to the recorder. The recorder repeats the number, records it in the proper space, and says the name of the next measurement. The examiner should keep the measuring instrument set until the recorder repeats the number. If the anthropometer becomes unset in any way before the measurement is read back, the measurement should be made again. On standing measurements the recorder will ensure that the subject stands erect. For the standing height measurement the recorder should check the height photo to be sure of the accuracy of the technician's reading.

A recorder is important because he helps ensure the accurate recording of the measurement while also helping the examiner position the examinee correctly. The recorder also assists the examiner by seeing that the steel tape is horizontal with proper tension when girths are measured. The recorder, having had the same training as the examiner, should recognize an error in measurement or in reading from the wrong scale. (The anthropometer has two scales—ascending and descending.) When he does see an error he should call it to the examiner's attention and have the mistake corrected.

All measurements are to be taken to the nearest tenth of a centimeter, except skinfolds which are to be taken to the nearest half of a millimeter. If the digit to the right of the last digit to be recorded appears to be exactly 5, the last digit to be recorded should be raised one unit if it is odd or stay unchanged if it is even. If a skinfold is too tight to be measured, write "too tight" in the recording space for that measurement (but, do try to get the subject to relax for the measurement).

The original examiner and recorder will complete an examination once it is started.

The measurements taken consist of various heights, breadths, circumferences, and skinfolds. All are to be taken on the right side of the body if possible. When any of the measurements cannot be taken on the right side because of casts, amputations, or any other reasons, these particular measurements should be made on the left side and the reasons noted on the recording page.

When the examinee's sample number ends in "3" or "6," four of the measurements are to be taken on the left side as well as the right side unless there is some reason it is impossible to take them on the left side. In this instance,

again, the reason not taken should be noted on the body measurement page.

Procedure for measuring examinees 8 years and over

Record on the control record the examiner number and the time the procedure begins. Record on the body measurement form the examiner and recorder numbers.

Have the examinee stand with his feet together in the standard erect position for the following five measurements.

1. *Bitrochanteric breadth*—With the top section of the anthropometer measure to the nearest 0.1 cm the maximum breadth of the body at the level of the greater femoral trochanters. Compress the soft tissue over the trochanters as much as possible by applying pressure on the caliper arms near where they touch the body (not where the arms are attached to the anthropometer). Take this measurement over the examinee's gown.
2. *Elbow breadth*—Have the examinee extend his right arm forward until it is perpendicular to his body. Bend the arm so the angle at the elbow forms 90° with the fingers pointing up and the dorsal part of the wrist toward the examiner. With the sliding calipers along the axis of the upper arm, measure to the nearest 0.1 cm the greatest breadth across the elbow joint. This is a bone to bone measurement across the epicondyles of the humerus and is usually taken at an oblique angle because the inner condyle is lower than the outer condyle. Be careful that the calipers do not slide off the epicondyle.
3. *Mid-upper arm circumference*—With the examinee's right arm flexed 90° at the elbow, use the fiberglass tape to measure to the nearest 0.1 cm the distance from the outer edge of the acromial process to the olecranon process of the ulna. Mark the outer edge of the acromial process first, then place the tape on the mark and locate the midpoint between the acromial and olecranon processes. Mark this midpoint carefully. This is the level at which both the arm girth and triceps skinfold are measured.
4. *Triceps skinfold*—Have the examinee relax his shoulder and let his arm hang freely at his side. Mark a point on the right mid-triceps in the same plane as the mid-humeral point used for the upper arm girth and perpendicular to the olecranon process of the ulna. Grasp the skin and subcutaneous tissue firmly with thumb and forefinger approximately 1 cm above this level and draw directly back from the body making sure that no muscle tissue is included in the fold. The crest of the fold should be parallel to the long axis of the arm. Apply the calipers at the level of the point marked above and measure the fold to the nearest ½ mm without releasing the fingers. Take a second measurement; if the two disagree, continue taking measurements until you get two that agree to within 1 mm.
5. *Subscapular skinfold*—Have the examinee relax his shoulders and arms. Palpate the inferior angle of the scapula. Grasp a fold of skin and subcutaneous tissue directly above the angle firmly with the thumb and forefinger and draw straight back from the body making sure that no muscle tissue is included in the fold. The fold should parallel natural cleavage lines of the skin which are often lines about 45° from the horizontal extending medially upward. Apply the calipers about 1 cm below the thumb and forefinger and measure the fold to the nearest ½ mm without releasing the fingers. Take a second measurement; if the two disagree, continue taking measurements until two agree to within 1 mm.
6. *Sitting height*—Have the examinee sit as far back on the measuring table as he can so that the backs of his knee joints (popliteal fossae) are at the front edge of the table. Have him sit erectly with his eyes straight ahead and the infraorbital meatal line parallel to the table top (i.e., eyes in horizontal plane looking straight ahead). Check with the recorder on the examinee's position before making the measurement. Then bring the caliper arm down firmly against the midline of the examinee's head. (Note: you might have to compress some hairstyles.) Take the measurement to the nearest 0.1 cm with your eyes at the same level as the caliper arm. Do not make the reading at an angle. Shorter technicians should use the stool available in the measuring room as an aid.
7. *Handedness*—Ask the examinee whether he is right-handed or left-handed and record his answer by checking the appropriate box.
8. *Weight*—
   a. Examinees who weigh 250 pounds or less:
      (1) Ask the examinee to stand still on the scale (in slippers).
      (2) Wait until the scale pointer stops moving.
      (3) Insert the bottom of the body measurement page on the case record in the slot at the front of the scale's printer.
      (4) Depress the bar on the front of the printer to record the weight on the record to the nearest quarter of a pound.
      (5) Check to be sure that the recorded weight is legible.
      (6) Record weight on the body measurement form in the space provided (Item 10) near the bottom of the form. Always record the weight in five digits, fill in the blank spaces with zeroes as appropriate, e.g., 98.5 should be entered as 098.50.
   b. Examinees who weigh more than 250 pounds:
      Since the scale printer will only print to 250 pounds, the following procedure must be followed if an examinee weighs more than 250 pounds:
      (1) If the examinee weighs more than 250 pounds, but no more than 350 pounds:

(a) Move the bottom weight on the notched bar on the front of the scale to 100 pounds (far right);
(b) Weigh the examinee and stamp his case record just as though he weighed less than 250 pounds;
(c) Add 100 pounds to the stamped weight total on the body measurement page; and then
(d) Record the total weight (stamped weight plus 100 pounds) in the proper space on the body measurement page.

(2) If the examinee weighs more than 350 pounds, but no more than 400 pounds:
(a) Move the bottom weight on the notched bar to 100 pounds;
(b) Move the top weight on the numbered bar to 50 pounds (far right);
(c) Weigh the examinee and stamp his case record just as though he weighed less than 250 pounds;
(d) Add 150 pounds to the stamped weight total on the body measurement page; and then
(e) Record the total weight (stamped weight plus 150 pounds) in the proper space on the body measurement page.

(3) If the examinee weighs more than 400 pounds ask him to estimate his weight.

9. *Height—*
a. Have the examinee stand erect with his back and heels against the upright bar of the height scale, ("Stand up tall" or "Stand up straight") with feet together and head in the Frankfort Horizontal Plane ("Look straight ahead"). Grasp the examinee under the mastoid processes and lift him gently upward.
b. Bring the horizontal bar down snugly to the examinee's head.
c. Stick one of the sample number labels next to the tape on the upright bar so the number label can be read when the height scale is photographed.
d. Photograph the height measurement and ask the examinee to step aside.
e. Process the film and place the sample number label from the height scale on the photo. Do not cover up the scale or the photographed sample number.
f. Record the standing height on the body measurement form as read from the photograph in the space provided (Item 11). This should be recorded in four digits to the nearest mm (0.1 of cm) from the metric scale. If there are fewer than four digits, fill in the blank spaces with zeroes as appropriate, e.g., 99.0 should be 099.0. When the measurement is exactly at the half-way point between 2 mm round up if the preceding whole number is odd and round down if even.

Procedure for measuring children under 8 years old

1. *Bitrochanteric breadth*—Use the same procedure as that for older examinees.
2. *Elbow breadth*—With child standing or sitting, use the same procedure as that for older examinees.
3. *Mid-upper arm circumference*—The arm must be fully extended and as relaxed as possible. Otherwise, use the same procedure as that for older examinees.
4. *Chest circumference*
a. *2 years old and over, standing*—Using the steel tape, measure to the nearest 0.1 cm the chest circumference at the level of the nipple line at midrespiration, with the examinee breathing normally and with his arms relaxed at the sides. The tape should pass around the chest so that it is at right angles to the longitudinal axis of the body.
b. *3 years old and under, supine*—Measure the child lying supine on the infant measuring board. Measure the circumference with a steel tape at nipple level, the tape being placed at right angles to the longitudinal axis of the body. The measurement is taken to the nearest 0.1 cm at normal midrespiration.
5. *Head circumference*—The child can be either sitting or standing. Steady the child's head and measure its circumference to the nearest 0.1 cm by placing the steel tape firmly around the frontal bones (forehead) just above but not including the supra-orbital ridges, passing it around the head just above the ears on each side, and laying it over the maximum occipital prominence at the back of the head. The tape should be pulled firmly to compress the hair (and underlying soft tissues).
6. *Triceps skinfold*—With the child either standing or sitting (preferably standing) use the same procedure as that for older examinees.
7. *Subscapular skinfold*—With the child either standing or sitting (preferably standing) use the same procedure as that for older examinees.
8. *Sitting height (2 years old and over)*—Have the child sit erectly on the measuring table with his eyes directed straight ahead (the eyes should be in a horizontal plane looking straight ahead). The child should sit as far back on the table as he can so that the backs of his knee joints (popliteal fossae) are in contact with the front edge of the table. *Check with the recorder on the child's position before making the measurement.* Younger children need to be encouraged to sit straight and you might have to give support to a younger child, i.e., straighten out his back by placing one hand (right) over the upper part of the chest and the other hand (left) over the lumbar area, and pushing gently. After checking the child's position with the recorder, bring the caliper arm firmly against the midline of the examinee's head. Note: you might have to compress some hairstyles. Take the measurement to the nearest 0.1 cm with your eyes at the same level as the caliper arm.

9. *Crown-rump length (children 3 years old and under)*—Measure on the infant measuring board with the child lying on his back with his knees bent to a right angle. One technician holds the child's head in the Frankfort plane (i.e., eyes straight ahead, in this case straight upward so that the plane they form is parallel to the movable foot board) and applies gentle traction to bring the head into contact with the fixed head board. The second technician supports the child's legs under the flexed knees and brings the movable foot board to rest against the child's buttocks with firm pressure.
10. *Weight*—Use the same procedure as that for older examinees.
11. *Standing height (2 years old and over)*—Use the same procedure as that for older examinees.
12. *Recumbent length (children 3 years old and under)*—Measure on the infant measuring board with the child lying supine. One technician holds the child's head in the Frankfort plane and applies gentle traction to bring the head into contact with the fixed head board. The second technician holds the child's legs roughly midway between the ankles and knees, with the toes pointing directly upward. Then, while applying downward pressure to the legs (to prevent the knees from flexing), the technician brings the movable foot board to rest firmly against the child's heels. You may need extra help (third person) for restless infants under 2 years to make measurements as quickly as possible and maintain accuracy.

Field checks

1. *Calipers*—Calipers must be checked before each stand and once a week during the stand against a metric tape. The skinfold caliper should be checked daily before use. To do this place the standards between the caliper arms and see that the reading on the scale corresponds to the length of the standard. If the calipers are not right, adjust them by pressing firmly on the arms. If they are 1 mm or more out of calibration, use the other available calipers and return the one out of calibration to headquarters.
2. *Height*—
   a. At the beginning and end of each stand, check to be sure that:
      (1) The upright bar and tape measure have not been changed or damaged. Check the accuracy of the tape with the sitting height anthropometer. Set the sitting height anthropometer at about the middle of the height scale base. Turn the movable anthropometer's caliper arm upside down. Take the picture of the height measurement. Read the anthropometer measurement the same way as for sitting height and record the reading on the back of the photograph. Send the photograph to the Chief, Quality Control Section, headquarters. The photograph should include the stand number and location, date, number of the person who checked the scale, anthropometer reading, and whether it was the beginning or end of the stand. If the measurement does not agree with the sitting height anthropometer, adjust the sighting window until the measurement does agree with the sitting height anthropometer setting. Take a picture after the adjustment and send the photograph to headquarters.
      (2) The horizontal bar is firmly attached to the upright section that slides on the upright bar.
      (3) The camera and light are working to produce optimum photos. Any necessary repairs and adjustments should be made as soon as possible. This equipment is the only means we have for measuring height.
   b. Check daily that the standing height measurer operates smoothly.
3. *Weight*—At the beginning of each stand before the examinations begin and again at the end of the stand, the scale should be calibrated at zero and at intervals of 25 pounds all the way up to 250 pounds. If the scale is out of calibration by a constant amount at all calibration weights, correct the error with the adjustment knob on the left side of the scale. If the trailer is not level, the scale will have to be zeroed. If adjusted to lower than 0.00 it will read E.EE; but when adjusted correctly it will read 0.00. After zeroing the scale properly, stamp zero on any ordinary sheet of 8x10½ paper. Then weigh the calibration weights in increments of 25 pounds, starting with 25 pounds and going up to 250 pounds and stamping each weight on the paper. Altogether, 11 recordings should be made on the paper. The paper with the recorded weights should also include the stand number and location, date, the number of the person doing the check procedure, and whether it was the beginning or end of the stand. Mail the recording immediately to the Chief, Quality Control Section, headquarters.

   If the scale is out of calibration by ½ pound or more at three stations, have it repaired.

   The ribbon for printing the weight will need occasional replacement (approximately every 6 months). When the printing starts getting dim, call a Toledo Scales dealer for replacement ribbon.

   At the end of each stand, turn the scale lock to a vertical position for transit. The tech responsible for the body measurement station should weigh himself daily to roughly check the accuracy of the weight scales. If there is any reason to believe the scales are not accurate, a complete recalibration should be done. The recording of the calibration should be sent to headquarters.
4. *Anthropometers*—Check daily to see that the sitting height anthropometer is vertical on the table top and that the caliper arm is perpendicular to the bar and not bent. See that the arms of the bitrochanteric breadth

anthropometer are perpendicular to the bar and not bent.

5. *Log book*—In a book that stays with the trailers write in the following headings:

   Date, Technician Number, Measuring Drive Number 0 mm, 10 mm, 20 mm, 30 mm, 40 mm, 50 mm, Counter Reading, and Tape Measure Reading.

   Record daily in the log book the required identifying information under the appropriate headings. Then record the skinfold caliper calibration reading for each standard. Finally, move the foot board of the baby board as close as possible to the head board; record in the book the counter reading. Measure with tape measure the distance between head and foot boards, and record that reading.

6. *Cleaning of equipment*—At the beginning of each stand the anthropometer, calipers, and tape measure should be cleaned with vinegar.

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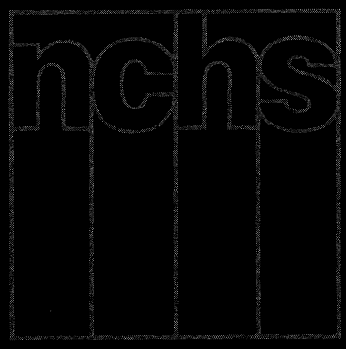

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United States, 1976–80

Data From the National Health Survey
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