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Vital and Health Statistics

Series 11, Number 246

May 2002

2000 CDC Growth Charts for the United States: Methods and Development

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention • National Center for Health Statistics

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Data From the National Health
Examination Surveys and the National
Health and Nutrition Examination
Surveys

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

Hyattsville, Maryland
May 2002
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Abstract

Objectives

This report provides detailed information on how the 2000 Centers for Disease Control and Prevention (CDC) growth charts for the United States were developed, expanding upon the report that accompanied the initial release of the charts in 2000.

Methods

The growth charts were developed with data from five national health examination surveys and limited supplemental data. Smoothed percentile curves were developed in two stages. In the first stage, selected empirical percentiles were smoothed with a variety of parametric and nonparametric procedures. In the second stage, parameters were created to obtain the final curves, additional percentiles and z-scores. The revised charts were evaluated using statistical and graphical measures.

Results

The 1977 National Center for Health Statistics (NCHS) growth charts were revised for infants (birth to 36 months) and older children (2 to 20 years). New body mass index-for-age (BMI-for-age) charts were created. Use of national data improved the transition from the infant charts to those for older children. The evaluation of the charts found no large or systematic differences between the smoothed percentiles and the empirical data.

Conclusion

The 2000 CDC growth charts were developed with improved data and statistical procedures. Health care providers now have an instrument for growth screening that better represents the racial-ethnic diversity and combination of breast- and formula-feeding in the United States. It is recommended that these charts replace the 1977 NCHS charts when assessing the size and growth patterns of infants, children, and adolescents.

Keywords: *growth charts • height • length • weight • body mass index • head circumference • NHANES*

2000 CDC Growth Charts for the United States: Methods and Development

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Introduction

The National Center for Health Statistics (NCHS) growth charts that have been in use since 1977 have been revised. The revised version, known as the Centers for Disease Control and Prevention (CDC) Growth Charts: United States released in 2000, is recommended for use in clinical practice and research to assess size and growth in U.S. infants, children, and adolescents (1).

The 2000 CDC Growth Charts consist of a set of charts for infants, birth to 36 months of age and a set of charts for children and adolescents from ages 2 to 20 years. The charts for infants include sex-specific smoothed percentile curves for weight-for-age, recumbent length-for-age, head circumference-for-age, and weight-for-recumbent length; the charts for children and adolescents include weight-for-age,

stature-for-age, and body mass index (BMI)-for-age curves. The BMI-for-age charts represent a new tool that can be used by health care providers for the early identification of children who are at risk for becoming overweight at older ages. The 2000 CDC Growth Charts also include weight-for-stature charts for statures ranging from 77 to 121 cm, primarily intended for use among children from ages 2 to 5 years. A listing of the 1977 NCHS charts and the 2000 CDC charts is shown in [table A](#).

Historical Background

Anthropometric data are valuable objective indicators of attained size and physical growth in children. A variety of growth references were developed and used in the United States since the early 1900s. Most of these earlier references have considerable limitations, including lack of coverage for infants and preschool children and limited

representation of ethnic, genetic, socioeconomic, environmental, and geographic variability (2). From 1946–1976, the Stuart/Meredith Growth Charts were widely used. These charts were derived from stature and weight measurements taken on white children living near Iowa City, Iowa, or in Boston, Massachusetts, from 1930 to 1945 (3). The sample sizes were relatively small and the smoothed percentile lines were reportedly based on mathematical approximations of curves smoothed by hand (4). Thus, the data did not represent the diversity of children residing in the United States and statistical curve-fitting procedures were not used.

The impetus for the development of the 1977 NCHS Growth Charts began in 1971, when a study group sponsored by the American Academy of Pediatrics and the Maternal and Child Health Program of the Bureau of Community Health Services, U.S. Public Health Service, recommended new growth charts, based on data from the NCHS Health Examination Surveys, for the clinical assessment of infants and children (5). Subsequently, in 1974, the Food and Nutrition Board of the National Academy of Sciences made similar recommendations, emphasizing the need for new growth charts for infants and children based on nationally representative survey data, to be supplemented with data collected from infants in the Fels Longitudinal Growth Study (6). These recommendations were further supported in 1975 by a study group sponsored by the National Institute of Child Health and Human Development, National Institutes of Health (7).

Growth charts for the United States were developed by NCHS when nationally representative cross-sectional survey data became available for most of the pediatric age range (8). Data from the National Health Examination Survey (NHES) II (1963–65) for ages 6–11 years, NHES III (1966–70) for ages 12–17 years, and the first National Health and Nutrition Examination Survey (NHANES) I (1971–74) for ages 1–17 years were used to develop these charts. National survey data were not available for the period from birth to 1

Table A. Charts included in the 1977 NCHS Growth Charts and in the 2000 CDC Growth Charts

| 1977 NCHS Growth Charts* | 2000 CDC Growth Charts* |
|--|--|
| Weight-for-age Birth to 36 months 2 to 18 years | Weight-for-age Birth to 36 months 2 to 20 years |
| Length-for-age Birth to 36 months | Length-for-age Birth to 36 months |
| Weight-for-length Birth to 36 months Boys (49 to 103 cm) Girls (49 to 101 cm) | Weight-for-length Birth to 36 months Boys (45 to 103 cm) Girls (45 to 103 cm) |
| Head circumference-for-age Birth to 36 months | Head circumference-for-age Birth to 36 months |
| Stature-for-age 2 to 18 years | Stature-for-age 2 to 20 years |
| Weight-for-stature** Boys (90 to 145 cm) Girls (90 to 137 cm) | Weight-for-stature** Boys (77 to 121 cm) Girls (77 to 121 cm) |
| | BMI-for-age 2 to 20 years |

*All charts are sex-specific.

**The 1977 charts are applicable to boys with stature from 90 to 145 cm and age under 11.5 years, and to girls with stature from 90 to 137 cm and under 10.0 years of age. They are not applicable for any child showing the earliest signs of pubescence. The revised charts have no similar age or pubescence restrictions. Although the revised charts were developed for children 2 to 5 years of age, in practice they may accommodate some shorter children with chronologic ages 5.0 years and over.

year. Therefore, the national survey data were supplemented with data from the longitudinal growth study of the Fels Research Institute in Yellow Springs, Ohio. To avoid pooling multiple diverse data sets in the 1977 NCHS charts for birth to 3 years, the infant charts were based solely on the Fels data. The 14 sex-specific growth charts developed for infants birth to age 36 months and older children from ages 2 to 18 years are generally referred to as the 1977 NCHS Growth Charts (2,8,9).

In 1978 CDC produced a normalized version of the NCHS curves (10,11). The World Health Organization (WHO) subsequently recommended these normalized charts for international applications (12–14). These normalized versions of the 1977 charts are thus sometimes referred to as the NCHS/WHO, CDC/WHO, or NCHS/CDC/WHO growth charts. Following the recommendation of Waterlow, et al., this version enabled the expression of body measurements in terms of standard deviations from the median or z-scores (15). Z-scores facilitate comparisons across ages and allow the mean and standard deviation to be calculated for a group of measures. Another advantage of the

normalized charts was the ability to describe the relative status of children at extremes of the distributions.

Although the normalized charts allowed users a means to better quantify growth at the extremes, normalization does not refer to an improved instrument to qualify growth as “normal” or as a “standard” for growth. Both the 1977 smoothed percentiles and the 1978 normalized growth curves are growth references. They allow the growth status of a child, or a group of children, to be compared with that of a reference population. The 1978 normalized curves are similar to, but not identical with the 1977 smoothed percentiles.

Concerns Surrounding the 1977 Charts

Since the development of the 1977 NCHS Growth Charts, a number of concerns have been raised about various aspects of the charts and the procedures used in their development (10,16–23). Most of these concerns centered on the infant charts and were largely associated with characteristics of the Fels data. The Fels data came from a single longitudinal study of mainly formula-

fed, white middle-class infants in a limited geographic area of southwestern Ohio, collected 1929–75. In addition to not being from a nationally representative sample, the Fels observations were made at birth and 1 month, at 3-month intervals from 3 to 12 months, and at 6-month intervals from 12 to 36 months. These intervals may be inadequate to properly identify growth patterns during periods of rapid change. The Fels birthweights may not match more recent national birthweight distributions, and differences between recumbent length and stature may have been too large, suggesting limitations in the recumbent length data. Moreover, size and growth patterns of Fels infants may not adequately represent current growth patterns of combined breast- and formula-fed infants in the population (8,18,19,21,22). In addition, differences between the recumbent length measurements for infants from the Fels data and the stature measurements from the NCHS data sets lead to inconsistent percentile estimates from the 1977 charts when the transition is made from recumbent length to stature between 24 and 36 months of age. Other concerns included the limited ability to assess size and growth at extremes beyond the 5th and 95th percentiles, the absence of

weight-for-stature references for adolescents, and the inability to assess growth at ages 18 years and over (16).

The Revision

The 1977 charts were revised in part because more recent and comprehensive national data on body measurements in U.S. children were available. After the 1977 NCHS Growth Charts were developed, additional national survey data became available from the NHANES II (1976–80) beginning at 6 months of age, and from the NHANES III (1988–94) beginning at 2 months of age (24,25). During the planning of NHANES III, increasing awareness of the concerns surrounding the 1977 NCHS Growth Charts influenced the decision to oversample children ages 2 months to 6 years.

The objective of the revision process was to use improved statistical smoothing procedures, in conjunction with more comprehensive national survey data, to provide a better instrument for health care providers who evaluate the growth status of children in the United States (16). The Advance Data report summarizing the development of the revised growth charts was issued in 2000 (1). The

present report is designed to expand on the content of the initial report and provide more detailed information on the development of the revised CDC growth charts for the United States, including the process, the data sources, the statistical procedures that were followed, and the results of statistical evaluations for the revised charts.

Methods

Data Sources

The source of data for each growth chart is shown in [table B](#). The primary and supplemental data sources are summarized in [table C](#). Detailed sample sizes for the data used to create each chart, stratified by age, sex, and data source, are shown in detailed [tables 1–8](#).

National Data

The revised growth curves for the United States were developed with data collected by NCHS in five cross-sectional, nationally representative health examination surveys ([table C](#)): the NHES II (1963–65) and III (1966–70), and NHANES I (1971–74),

Table B. Source of data for each growth chart

| Chart | Age (months) or height (cm) range | Primary data sources ¹ | Supplemental data sources |
|----------------------------|-----------------------------------|-------------------------------------|---|
| Weight-for-age | Birth to 36 months | National surveys 3–5 ² | National birth certificate data from United States Vital Statistics ² |
| Length-for-age | Birth to 36 months | National surveys 3–5 ^{2,3} | Birth certificate data from Wisconsin and Missouri State vital statistics ^{2,4} ; CDC Pediatric Nutrition Surveillance System data for 0.5, 1.5, 2.5, 3.5, and 4.5 months ² |
| Head circumference-for-age | Birth to 36 months | National surveys 3–5 ² | Fels Longitudinal Study data ² |
| Weight-for-length | 45 to 103 cm | National surveys 3–5 ^{2,5} | Birth certificate data from Wisconsin and Missouri State vital statistics ² |
| Weight-for-stature | 77 to 121 cm | National surveys 3–5 ⁵ | None |
| Weight-for-age | 24 to 240 months | National surveys 1–5 ⁵ | None |
| Stature-for-age | 24 to 240 months | National surveys 1–5 | None |
| BMI-for-age | 24 to 240 months | National surveys 1–5 ⁵ | None |

¹Survey 1 = NHES II, Survey 2 = NHES III, Survey 3 = NHANES I, Survey 4 = NHANES II, and Survey 5 = NHANES III.

²Excludes birthweight <1,500 gm.

³Excludes data from NHANES III for ages <3.5 months.

⁴Wisconsin and Missouri were the only states with available data from birth certificates.

⁵Excludes data from NHANES III for ages ≥72 months.

II (1976–80), and III (1988–94). The survey designs are based on stratified, multistage probability samples of the civilian, noninstitutionalized population in the 48 contiguous States (NHES II, NHES III, NHANES I) or all 50 States (NHANES II, NHANES III). All surveys consisted of a home interview and a standardized physical examination conducted in a mobile examination center. Age was calculated as age at the time of examination when the anthropometric data were recorded. Children ages 6–11 years from NHES II, 12–17 years from NHES III, 1–19 years from NHANES I, six months–19 years from NHANES II, and 2 months–19 years from NHANES III were included in the revision. The small

number of children in NHES II who had their 12th birthday after the home interview and before the examination and those who had their 18th birthday after the home interview and before the examination in NHES III were also included. Although the revised growth charts for older children were developed for ages from 2 to 20 years, additional NHANES data for individuals younger than 2 years and older than 20 years were included in the analysis to improve estimates at the lower and upper boundaries (table C). Detailed descriptions of these surveys have been provided (25–29).

Anthropometric procedures developed for NHANES III are documented on videotape

URL: <http://www.cdc.gov> and in the NHANES III procedures manual (30). The procedures were consistent with published recommendations for standardized anthropometric techniques (31). The NHANES III measurement techniques for weight, recumbent length, stature, and head circumference were based on procedures used in the previous NHES and NHANES surveys, and either the same or comparable measuring equipment was used across the surveys.

Supplemental Data

For the infant charts, a limited number of additional data points

Table C. Primary and supplemental data sources

| Data set | Years | Data source | Subject ¹ | Sex | Chart ² |
|--|---------------------|-------------------------------|--|------|--------------------|
| Primary data sets | | | | | |
| NHES II | 1963–65 | National survey | Age (months): 72.0–145.9 | M, F | W, S, BMI |
| NHES III | 1966–70 | National survey | Age (months): 144.0–217.9 | M, F | W, S, BMI |
| NHANES I | 1971–74 | National survey | Age (months): 12.0–23.9 | M, F | L |
| | | | 12.0–35.9 | M, F | HC |
| | | | 12.0–281.9 | M | W |
| | | | 12.0–245.9 | F | W |
| | | | 18.0–305.9 | M, F | S, BMI |
| | | | Length (cm): 65–109 | | WL |
| | | | Stature (cm): 77–127 | | WS |
| NHANES II | 1976–80 | National survey | Age (months): 6.0–35.9 | M, F | L, HC |
| | | | 6.0–281.9 | M | W |
| | | | 6.0–245.9 | F | W |
| | | | 18.0–305.9 | M, F | S, BMI |
| | | | Length (cm): 65–109 | | WL |
| | | | Stature (cm): 77–127 | | WS |
| NHANES III | 1988–94 | National survey | Age (months): 3.0–35.9 | M, F | L |
| | | | 2.0–35.9 | M, F | HC |
| | | | 2.0–71.9 | M, F | W |
| | | | 18.0–305.9 ³ | M, F | S |
| | | | 18.0–71.9 ³ | M, F | BMI |
| | | | Length (cm): 65–109 | | WL |
| | | | Stature (cm): 77–127 | | WS |
| Supplemental data sets | | | | | |
| United States Vital Statistics | 1968–80; 1985–94 | Birth certificates | Age: birth | M, F | W |
| State of Wisconsin Vital Statistics | 1989–94 | Birth certificates | Age: birth Birth length (cm): 45–52.9 | M, F | L WL |
| State of Missouri Vital Statistics | 1989–94 | Birth certificates | Age: birth Birth length (cm): 45–52.9 | M, F | L WL |
| Fels Longitudinal Study | 1960–94 | Hospital records ⁴ | Age: birth | M, F | HC |
| Pediatric Nutrition Surveillance System ⁵ | 1975–95 | Clinic records | Age (months): 0.1–4.9 | M, F | L |

¹Data from outside the 2 to 20-year range for the child/adolescent charts were used to improve estimates at the upper and lower age boundaries. Subject ages, shown for growth chart variables, reflect the endpoints of age ranges for data actually used to construct the smoothed percentile curves.

²W = weight-for-age; S = stature-for-age; BMI = body mass index-for-age; L = length-for-age; HC = head circumference-for-age; WL = weight-for-length; WS = weight-for-stature.

³Lengths at ages 18.0–23.99 months, and stature at all other ages.

⁴Majority measured in hospital by Fels staff.

⁵Selected clinics.

obtained from other sources were incorporated at birth and during the first few months of life where national data were either not available or were insufficient (table C). The infant weight-for-age curves included national birthweight distributions taken from birth certificates for more than 83 million infants born in the United States between 1968–80 and 1985–94, corresponding to years in which infants in the national surveys were born. Birth length data were only available from two States, Wisconsin and Missouri. These States recorded this information on birth certificates for 890,000 infants born between 1989 and 1994. These data were used in the development of the length-for-age and weight-for-length curves. Additionally, a limited amount of data from the CDC Pediatric Nutrition Surveillance System (PedNSS) was used in the length-for-age charts. The majority of infant data in the PedNSS system come from clinical records of the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) (20). Because the PedNSS data are not nationally representative, a subset of the PedNSS data collected from 1975 to 1995 was used. Clinics were selected for inclusion based on three specific conditions. First, the mean lengths and weights had to be within ± 0.5 cm and ± 0.5 kg of the mean from NHANES II and III combined for each single month of age from age 3 to 11 months. Second, the clinics had to have a SD within ± 0.2 cm and ± 0.2 kg of the SDs in the combined NHANES II and III. Finally, the skewness in weight distribution of the selected clinics' population had to be within ± 0.3 kg of the skewness of weight in the combined NHANES II and III. A total of 213 PedNSS clinics were selected, resulting in a sample of 14,846 observations at 0.5 months, 8,825 at 1.5 months, 5,240 at 2.5 months, 1,640 at 3.5 months, and 2,258 at 4.5 months. All the matching procedures excluded subjects with birthweights $< 1,500$ grams.

Head circumference at birth was not available from the national surveys or from birth certificates. Consequently, the head circumference-for-age curves included data for head circumference at birth from 362 infants in the Fels

Longitudinal Study who were born between the years 1960 and 1994, corresponding to the national surveys. Most of these data were recorded in hospitals by the Fels staff. The Fels Longitudinal Study began in 1929 with a major goal of following physical growth and development in a cohort of 1,000 people from birth throughout their entire life cycle (32). Data at birth, including head circumference at birth, obtained since 1975, come from relatives of the early cohorts.

Data Exclusions

Several exclusions were made prior to curve smoothing. First, data for all very low birthweight (VLBW) infants ($< 1,500$ grams) were excluded from the infant growth charts, primarily because the growth of VLBW infants is known to be markedly different from that of higher birthweight, full-term infants. For NHANES I and II, if a reported birthweight from the interview questionnaire was not available, an exclusion was not applied. As part of the NHANES III protocol, birth certificates were obtained from the States for children born in the United States. For NHANES III, if a reported birthweight was missing from the survey interview data, birthweight from the child's birth certificate was used to determine possible exclusion, and, if neither were available, an exclusion was not made. Second, data from NHANES III for children greater than or equal to 6 years of age were excluded from the charts for weight-for-age, weight-for-stature, and BMI-for-age. Inclusion of these data would have led to the underclassification of overweight, because overweight cutoff criteria based on weight- and BMI-for-age percentiles would have been shifted upward. Third, 11 infants whose recumbent length and stature differed by greater than or equal to 5 cm were excluded from the length-for-age, weight-for-length, stature-for-age, weight-for-stature, and BMI-for-age charts. Fourth, two outlier values, one for head circumference of an infant girl, and one for recumbent length of an infant boy, were excluded because the measurement values and the sampling weights were extreme.

Statistical Curve Smoothing Procedures

Data from the national surveys were pooled because no single survey in the NHANES series has enough observations to construct growth charts. Sample sizes from 400 to 500 are required to achieve precision of the empirical percentiles at the specific ages selected for the curve fitting (33). This is particularly important for outlying percentiles that are used in research and clinical practice. Pooling enhances the number of subjects at each age, thereby increasing the stability of the outlying percentile estimates.

Statistical sample weights were available for each national survey. These sample weights take into account the unequal probabilities of selection resulting from the complex sampling cluster design, planned oversampling of selected subgroups, nonresponse, and noncoverage. These survey-specific sample weights were applied to the national survey data resulting in each survey representing the U.S. population at the time the survey was conducted. All statistics were calculated with the original survey sample weights. Sampling weights were not available for the supplemental data.

Statistical procedures were applied to the observed data in two stages, first to generate initial smoothed curves for selected major percentiles and second to generate the parameters that were used to construct the final smoothed curves and additional percentiles. The first stage is referred to as the curve smoothing stage, and the second stage as the transformation stage. In the first stage, selected empirical percentiles were smoothed with a variety of parametric and nonparametric regression procedures. In the transformation stage, the smoothed curves were approximated using a modified LMS estimation procedure to provide the transformation parameters, λ , μ , and σ (LMS). This resulted in final percentile curves that closely matched the percentile curves smoothed in the first stage and allowed computation of additional percentiles and z-scores. The procedures for each stage are described

Table D. Summary of curve smoothing procedures

| Curve | Curve smoothing procedures |
|--|--|
| Weight-for-age | <p>For birth to 36 months, a 3-parameter linear model fit to empirical percentile points for weight at midpoints of age intervals, and anchored (i.e., forced) at birth and at 2.75 years. Averages of weighted empirical percentiles at 2.25 and 2.75 years (based on data used for birth to 36 months and 2 to 20 years) substituted for data points in the 24 to 36 months range.</p> <p>For 2 to 20 years, locally weighted regression (LWR) based on 15-point smoothing for boys and 17-point smoothing for girls. Fit to empirical percentile points for weight at midpoints of age intervals, combined averages of weighted empirical percentiles at 2.25 and 2.75 years (based on data used for birth to 36 months and 2 to 20 years), and predicted values for 2 to 3 years at 0.1 year intervals from the 3-parameter linear model used for birth to 36 months.</p> <p>All results from the 3-parameter linear model and LWR were combined and refit at midpoints of age intervals from birth to 20 years using a 10-parameter polynomial regression model for boys and 9-parameter polynomial regression model for girls.</p> |
| Length-for-age and Stature-for-age | <p>For length-for-age, birth to 36 months, a 3-parameter linear model was fit to empirical percentile points for length at midpoints of age intervals and to birth data.</p> <p>For stature-for-age, 2 to 20 years, a 10-parameter nonlinear model was fit to empirical points for stature at midpoints of age intervals. Results from the 3-parameter linear model used for length-for-age were adjusted by subtracting 0.8 cm from length to make length continuous with stature in the overlapping age interval of 24 to 36 months. Percentiles in the overlap period were averaged by assigning weights of 1, 11/12, ..., 1/12, 0 at 24, 25, ..., 35, 36 months, respectively, to the adjusted length-for-age. Opposite weights of 0, 1/12, ..., 11/12, 12/12 at 24, 25, ..., 35, 36 months, respectively, were assigned to smoothed stature-for-age percentiles. The final length-for-age and stature-for-age curves were created by adding back 0.8 cm to the smoothed length.</p> |
| Head circumference-for-age | For birth to 36 months, a 3-parameter linear model was fit to empirical percentile points for head circumference at midpoints of age intervals and to birth data. |
| Weight-for-length and Weight-for-stature | Empirical weight-for-length data were adjusted by subtracting 0.8 cm from length to make length continuous with stature in the overlapping age interval of 24 to 36 months. The combined adjusted weight-for-length and weight-for-stature data were smoothed with a 5-parameter polynomial regression model, fit to empirical percentile points for weight at midpoints of 2 cm intervals. After applying LMS, separate weight-for-length curves were created by adding 0.8 cm back to length. |
| BMI-for-age | For 2 to 20 years, LWR model was based on a 5-point smoothing at midpoints of age intervals for ages 2 to 12.5 years, and a 25-point smoothing for boys and a 27-point smoothing for girls for ages 13 to 20 years. The curves were further smoothed with a 4-parameter polynomial regression model fit to smoothed percentile points for BMI at midpoints of age intervals. |

in detail for each chart and are summarized in [table D](#).

Age and Length Groupings

Before smoothing, data were grouped by single month of age for the development of charts relating size to age. Each month of age was truncated to the nearest completed month, for example, 1 month (1.0–1.9 months), 11 months (11.0–11.9 months), 23 months (23.0–23.9 months), and so forth. From birth to 12 months, the empirical percentile estimates were made at 1-month intervals; from 12 to 24 months, the empirical percentile estimates were made at 3-month intervals; and at 24 months and beyond, empirical percentile estimates were made at 6-month intervals. All ages were labeled as the midpoint of the defined age groups. For the infant charts, infants were grouped as follows: 0.5 months = 0.1–0.9 months (birth was not included), 1.5 months = 1.0–1.9 months, ..., 11.5 months = 11.0–11.9 months; 13.5 months = 12.0–14.9 months, 16.5 months = 15.0–17.9 months, 19.5 months = 18.0–20.9 months, 22.5 months = 21.0–23.9 months;

27.0 months = 24.0–29.9 months, and 33.0 months = 30.0–35.9 months. For the charts for older children and adolescents, subjects were separated into 36 half-year age groups. Each age group was categorized by the midpoint of an age range. For example, age 2.25 years included ages from 2.0 years to 2.5 years of age. This pattern continued up to the 19.75 year age interval in which the age range is from 19.5 to 20.0 years of age.

Before smoothing, the length and stature data were grouped by 2-cm intervals. For example, 46 cm = 45–46.9 cm.

Curve Smoothing Stage

For each growth chart, the initial smoothing methods were applied to nine empirical percentiles (3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, and 97th). In addition, the 85th percentile was included in the BMI-for-age charts because the 85th percentile of BMI has been recommended as a cutoff to identify children and adolescents at risk for overweight (34,35).

The weighted empirical percentile estimates were obtained by applying the

survey-specific sample weights to calculate weighted empirical percentile points at the midpoint of each age group (or the midpoint of each 2-cm interval for length or stature). The irregular plots of empirical percentile values had to be smoothed to produce clinically useful percentile curves.

Several different approaches were used in the smoothing stage. The empirical percentiles for infant weight, length, and head circumference were smoothed using a family of three-parameter linear models that have been used previously to describe age-related changes in growth from birth to age 36 months (36–38). Stature-for-age was smoothed using a nonlinear model whereas weight-for-stature and weight-for-length were smoothed using a 5-degree polynomial regression model. Two-step smoothing was applied to weight-for-age in infants and older children and BMI-for-age. In the first step of smoothing weight-for-age and BMI-for-age for older children, locally weighted regression (LWR) was used. Polynomial regression was used in the second step of smoothing weight-for-age and BMI-for-age. The smoothing stage resulted in every chart having a

parametric form with estimated parameters specific for each selected major percentile.

The parameters of the linear regressions were estimated using the SAS procedure REG, and the parameters in the nonlinear regression were estimated using the SAS procedure NLIN (39). The fit of the models was evaluated using root mean square error (RMSE), R^2 , and CV (40).

The Transformation Stage

In order to estimate any percentile and allow calculation of standard deviation units and z-scores, a modified LMS statistical procedure was applied to the smoothed percentile curves. The LMS method does not change the distribution of percentile curves in a growth chart; rather it provides a way to estimate percentiles in a continuous manner.

The distribution of some anthropometric data used in the growth charts are skewed. To remove skewness, a power transformation can be used to stretch one tail of the distribution while the other tail is shrunk. A Box-Cox transformation can make the distribution nearly normal (41). The assumption is that, after the appropriate power transformation, the data are closely approximated by a normal distribution (42). The transformation does not adjust for kurtosis, which is a less important contributor to nonnormality than skewness (43).

In the LMS technique, three parameters are estimated: the median (M), the generalized coefficient of variation (S), and the power in the Box-Cox transformation (L). The L reflects the degree of skewness. The LMS transformation equation is:

$$X = M (1 + LSZ)^{1/L} \quad L \neq 0$$

or

$$X = M \exp(SZ) \quad L = 0$$

where X is the physical measurement and Z is the z-score that corresponds to the percentile.

The key task of the transformation was to estimate parameters L , M , and S . With estimates of L , M , and S , values of X are connected to the values of Z through the above equation. The

percentile is obtained from a normal distribution table where the z-score corresponds to the percentile of interest. For example, a z-score of 0.2019 corresponds to the 58th percentile. In the case of growth charts, with the L , M , and S parameters, it is possible to evaluate any single measure in a population as an exact z-score or percentile.

To generate age-specific estimates of L , M , and S , Cole (42,44) has recommended applying a penalized likelihood estimation procedure to the raw data. In this approach smoothed curves of L , M , and S are generated first, and then smoothed percentile curves, or an individual standardized score, can be obtained from the values of L , M , and S .

In contrast to the original LMS procedure, a modified LMS estimation procedure was created and used to generate the 2000 CDC Growth Charts. In the modified LMS approach, empirical percentile curves were initially smoothed and parametric models were generated, as described above. Then, at each age or length/stature interval, a group of 9 equations (10 for BMI charts) was generated by specifying the LMS transformation equations for the previously smoothed major percentiles. A simultaneous solution for the three parameters of L , M , and S from the group of specified equations was generated using the SAS procedure NLIN (39). By minimizing the sum of squared errors, the set of L , M , and S parameters was obtained as the best solution to a system of equations rather than as likelihood-based estimates from empirical data. This approach is similar to the method used by Cole to estimate LMS parameters from published percentile curves (45–47).

This modified LMS procedure produced final curves that are extremely close to the smoothed percentile curves obtained from the first stage of smoothing. The net result is that the close fit of the smoothed curves from the first stage of smoothing to the empirical data is retained. In addition, the modified LMS method allows z-scores to be obtained in a continuous manner. The LMS values were calculated by solving equations that

used the values for percentiles ranging from the 3rd to the 97th. Percentiles less than the 3rd or greater than the 97th are beyond the range of the data from which the LMS parameters were calculated. As in any statistical procedure, extrapolation beyond the range of the data should be done with caution.

The final set of percentile curves for the CDC growth charts presented in this report was produced using this modified LMS estimation procedure. In the transformation stage, percentiles were developed at 1-month or 1-centimeter intervals in the infant and child charts. Estimates of L , M , and S parameters in these intervals were calculated to provide the necessary tools for determining additional percentiles. Generally, 1-month or 1-centimeter intervals will be adequate for estimation or evaluation. To obtain percentiles at finer intervals, the L , M , and S values could be interpolated.

Detailed Procedures by Chart

Weight-for-Age

Combining infant and child/adolescent weight-for-age—After the infant weight-for-age and child/adolescent weight-for-age curves were smoothed using a 3-parameter linear model and LWR, the results were combined and refit from birth to age 20 years using a single regression model for each sex. The smoothed weight-for-age curves for infants and for older children were combined to obtain a seamless transition between the curves. Ultimately the combined weight-for-age curve was separated into infant and child/adolescent curves to facilitate use in clinical settings.

In order to combine the infant and child/adolescent weight-for-age curves, weighted averages of overlapping empirical percentiles from infant and child charts at 2.25 years (24.0–29.9 months) and 2.75 years (30.0–35.9 months) were calculated using the combined infant and child/adolescent data. The empirical percentiles were not identical at ages 24–36.9 months because VLBW infants (<1,500 grams) were excluded from the infant

percentiles, but included in the older child percentiles where the effect of VLBW is diminished. The averaged percentiles were substituted for the empirical values in smoothing the weight-for-age for infants and weight-for-age for children/adolescents. These combined percentile curves were fit by a 10-degree polynomial for boys and by a 9-degree polynomial for girls. A set of nine polynomial regression equations, one for each of the major smoothed percentiles, was solved simultaneously for infants and for children to estimate the L , M , and S parameters for boys and for girls separately.

Weight-for-age, birth to 36 months—

The infant weight-for-age curves for ages birth to 36 months were smoothed initially with a 3-parameter linear model:

$$f(t) = a + b * \ln(t+0.5) + c(t+0.5)^{0.75}$$

where $f(t)$ is body weight in kg, t is age in months (calculated as midpoint of the age range), and a , b , and c are parameters to be estimated. The estimated values of $f(t)$ are the smoothed values. At birth, $t = 0$. Estimates of a , b , and c are specific for each of nine percentiles being smoothed. An exponent of 0.75 was selected based on the evaluation of RMSE after several models were tried, beginning with the exponent of 0.3.

After excluding birthweights <1,500 gm, the model was fit to the national data with anchor points at birth and at 2.75 years. In other words, when the regression line was fit, no error term was allowed at the two anchor points. The curves were anchored to the national distribution of birthweights (years 1968–80 and 1985–94) from NCHS natality files (that is, forced through the sex-specific summary values provided for the major centile lines at birth) after excluding birthweights <1,500 gm, and forced through the weighted average percentile values at 2.75 years.

Weight-for-age, 2 to 20 years—Initial smoothing of weight-for-age for older children involved combining the weighted average of the empirical

percentiles for infants and older children at 2.25 and 2.75 years, predicted infant values for weight from 2 to 3 years at 0.1-year intervals from the 3-parameter linear model and the empirical percentiles from 3 to 20 years. This approach used all available information for infants after excluding data for VLBW infants and for older children where data for VLBW infants were not excluded. Some empirical data less than 2 years of age and greater than or equal to 20 years were included, as described below. This compound data set was smoothed with a locally weighted regression (LWR) procedure.

The LWR does not give any parameter estimates, but provides an intermediate smoothed curve for further parametric smoothing. Locally weighted regression applies a weight function to data in the neighborhood of the value to be estimated (48). Ages at measurements that are near that of the value to be estimated received larger weights than those farther away from the specific age. A weight function

$$Weight = \left(1 - \left| \frac{X_0 - X_i}{\Delta X} \right| \right)^3$$

applies larger weights to data points near the value to be estimated than to those further away, where X_0 is the central age at which the value is smoothed, X_i is the i th age from the central age and the value to which the weight is being assigned, and ΔX is the age range covered by the width of the moving regression window. The mechanics of LWR require the selection of a series of points on either side of the value to be estimated. This series of points constitutes the regression window. Windows for each of the values to be estimated overlap and are referred to as moving regression windows. The weighted least squares regression is applied to the values in each moving regression window to provide the smoothed estimate at X_0 . The resulting estimates from each regression window form a smoothed curve.

The width of the LWR moving window for weight-for-age was chosen after several trials to balance the degree of smoothness and fidelity to the data. For boys, each smoothed value was estimated by a weighted linear

regression on the 15 neighborhood points adjacent to the estimated value. For girls, a 17-point smoothing procedure was chosen. Seven data points for boys and eight data points for girls at ages less than 2 years were necessary for smoothing the value at age 2 years. The weight value at age 1.75 years in boys was repeated 7 times from age 1.75 down to 1.15 years by 0.1-year intervals, and in girls was repeated 8 times from age 1.75 down to 1.05 years by 0.1-year intervals. Similarly, when smoothing the value at age 20 years, seven and eight data points at ages over 20 years were necessary for boys and girls, respectively. For boys, the empirical percentiles from 20.25 to 23.25 years by 0.5-year intervals were used as seven additional data points for smoothing. For girls, the empirical percentiles after age 18 years were very irregular due to the limited number of subjects and considerable variation in body weight. Therefore, instead of using empirical percentiles from 20 to 25 years, the value at age 20.25 years was repeated 8 times from age 20.25 to 23.75 years by 0.5-year intervals to achieve reasonably smoothed values near age 20 years.

Length-for-Age and Stature-for-Age

Combining length-for-age and stature-for-age—

A smooth transition from the length-for-age to stature-for-age chart was required. Analyses of data from NHANES II and III children indicated that recumbent length is, on average, 0.8 cm longer than standing height (stature). Thus, it is desirable to have parallel smoothed percentile curves for length-for-age and stature-for-age with a difference of 0.8 cm between length and stature in the overlapping ages from 24 to 36 months.

To obtain these parallel curves, percentiles for each month of age were predicted by the 3-parameter model in the length-for-age portion and by the 10-parameter nonlinear model in the stature-for-age portion. Length-for-age percentiles were adjusted by subtracting 0.8 cm from length to make length commensurate with stature. Averages of the percentiles in the two charts in the overlapping ages were calculated by assigning weights of 1, 11/12, 10/12, ...,

1/12, 0 to values of length-for-age at 24, 25, 26, ..., 35, 36 months, respectively, and assigning opposite weights of 0, 1/12, ..., 11/12, 1 to values of stature-for-age at 24, 25, ..., 35, 36 months, respectively. These weighted average percentile values in the overlapping section were shared by both charts. Length-for-age was readjusted by adding back 0.8 cm to length, producing separate length-for-age and stature-for-age curves. This resulted in the two sets of parallel percentiles with a consistent separation of 0.8 cm in the overlapping section.

Two sets of nine equations (one set for length-for-age and one set for stature-for-age), for each of the major smoothed percentiles, were solved simultaneously to estimate the L , M , and S parameters for boys and girls separately. The nine final percentile curves for infants and children were predicted using the estimated L , M , and S values.

Length-for-age, birth to 36 months—The infant recumbent length-for-age curves for ages birth to 36 months were smoothed with a 3-parameter linear model:

$$f(t) = a + b * \ln(t+1) + c(t+1)^{0.5}$$

where $f(t)$ is length in cm, t is age in months (calculated as midpoint of the age range), and a , b , and c are parameters to be estimated. The estimated values of $f(t)$ are the smoothed values. At birth, $t = 0$. Estimates of a , b , and c are specific for each of nine percentiles being smoothed.

After excluding birthweights <1,500 gm, the 3-parameter model was fit to the national data and birth length distributions from Wisconsin and Missouri. In contrast to data from the NCHS surveys that were pooled prior to curve smoothing, the Wisconsin and Missouri data were not pooled, but were treated as two separate sets of data points in the curve smoothing. Because the fitted values did not match other data sets well in the first few months of life, and because the smoothed point at 2.5 months was unstable due to insufficient sample size, data from a subset of the PedNSS at ages 0.5, 1.5, and 2.5 months were also included. Inclusion of these additional data at younger ages provided a better fit of the

3-parameter model in the first several months of age. To gradually merge the PedNSS data with the national survey data, PedNSS data were averaged with the national data at ages 3.5 and 4.5 months, after which the national data were used exclusively.

Stature-for-age—The stature-for-age curves for ages from 2 to 20 years were smoothed with a nonlinear model that ensured a monotonic increase in stature:

$$f(t) = aq/(1+e^{-b_1(t-c_1)}) + ap/(1+e^{-b_2(t-c_2)}) + (f-a)/(1+e^{-b_3(t-c_3)})$$

where $f(t)$ is stature in cm, t is age in years (calculated as midpoint of the age range), and a , b_1 , b_2 , b_3 , c_1 , c_2 , c_3 , p , q , and f are parameters to be estimated ($p = 1 - q$). The estimated values of $f(t)$ are the smoothed values. Estimates of a , b_1 , b_2 , b_3 , c_1 , c_2 , c_3 , p , q , and f are specific for each of nine percentiles being smoothed.

The empirical percentile curves derived from the national survey data were irregular partly due to sampling variations and the small number of subjects older than 18 years. To aid in smoothing the irregular empirical percentile curves at older ages, the empirical data were extended to age 25 years in 0.5-year intervals. For girls, empirical data for the 6-month age group from 1.5 to 2.0 years (midpoint 1.75) were also included to provide smoothed estimates closer to the empirical percentiles than the estimates obtained without inclusion of such data. Unadjusted recumbent length data were used as a proxy for stature in the age group from 1.5 to 2.0 years.

Head Circumference-for-Age

The infant head circumference-for-age curves for ages birth to 36 months were smoothed with a 3-parameter linear model:

$$f(t) = a + b * \ln(t+2) + c(t+2)^{0.5}$$

where $f(t)$ is head circumference in cm, t is age in months (calculated as midpoint of the age range), and a , b , and c are parameters to be estimated. The estimated values of $f(t)$ are the smoothed values. At birth, $t = 0$. Estimates of a , b , and c are specific for each of nine

percentiles being smoothed. After excluding birthweight <1,500 gm, the model was fit to the national data and head circumference at birth from the Fels Longitudinal Study.

A set of nine 3-parameter linear equations, one for each of the major smoothed percentiles, was solved simultaneously to estimate the L , M , and S parameters for boys and girls separately. The nine final percentile curves for infants were predicted using the estimated L , M , and S values.

Weight-for-Length and Weight-for-Stature

Similar to length-for-age and stature-for-age, weight-for-length and weight-for-stature required a smooth transition. Consequently weight-for-length and weight-for-stature were developed together using a single regression model. Before fitting the model to the data, 0.8 cm was subtracted from each empirical recumbent length data point. The shifted empirical weight-for-length data were smoothed simultaneously with the empirical weight-for-stature data using a 5-degree polynomial regression model.

The 5-degree polynomial regression model was fit to the national data and to weight-for-length data at birth from Wisconsin and Missouri. The birth length intervals from Wisconsin and Missouri began at 45 cm. However, there was a discontinuity between the State data and the national data perhaps due to lack of data between birth and 2 months. To avoid lowering the estimates for weight-for-length, data from 53 to 65 cm from the State or national data were omitted in the smoothing procedure.

The weight-for-length and weight-for-stature charts are age independent. Empirical percentiles of weight were based on recumbent length or stature in 2-cm intervals. Although the weight-for-length chart was developed for use with infants from birth to 36 months, and weight-for-stature was developed primarily for use with children from 24 to 60 months of age to maximize sample sizes, an upper age limit was not used in the development of either chart. Available weight-for-length data ranged from 45

to 109 cm and available weight-for-stature data ranged from 77 to 127 cm for calculating empirical percentiles. After the final curve smoothing, weight-for-length was truncated to 103 cm and weight-for-stature was truncated to 121 cm on the final charts.

A set of nine 5-degree polynomial regression equations, one for each of the major smoothed percentiles for the combined weight-for-length and weight-for-stature data, was solved simultaneously to estimate the *L*, *M*, and *S* parameters for boys and girls separately. The nine final percentile curves for infants were predicted using the estimated *L*, *M*, and *S* values. To obtain separate weight-for-length and weight-for-stature curves, 0.8 cm was added back to all the smoothed length values. This was accomplished by shifting back the corresponding length values for the length-specific weight, *L*, *M*, and *S*, by 0.8 cm to form the weight-for-length measure from the weight-for-stature scale. The 85th percentile of weight-for-stature was calculated subsequently from the *L*, *M*, and *S* values.

Body Mass Index-for-Age

Empirical percentiles from the national data were smoothed with LWR. Ten empirical percentiles were calculated for the BMI-for-age charts because the additional 85th percentile was required for boys and girls to identify children and adolescents at risk for overweight. Each smoothed value was estimated by weighted linear regression on the five-neighborhood points adjacent to the value to be estimated from ages 2 to 12.5 years. From 13 to 20 years, a 25-point smoothing procedure was used for boys and a 27-point smoothing procedure was used for girls. At the lower end (that is, age 2 years), two additional points were needed in the smoothing window, so a neighborhood point of 1.75 years was used for BMI. This was calculated using unadjusted recumbent length, repeated at 1.75 and at 1.71 years for both sexes. At the upper end (that is, age 20 years), the maximum BMI values in each empirical percentile from age 19.75 through 25.25 years were chosen and repeated in 0.5-year intervals from 20.25 through

25.75 years for boys or from 20.25 through 26.25 years for girls. Taking maximum values as additional data in smoothing the windows ensured that the BMI curves did not increase beyond the maxima at the upper ends of the age ranges. The smoothed percentile curves obtained through LWR were then fit by a 4-degree polynomial regression to achieve parametric percentiles. (See section on weight-for-age, 2 to 20 years, above, for further description of LWR.)

A set of 10, 4-degree polynomial regression equations, 1 for each of the major smoothed percentiles, was solved simultaneously to estimate the *L*, *M*, and *S* parameters for boys and girls separately. The 10 final percentile curves for infants were predicted using the estimated *L*, *M*, and *S* values.

Results

Observed and Smoothed Percentiles

The observed percentile distributions, along with means and standard deviations, are shown by sex and age in detailed tables 9–16. Selected smoothed percentiles (3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, and 97th for all charts, and 85th for BMI-for-age and weight-for-stature) are shown in detailed tables 17–24 for the 16 age- and sex-specific growth charts. Also presented in these tables are the *L*, *M*, and *S* parameters that were used to create the final charts and are needed to generate additional percentiles and z-scores.

The smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, and 97th percentile curves that constitute the 16 individual CDC growth charts for the United States are shown in figures 1–16. In addition, the 85th percentile is shown in figures 13 and 14 for BMI-for-age and in figures 15 and 16 for weight-for-stature. Two additional sets of individual charts not shown in this report are available on the Internet (www.cdc.gov/growthcharts). One set shows curves ranging from the 5th to 95th percentiles (without the 3rd and 97th), and another set has the 3rd to 97th percentiles (without the 5th and 95th).

The growth charts shown in figures 1–14 have a primary scale in English units (lb, in), and a secondary scale in metric units (kg, cm), except in the BMI-for-age charts where there are single scales (kg/m²) as shown in figures 15 and 16.

Figures 17–26 show the charts developed for clinical use depicting the 5th, 10th, 25th, 50th, 75th, 90th, and 95th percentiles, and 85th for BMI-for-age and weight-for-stature. This format has two charts per page and includes tables for recording measurement data. For the clinical charts, the primary scale is metric and the secondary scale is English. A comparable set of clinical charts with the 3rd and 97th percentiles in place of the 5th and 95th not shown in this report is available on the Internet (www.cdc.gov/growthcharts).

Evaluation of the Revised Growth Curves

After the initial smoothing and transformation stages were completed, the percentile curves were evaluated. Transitions between the infant and older child charts were reviewed and each major percentile curve (3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th, and 85th for BMI-for-age) was compared graphically with the corresponding empirical data. In addition, the percent of empirical data below the smoothed percentiles was calculated and compared with the expected values. The objective of these procedures was to search for any large or systematic differences between the smoothed percentiles and the empirical data.

Evaluation of the transitions between the charts from birth to 36 months to the charts from 2 to 20 years indicated that disjunctions that were present in the 1977 NCHS charts were not present in the 2000 CDC charts. The final charts for length-for-age and stature-for-age were constructed simultaneously with an imposed parallel separation of 0.8 cm, based on the average difference between measured length and stature. Consequently, the smoothed percentile curves for length-for-age and stature-for-age are

parallel to each other as shown in [figures 27–28](#). A child should have similar values for length-for-age or stature-for-age. Weight-for-length and weight-for-stature were constructed with an imposed offset of 0.8 cm ([figures 29 and 30](#)).

The results of graphical comparisons for evaluation of the final curves are shown in [figures 31–62](#). Overall, the smoothed curves fit the empirical data well, without any systematic departures. This was particularly true for stature-for-age ([figures 55–58](#)). Nevertheless, for all the curves, the empirical data points at the outer percentiles tended to be more irregular relative to those at the more central percentiles.

Although the performance of the final smoothed curves was judged acceptable, the weight-for-age curves diverged from the empirical data points at some ages, even at the median, where estimates generally are expected to be most stable. This divergence was particularly evident from 3 to 11 months ([figures 31–34](#)) and after approximately 12 or 13 years (144–156 months in [figures 53–54](#)). For BMI-for-age ([figures 59–62](#)), the empirical data, especially for values greater than or equal to the 75th percentile and during the adolescent years, showed a high degree of variability around the smoothed percentile lines.

The observed and the expected percents below the smoothed percentiles are shown graphically in [figures 63–94](#). Approximately 50 percent of the observed data would be expected to fall below the smoothed median or 50th percentile. The findings indicated acceptable results for the percent of empirical data below the smoothed curves.

Differences Between the 1977 NCHS and the 2000 CDC Growth Curves

The smoothed 1977 and 2000 percentile curves were compared graphically as shown in [figures 95–108](#). The comparisons are limited to the charts, ages, and percentile lines common to both sets of references.

Thus, comparisons were not possible for the new BMI-for-age charts, for the weight-for-stature charts above 120 cm of stature, for ages over 17 years on any chart, or for the 3rd and 97th percentiles on any chart.

Overall, the 1977 and the 2000 growth curves are quite similar. The differences that exist are more apparent in charts for infants where national survey data were previously lacking than in the charts for older children. For infants, the major differences were seen in the head circumference-for-age charts. In the other infant charts, differences generally occurred at the outer (lower and upper) percentiles. For older children, there were almost no differences in the stature-for-age charts and only minor differences in the weight-for-age charts.

Infant Charts

From approximately 12 to 24 months for infant weight-for-age, the 2000 percentiles are generally higher than the corresponding 1977 percentiles. This is most evident at the 5th and 10th percentiles ([figures 95–96](#)). The 2000 length-for-age curves are generally lower than the 1977 curves, especially after 6 months of age when the 2000 10th percentile approximates the 1977 5th percentile ([figures 97 and 98](#)). In the weight-for-length curves ([figures 99 and 100](#)), for lengths ranging from approximately 50 to 70 cm, the 2000 curves are higher than the 1977 curves. This is most evident at lower percentiles, where the 5th percentile for the 2000 charts is equivalent to the 25th percentile in the 1977 charts. The dip that occurred in the 1977, 5th and 10th percentiles at the 50–70 cm range is absent from the 2000 weight-for-length charts. Comparisons of the head circumference-for-age percentiles indicate considerable differences ([figures 101 and 102](#)). Generally, the 2000 smoothed percentiles are higher than the 1977 percentiles from birth until approximately 4–6 months, where a crossover occurs and the 2000 curves become lower than the 1977 curves ([figures 101 and 102](#)).

When the 2000 charts are used there will be some differences in clinical

classifications relative to the 1977 charts. For example, with the 2000 charts, infants will be more often classified as underweight, less often classified as high weight-for-age, less often classified as having short length-for-age, less often classified as having small head circumference particularly after 6 months, and more often classified as having large head circumference.

Child/Adolescent Charts

Comparisons of the weight-for-stature charts are limited because the range of statures differed in the 2000 charts compared with the 1977 charts. For matching statures within the range shown, weights in the 2000 charts tend to be higher than weights in the 1977 charts, especially at larger statures and for girls ([figures 103 and 104](#)). Overall, from approximately 2 to 14 years, the 1977 and 2000 weight-for-age curves are similar. Even though the 1977 and 2000 data sets for weight-for-age closely match after 6 years, differences in the percentile curves beyond age 14 years (168 months) may reflect limitations of the curve smoothing procedures in the 1977 weight-for-age charts ([figures 105 and 106](#)). The 1977 and 2000 charts for stature-for-age are quite similar ([figures 107 and 108](#)).

Discussion

Revision Process

The 1977 NCHS Growth Charts have been widely used in pediatric practice and public health for more than 20 years. Although some concerns about these growth charts arose, the charts had not undergone a major formal revision since they were developed. There was, however, an interim adjustment to the length-for-age and stature-for-age, and weight-for-length and weight-for-stature curves, designed for use in limited applications for the analysis of population-based survey and surveillance data (22,49). In 1985, when planning the sample design for NHANES III, NCHS began the growth

chart revision process with the decision to oversample infants and young children for the purpose of revising the 1977 growth charts.

Growth Chart Workshops

Beginning in December 1992 NCHS sponsored a series of workshops to obtain expert input for revising the 1977 NCHS Growth Charts. These workshops were intended to provide options and recommendations that would be considered in making final decisions on how best to proceed. The participants and highlights of the workshops are presented in [appendix I](#). Three of these workshops were summarized in reports that are available on the Internet (www.cdc.gov/growthcharts). The workshop reports include appendixes with supporting data and references.

Major Features of the 2000 CDC Growth Charts for the United States

The 2000 CDC Growth Charts for the United States differ from the 1977 NCHS Growth Charts with regard to data and methods used in their construction. In addition, there are a number of new features in the 2000 charts that were not previously available:

- **National survey data**
In the 2000 CDC charts, nationally representative survey data, supplemented with a limited amount of data from other sources, replaced the Fels data used in the 1977 NCHS infant growth charts from birth to 36 months.
- **Body mass index-for-age charts**
New sex-specific BMI-for-age charts for 2 to 20 years were developed to replace the 1977 NCHS weight-for-stature charts that were applicable only at prepubescent ages for statures for boys ranging from 90 to 145 cm and for girls ranging from 90 to 137 cm. Revised weight-for-stature charts are available for optional use from ages 2 to 5 years. Either BMI-for-age or weight-for-stature

charts may be used to assess risk of overweight from ages 2 to 5 years.

- **Extended age range**
The revised charts were extended by 2 years beyond the 1977 NCHS charts to include children and adolescents from 2 to 20 years of age. This change was made to accommodate adolescents who continue to be seen by pediatricians through their later teenage years.
- **Additional percentiles**
The 3rd and 97th percentiles were added to each chart to facilitate plotting data for children at extremes of the distribution. The major percentiles included in the 1977 NCHS charts (5th, 10th, 25th, 50th, 75th, 90th, and 95th) were retained in the revised charts. The 85th percentile was added to weight-for-stature and BMI-for-age charts, enhancing their use as screening tools to identify children and adolescents who may be overweight or at risk of overweight.
- **Corresponding percentiles and z-scores**
The 2000 CDC Growth Charts can be used to obtain percentiles and z-scores. To meet the needs of researchers, for analyses of surveillance data, and to monitor changes in growth indicators for individuals, z-scores can be obtained and exact percentiles can be calculated.
- **Smooth junction between length and stature**
The revised charts largely correct discontinuities that existed in the 1977 charts for infants and older children from 24 to 36 months. These disjunctions were the result of using data from different sources.

Using the Revised Growth Charts

Screening for Health and Nutritional Status

The 5th and 95th percentiles of the 1977 NCHS Growth Charts have been

used for many years as screening indicators, particularly for infants. These percentile cutoff values are used to help identify infants and children who are at increased nutritional and overall health risk.

Where there are differences between the 2000 and the 1977 curves, the percentile ranking of a child may differ. In general, when the upper percentiles of the revised curves are higher than the corresponding percentiles of the 1977 curves, this will result in *less* frequent classification as high risk. When the lower percentiles of the revised curves are higher than the corresponding percentiles of the 1977 curves, classification as high risk will be *more* frequent. For example, the 90th and 95th infant weight-for-age percentiles of the revised curves are higher than the corresponding percentiles of the 1977 curves from approximately 6 to 36 months for boys, and from 12 to 36 months for girls. This shift would be expected to result in lower estimates for the prevalence of overweight when using the revised charts. In contrast, after approximately 6 months, all percentiles in the revised head circumference charts are lower than the corresponding percentiles in the 1977 charts. The expected impact for clinical screening or for population-based prevalence estimates, using the 2000 charts compared with the 1977 charts, is that children may be classified less frequently as having small head circumferences and may be more frequently classified as having large head circumferences. Other examples are evident in the detailed figures in this report that compare the 2000 percentile curves with the 1977 percentile curves.

Racial-Ethnic Considerations

Children of all major racial-ethnic groups appear to have similar growth potential. Studies have demonstrated that genetic effects on growth are small compared with the effects of the environment, nutrition, and health. Regardless of racial-ethnic status, children provided with good nutrition, access to health care, and good social and general living conditions have similar growth patterns (13,50–55).

The 2000 growth charts were produced for all children in the U.S. population. From a practical standpoint, the NCHS health examination surveys are not designed to provide separate reliable growth estimates for each of the racial-ethnic groups in the United States. Even after pooling data sets from the various national surveys, the sample sizes for the individual major racial-ethnic groups in the NCHS surveys did not meet statistical requirements for precise estimates of outlying percentiles (33).

Given the evidence that differences in growth are primarily due to environmental and socioeconomic constraints, in combination with insufficient data for each racial-ethnic group, the development of separate racial-ethnic growth charts for various groups that constitute the U.S. population was neither justified nor practical. Even if sufficient data were available, it would be difficult to develop and to apply ethnic-specific growth charts because many children are ethnically diverse.

Assessing the Growth of Breast-Fed Infants

The 1977 NCHS Growth Charts for infants were based entirely on data from the Fels Research Institute collected 1929–75. In this study population, as in the general population during this period, infants were mainly formula-fed, although a small percent were exclusively breast-fed for 3 months. In addition, it is possible that infants in the Fels Longitudinal Study were supplemented early with solid foods, which could have an impact on growth that would be reflected in growth charts constructed from these data (56).

The 2000 CDC Growth Charts include data for formula-fed and breast-fed infants, proportional to the distribution of breast- and formula-fed infants in the population. During the past two decades, approximately one-half of all infants in the United States received some breast milk and approximately one-third were breast-fed for 3 months or more (57). By replacing data from the Fels Research Institute with national survey data collected from

1970 to 1994, the combined growth patterns of breast-fed and formula-fed infants in the U.S. population are represented.

Breast-feeding is recommended as the feeding method of choice for most full-term infants during the first 6 months after birth and should be continued with the addition of solid foods through the first 12 months (58). The association between breast-feeding and size and growth in infants has been the topic of many investigations. In general, breast-fed infants tend to gain weight more rapidly in the first 2–3 months. From 6 to 12 months breast-fed infants tend to weigh less than formula-fed infants (18,59). These observations have led to recommendations for the development of new infant growth references based on healthy breast-fed infants (18,19,60,61). A study sponsored by the WHO is currently collecting data at study centers in six countries. These data will be used to develop a new international growth reference.

Body Mass Index-for-Age Growth Charts

Body mass index (BMI; kg/m^2) has been recommended for use in children, adolescents, and adults to assess weight, adjusted for stature (34,35,62). BMI tracks over time and the tracking tends to increase at older adolescent ages (64,65). By age 8 years, however, most children are in the percentile range they will follow until the end of growth (65,66).

The pattern of the BMI curves indicates that BMI increases rapidly from birth to approximately 8 months of age, then decreases until approximately age 6 years, when it reaches its nadir before rebounding, or increasing once again (67). This has been termed the *adiposity rebound*, because it is believed to be the age when body fatness begins to increase after reaching a minimum. This pattern is evident in the revised growth charts. The younger the age at which a child's BMI curve is at its nadir, the greater the likelihood that the level of adiposity will be high in adolescence and early adulthood (66,68,69). Children at higher percentiles for BMI tend to achieve their adiposity rebound at

younger ages. These children have a greater likelihood to track at a higher BMI percentile with increasing age.

BMI is commonly used in clinical evaluation of individuals and in population-based studies. BMI can be calculated by dividing weight in kilograms (kg) by stature in meters squared (m^2). As an alternative to doing the calculation, BMI can be estimated from a nomogram or a look-up table (www.cdc.gov/growthcharts). Available nomograms have the disadvantage of approximating BMI only to the nearest integer. Numeric tables with precalculated BMI values to the nearest 0.3 units are preferred to intersecting line nomograms because they provide greater precision. In clinical assessment, a transition from the weight-for-length to the BMI-for-age charts from 24 to 36 months of age becomes possible when children can stand unassisted and adequately follow directions to assume the correct posture for a stature measurement.

Specialized Charts

Low Birthweight and Very Low Birthweight Infants

The revised growth charts for the United States include data on low birthweight infants but do not include data on very low birthweight infants (VLBW; <1,500 gm). Alternate charts are available to assess the growth of VLBW infants. Perhaps the most recent are those developed from data collected in the National Institute of Child Health and Human Development Neonatal Research Network Centers (70). This recent reference was developed from data on 478 infants who were appropriate-for-gestational age and survived to discharge. Prospective growth curves are plotted by 200 gm birthweight intervals for birthweights ranging from 501 to 1,500 gm. However, these charts only extend to about 120 days uncorrected postnatal age or until a body weight of 2000 gm. These charts have a very limited range of use. Perhaps the best general reference available for VLBW infants is the Infant Health and Development

Program (IHDP) reference (71,72,73), although it has limitations. The IHDP growth charts may be considered to assess the growth of VLBW infants from an age corrected for gestation of 40 weeks to 36 months. However, the IHDP charts are based on data collected in 1985, which was before current medical and nutritional care practices were being used. VLBW infants may show more accelerated growth in weight-for-age during the first 6 months of age corrected for gestation than depicted in the IHDP reference and will be lighter for their length than the reference until they are 60 cm long, becoming increasingly heavier for their length than the reference after 60 cm. Alternatively, the new 2000 CDC Growth Charts can be used to assess VLBW infants, but their measurements may fall in the lower percentiles. Length-for-age will show catch up between 18 and 30 months and weight-for-age will fall in the lower percentiles but follow a similar pattern to the CDC growth charts.

Children With Special Health Conditions

A variety of health conditions such as Down syndrome, cerebral palsy, Turner syndrome, and others affect growth status. There are specialized charts that may be considered for use with children affected by these conditions (74–76). These specialized growth charts provide useful growth references, but may have some limitations. Generally, they are developed from relatively small samples. One option is to plot the growth patterns of these children on the specialized charts and the CDC growth charts. This will allow comparisons of growth to the general population of children and to the references for children identified with a given condition. In most cases, BMI charts are not available for special conditions, and the CDC charts would provide a useful reference to monitor weight in relation to stature.

General Growth Chart Principles

Growth References and Standards

The distinction between a growth reference and a growth standard is relevant to the development and application of growth charts. The WHO working groups (61,77) have defined a reference as a tool for providing a common basis for purposes of comparison, and a standard as embodying a concept of a norm or target, that is, a value judgment. In simple terms, a reference describes “what is,” whereas a standard prescribes “what should be.” In practice, however, reference values are often used as a standard (78). Growth references are intended to be used to screen and monitor growth in individuals and populations. They are not intended to be the sole independent diagnostic instruments upon which clinical decisions are made.

In the development of the 1977 NCHS Growth Charts, the task force adhered strictly to a policy of no data adjustments (8). In the development of the 2000 CDC Growth Charts, two notable data exclusions were made. The first exclusion was of data for all VLBW infants and the second was of body weight observations for NHANES III subjects ages 6 years or over. The exclusion of VLBW infants was based on the fact that alternative growth references are available and are appropriate to monitor the unique growth patterns of VLBW infants.

The exclusion of NHANES III body weight data for children and adolescents was made after consultation with numerous experts. Although this meant straying from a pure reference, the advantages of excluding these data were judged to outweigh the disadvantages. Had these data been retained, the increase in body weight among NHANES III subjects would have shifted the weight- and BMI-for-age percentile curves upward. This would have led to identifying fewer children

and adolescents as overweight or at risk of overweight. The revised U.S. growth charts are still intended to be growth references.

In addition to data exclusions, there were some minor data adjustments and inclusions of data that were not nationally representative. The length data were adjusted to integrate them with stature data in the smoothing process. State data were used for length at birth and weight-for-length at birth, Fels data were used for head circumference at birth, and PedNSS data were used for length-for-age from 0.5 to 5.0 months. These approaches were taken to provide more complete and accurate charts, and do not diminish their use as growth references based on well-defined data sources.

Roles of Cross-Sectional and Longitudinal Data in Growth Charts

There is a difference between growth (or size) charts and growth velocity charts (8). The 2000 CDC Growth Charts for the United States are based primarily on cross-sectional national survey data that were statistically smoothed to create percentile curves. The curves were superimposed on grids that permit interpretation of an individual’s attained body size (weight, length or stature, and head circumference) at given ages, or weight at given lengths or statures, in comparison with the body sizes of children in the reference population. Therefore, these charts more appropriately may be considered size charts. When serial values for an individual are plotted, assessments can be made of that individual’s growth progress over time.

Growth velocity charts are constructed from incremental data obtained from longitudinal observations. Growth velocity charts are more sensitive indicators of small changes in growth status than the size-attained charts, and are more useful when evaluating changes in growth rates that are important in selected growth disorders and therapies. Incremental growth charts and growth tables for

6-month increments have been developed using weight, recumbent length, stature, and head circumference data from the Fels Longitudinal Study (79,80).

Percentiles and Z-Scores

Smoothed percentile curves and z-scores are used to evaluate the growth of children. Percentiles are the most commonly used clinical indicator to assess the size and growth patterns of individual children in the United States. Percentiles rank the position of an individual by indicating what percent of the reference population the individual would equal or exceed. For example, on the weight-for-age growth charts, a 5-year-old girl whose weight is at the 25th percentile, weighs the same or more than 25 percent of the reference population of 5-year-old girls, and weighs less than 75 percent of the 5-year-old girls in the reference population.

A z-score is the deviation of the value for an individual from the mean value of the reference population divided by the standard deviation for the reference population. Because z-scores have a direct relationship with percentiles, a conversion can occur in either direction using a standard normal distribution table. Therefore, z-scores and percentiles are interchangeable. Which one is used is based primarily on convention or preference. In certain population-based applications, such as research settings and surveillance systems, the mean and standard deviation are often calculated for a group of z-scores (61). In selected clinical situations where growth monitoring is an important evaluation tool and greater measurement precision is necessary, z-scores or exact percentiles may be preferred by clinicians.

To track growth below the 5th percentile, z-scores achieved widespread use. A z-score of -2 SD is accepted as a standard statistical cutoff point to determine the need for nutritional intervention and corresponds approximately to the 3rd percentile (z-score at 3rd percentile = 1.88) (77). Because the LMS values were calculated by solving equations that used the values for percentiles ranging

from the 3rd to the 97th, the outermost percentiles less than the 3rd or greater than the 97th are beyond the range of the data. The sample sizes for the data used to calculate the growth charts were not adequate to calculate percentiles below 3 and above 97, corresponding to z-scores of -1.88 and 1.88 .

Extrapolation beyond this range of the data should be done with caution. In addition, a solution may not be obtained when both the Z and L are high and have opposite signs. Moreover, some z-score values may have extreme corresponding measurement values. For these reasons, any use of the LMS values to calculate z-scores below -2 (2.3 percentile) or above 2 (97.7 percentile) should be done with an awareness of the limitations. Z-scores and exact percentiles can be calculated using formulas and data tables available on the Internet (www.cdc.gov/growthcharts) or in the revised nutritional anthropometry module (NutStat) of CDC's Epi Info 2000. Epi Info is a public domain computer program available on the Internet (www.cdc.gov/epinfo).

Conclusions

The purpose of this revision to the 1977 NCHS Growth Charts was to provide better estimates of size and growth, using more comprehensive national survey data and improved statistical smoothing procedures. To construct clinically useful growth charts, it is necessary to have access to a reference population, to obtain anthropometric data, and to statistically smooth the observed data. In developing such reference data for children, it is not feasible to conduct a study that would obtain measures on the total U.S. population of children and adolescents. Instead, the reference population for the revised U.S. growth charts was primarily based on statistically representative samples of the U.S. pediatric population, measured in a series of cross-sectional surveys from 1963 to 1994, that were supplemented with limited data from other sources. Replacing the Fels data in the 1977

NCHS infant charts with national survey data addressed one of the major concerns with the 1977 charts.

National survey data, in combination with improved statistical smoothing procedures, produced curves with better transitions between the infant and older child curves from 24 to 36 months of age than were found in the 1977 curves. The statistical procedures used to generate the 2000 growth charts will allow users to calculate percentiles and z-scores that are completely interchangeable. This is an improvement over the 1977 NCHS charts where they often did not agree.

A major shortcoming in the 1977 NCHS charts was the inability to calculate a weight-for-stature value for post-pubertal adolescents. Overweight in children and adolescents is becoming more common in the United States (81–83), and screening tools are needed to identify individuals and population groups at risk. Expert committees have recommended use of the BMI to identify children who are overweight or at risk of becoming overweight (34,35). Development of the new BMI-for-age growth chart for boys and girls from 2 to 20 years of age provides a screening instrument to monitor weight adjusted for stature.

The 2000 CDC Growth Charts for the United States are intended to serve as a reference to evaluate physical size and growth for the majority of the pediatric population. For preterm, VLBW infants and children with specific conditions that may affect size and growth, various charts are available for alternative use, although most of these were developed from restricted samples that were not based on nationally representative survey data.

Differences between the 1977 and the 2000 growth charts have been illustrated in this report. In clinical practice most of these differences will not affect the way in which current evaluations are made. Substitution of the 2000 CDC charts for the 1977 NCHS charts in research, surveillance, food assistance, and other population-based activities may affect the classification of some individuals.

The revised growth charts should continue to meet the many uses that

growth charts currently serve in the United States. Users are encouraged to make the transition from the 1977 NCHS Grow Charts to the 2000 CDC Growth Charts. To facilitate this transition, master copies of the 2000 CDC Growth Charts are available on the Internet as high resolution graphics with guidelines for reproducing multiple copies (www.cdc.gov/growthcharts). CDC has made available camera-ready negatives to State health offices, and copies are also available through some infant formula manufacturers and professional organizations such as the American Academy of Pediatrics. Various proprietary software programs are available that incorporate the 2000 CDC Growth Charts in electronic formats, and CDC has included the normalized 1977 and the 2000 growth charts in the NutStat module of Epi Info 2000.

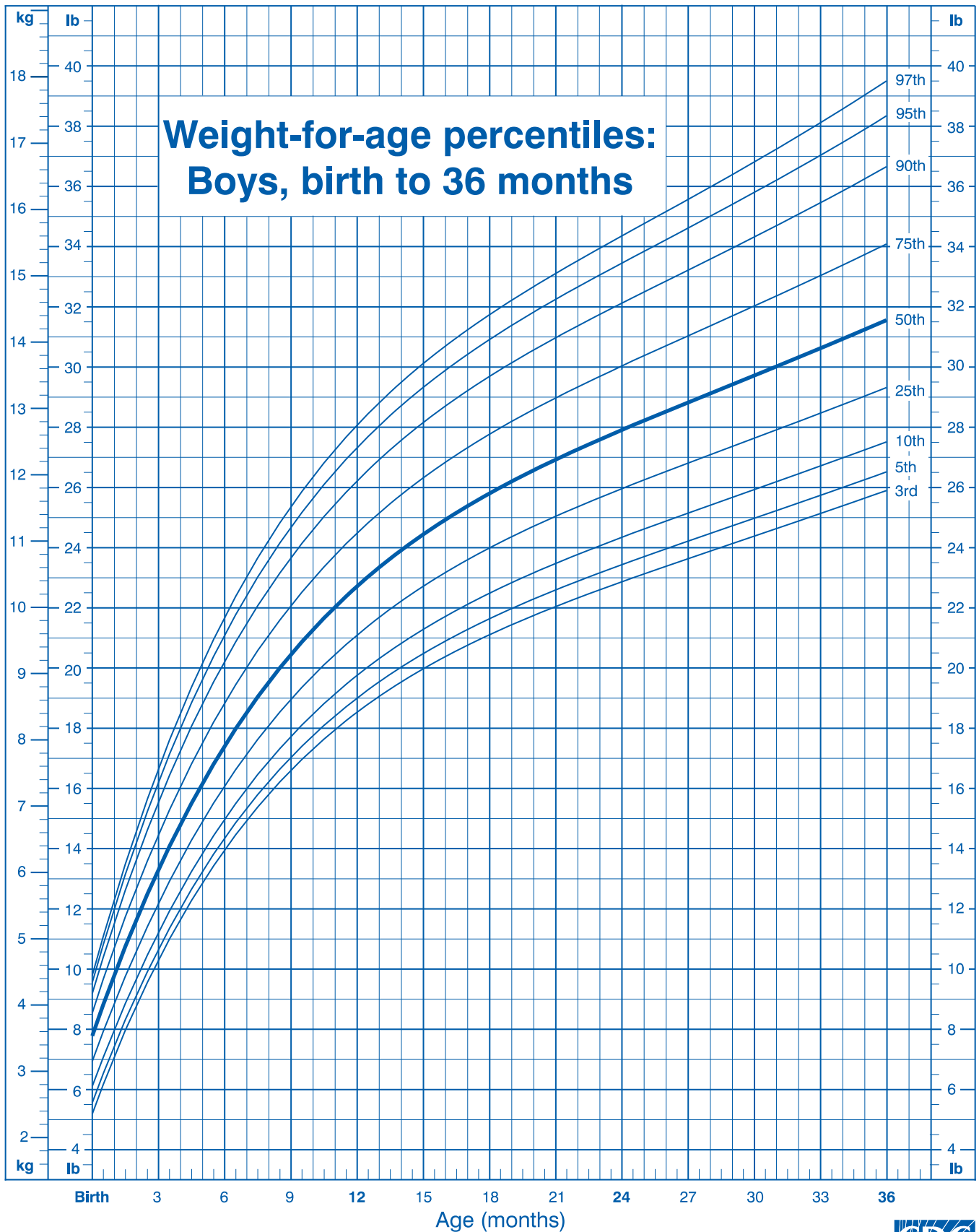
As the 2000 CDC Growth Charts are used in various applications, they will continue to be evaluated. Through this process, additional knowledge will be gained to give direction for future improvements in pediatric growth charts for the United States.

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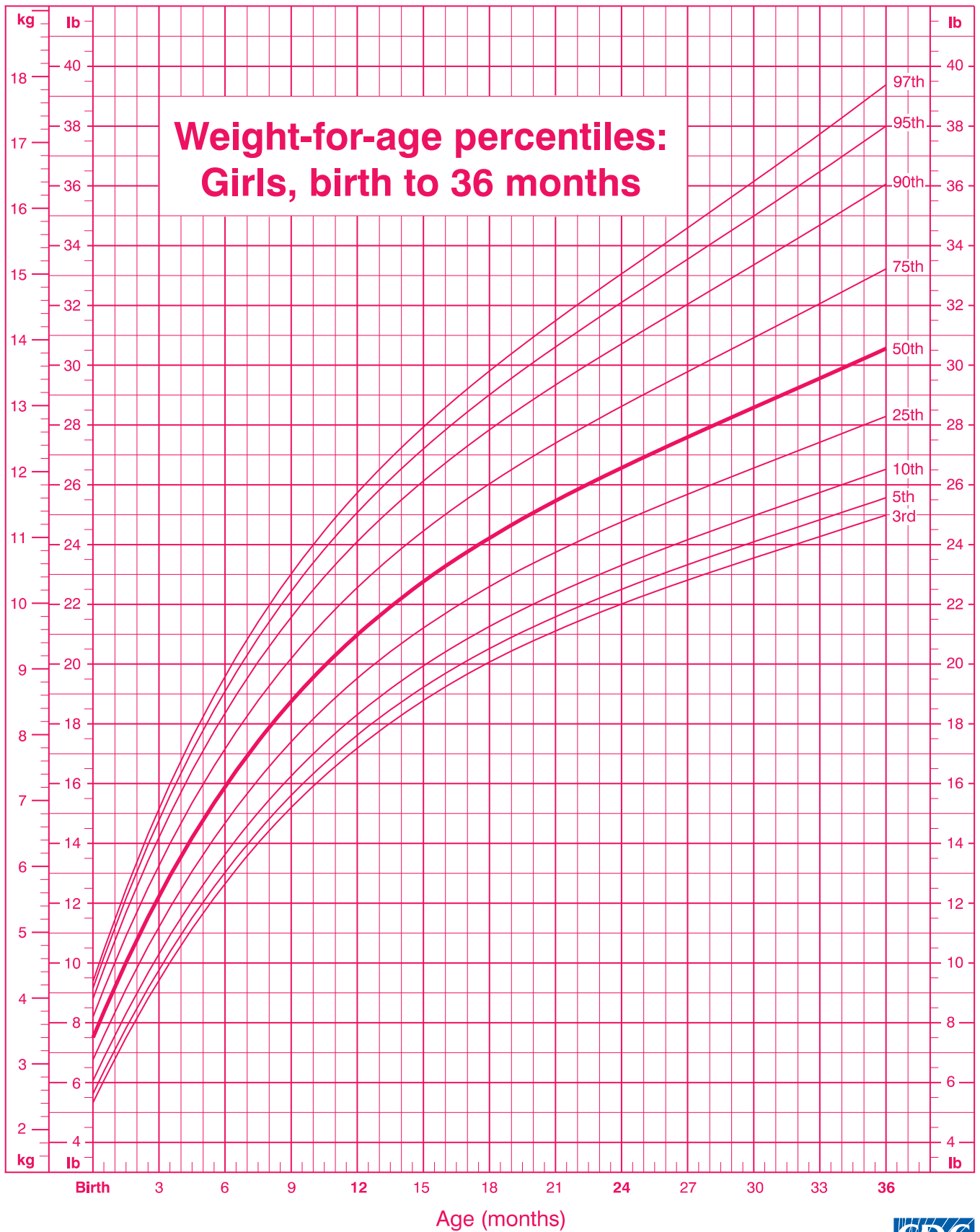
Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Figure 1. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, birth to 36 months: Boys weight-for-age



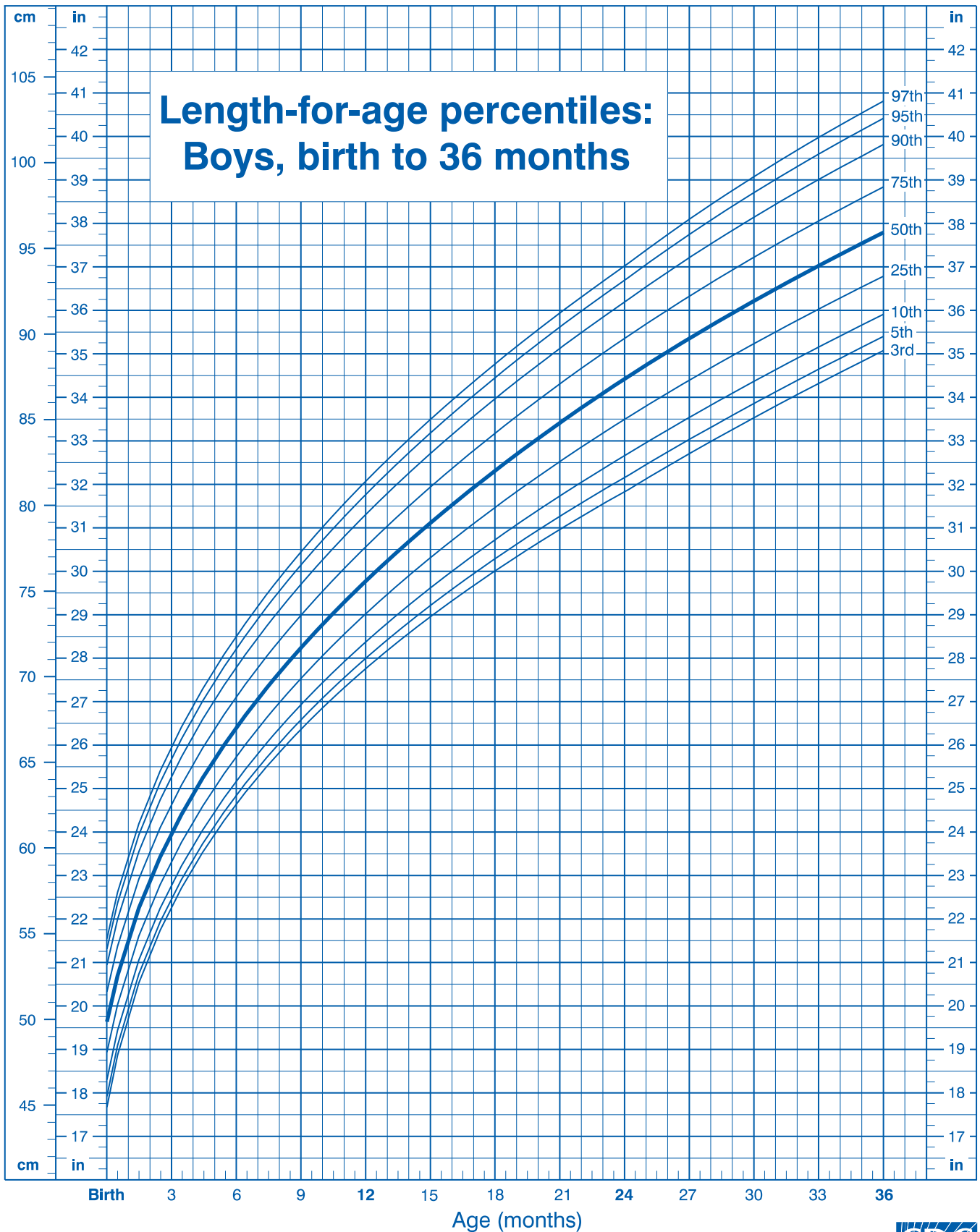
Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Figure 2. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, birth to 36 months: Girls weight-for-age



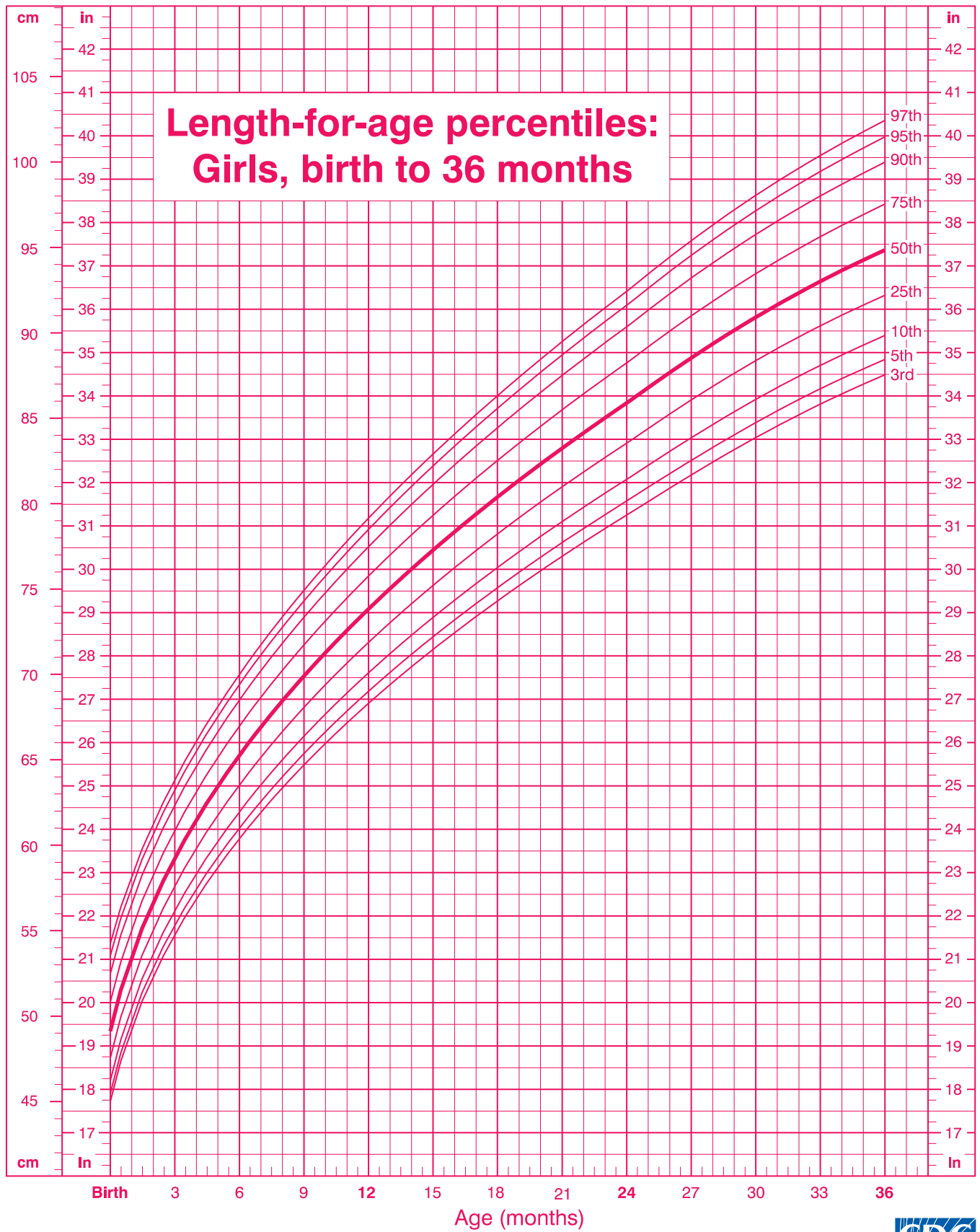
Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Figure 3. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, birth to 36 months: Boys length-for-age



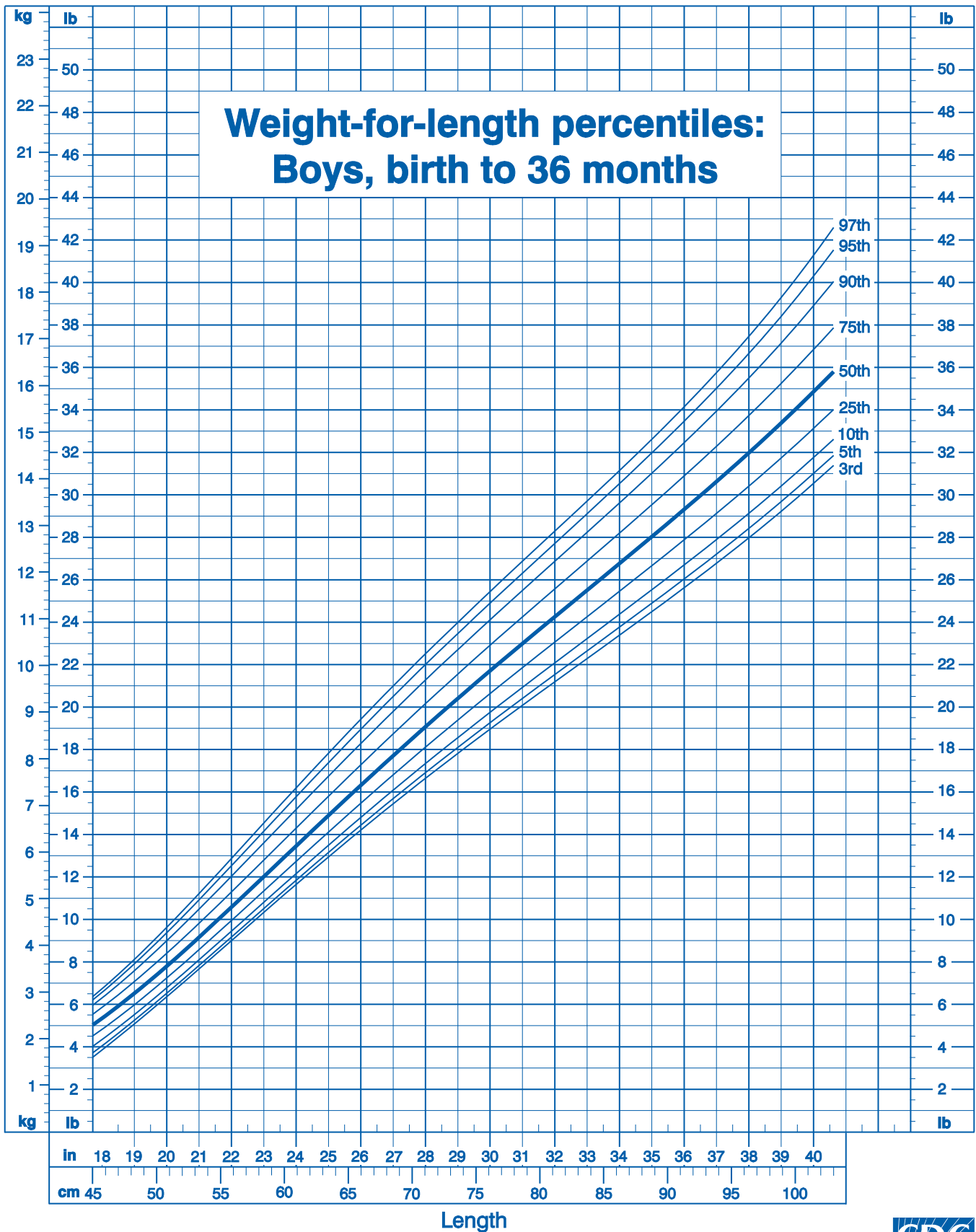
Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Figure 4. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, birth to 36 months: Girls length-for-age



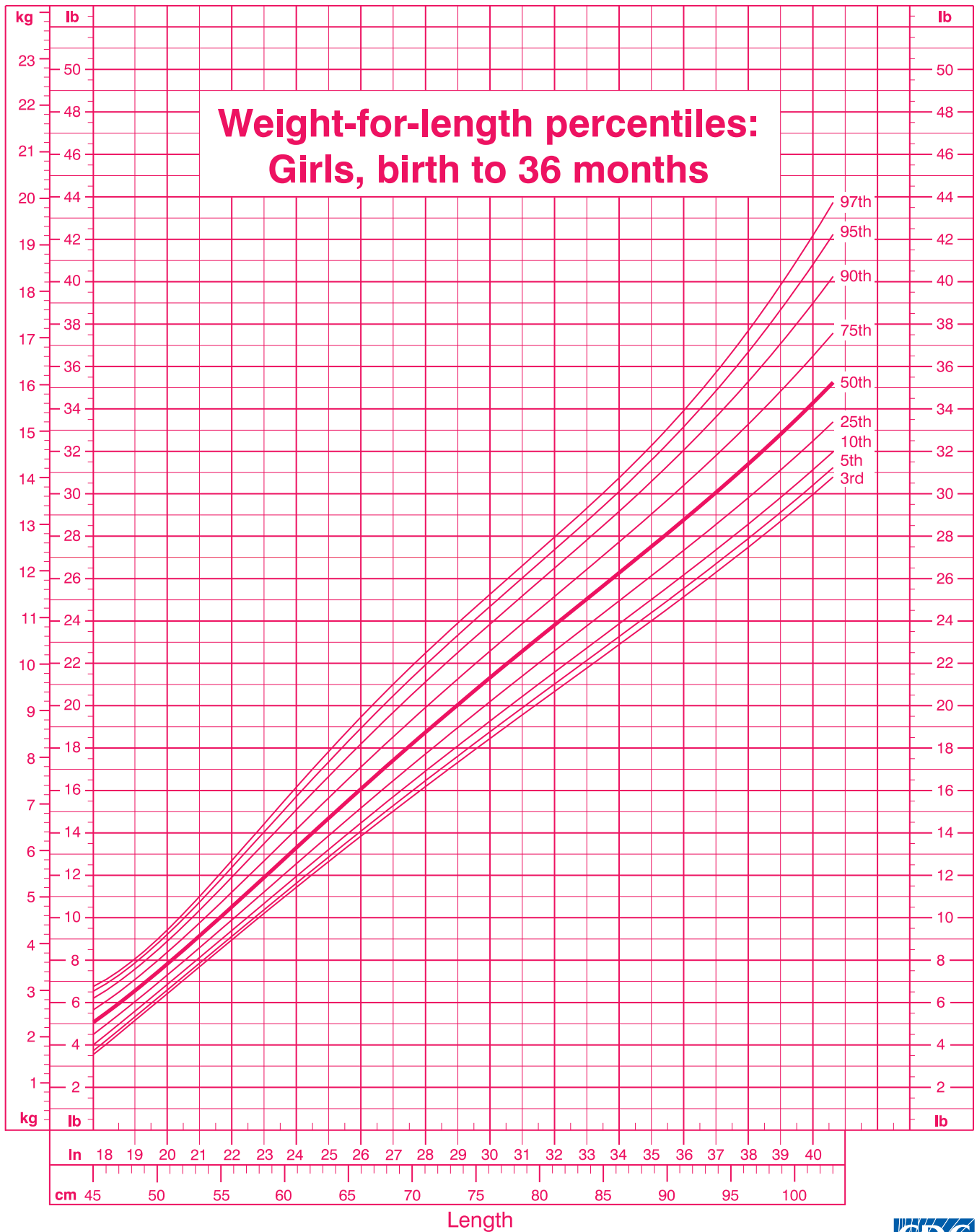
Published May 30, 2000 (modified 6/8/00).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Figure 5. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, birth to 36 months: Boys weight-for-length



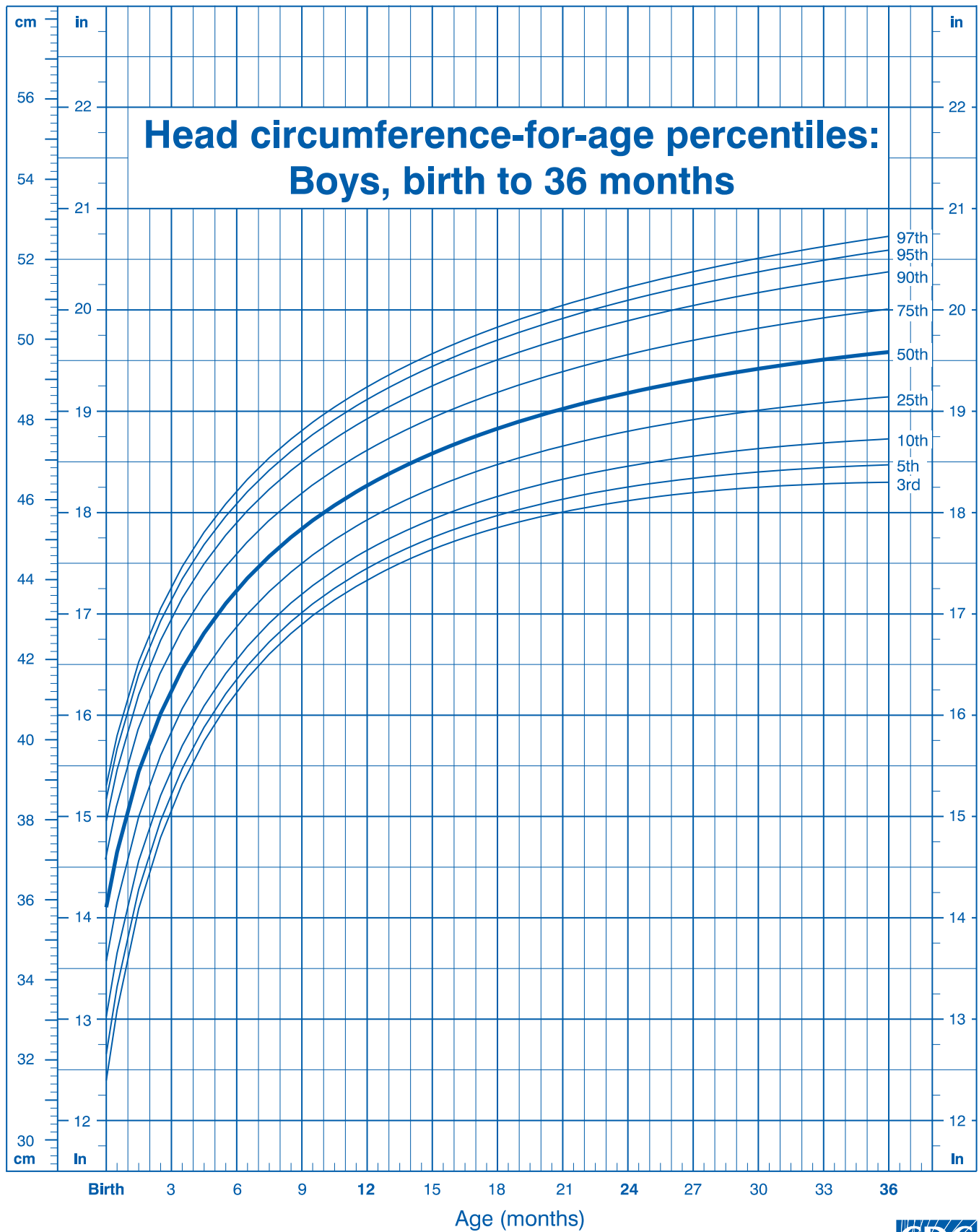
Published May 30, 2000. (modified 6/8/00)

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Figure 6. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, birth to 36 months: Girls weight-for-length



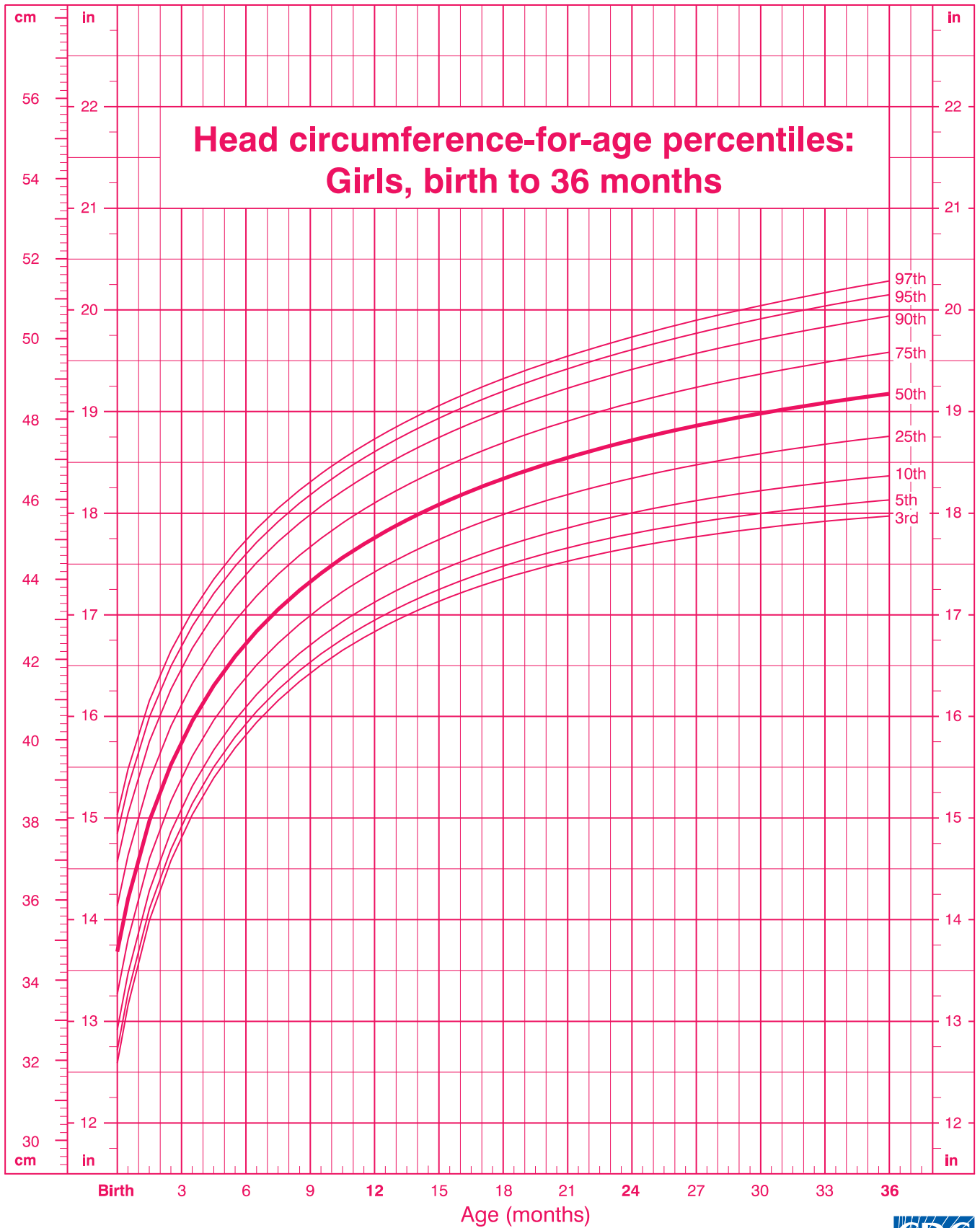
Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Figure 7. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, birth to 36 months: Boys head circumference-for-age



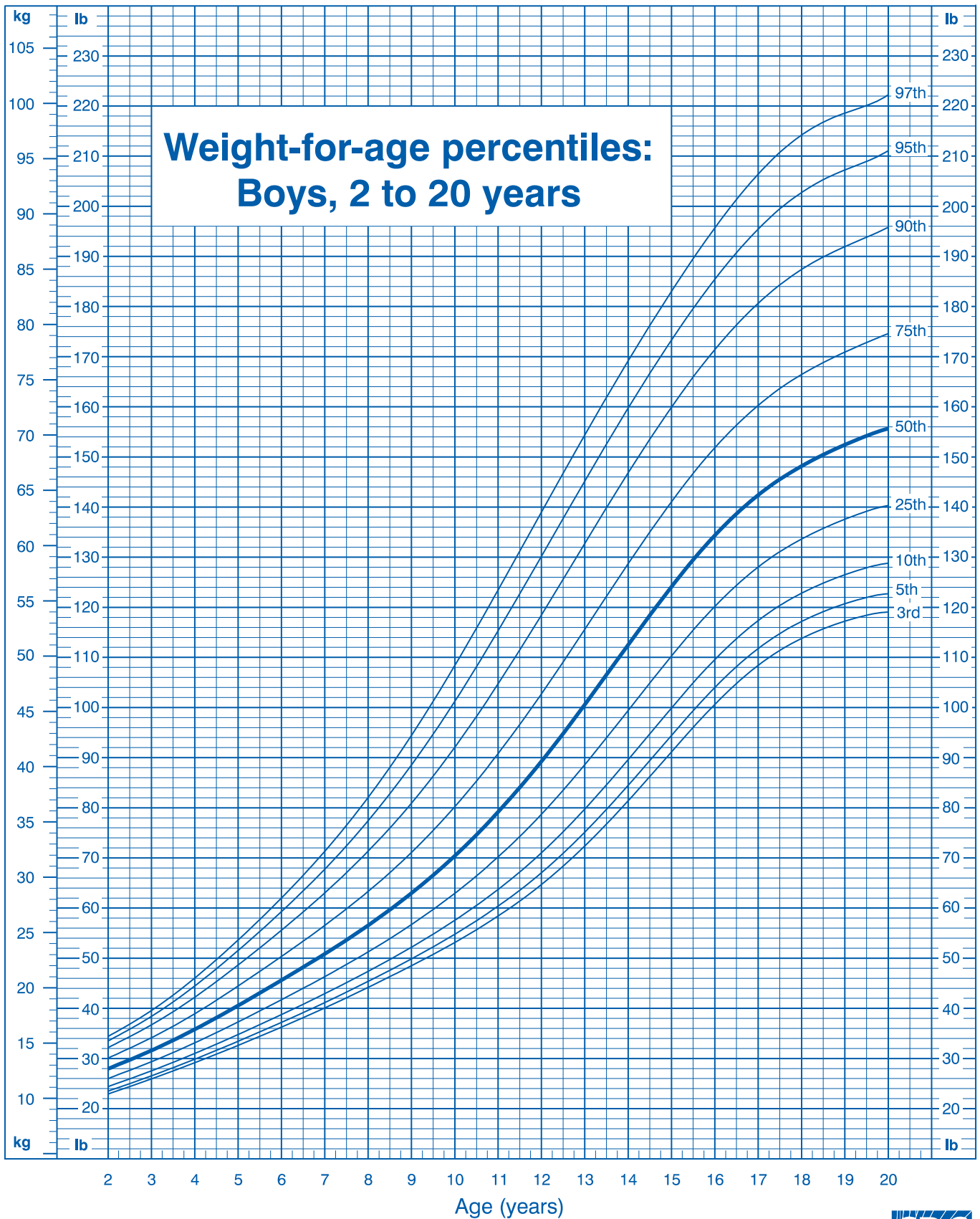
Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Figure 8. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, birth to 36 months: Girls head circumference-for-age



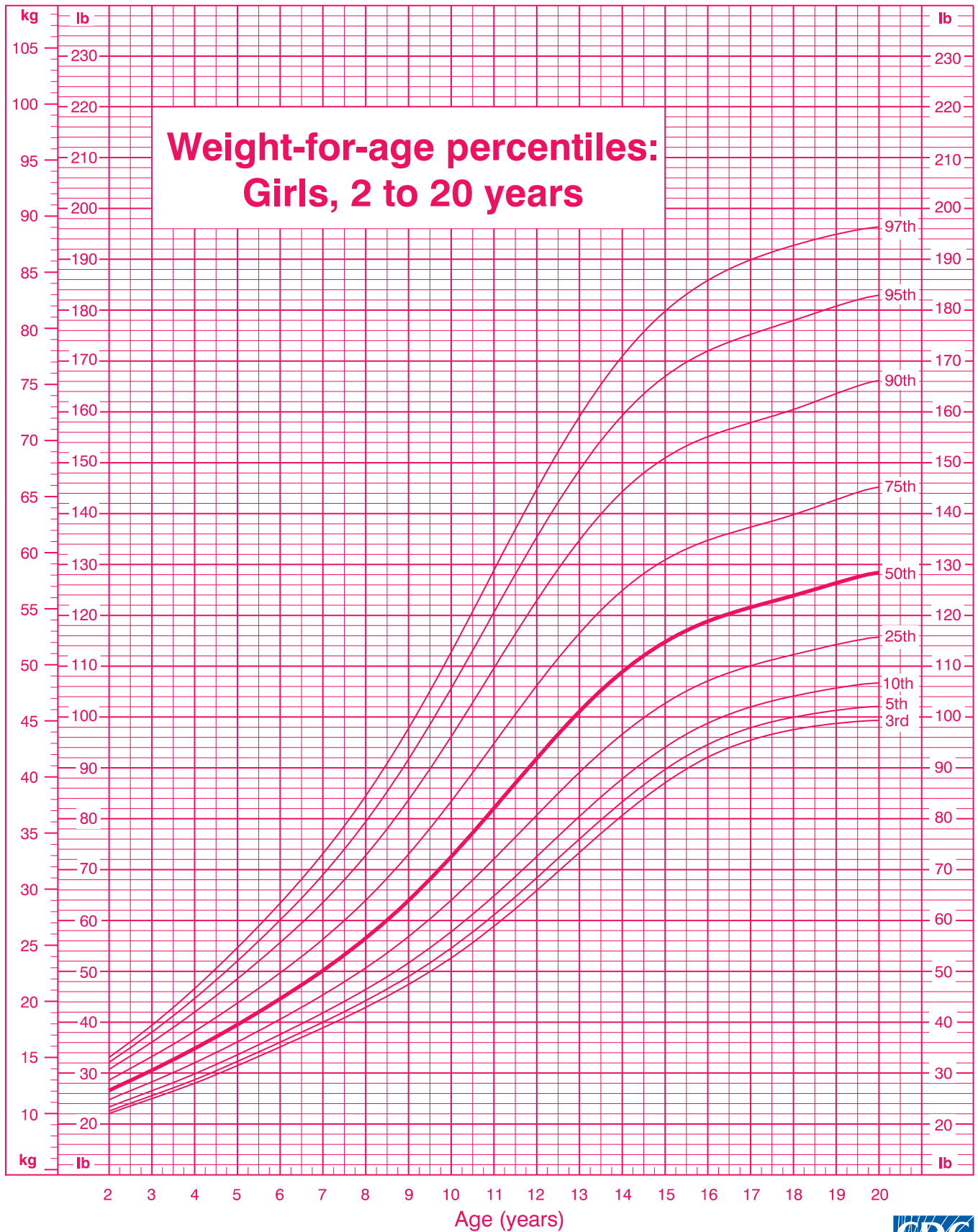
Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Figure 9. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, 2 to 20 years: Boys weight-for-age



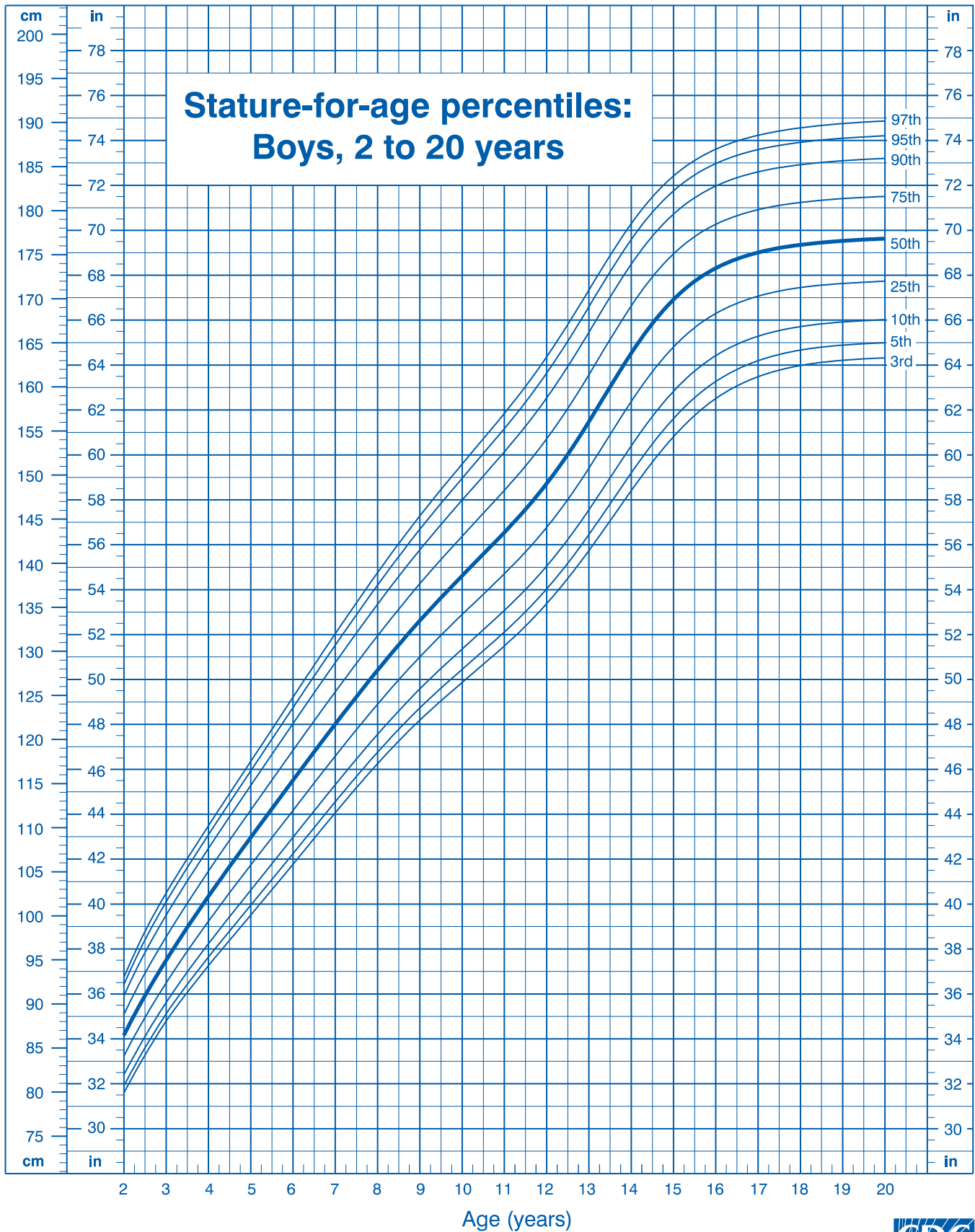
Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Figure 10. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, 2 to 20 years: Girls weight-for-age



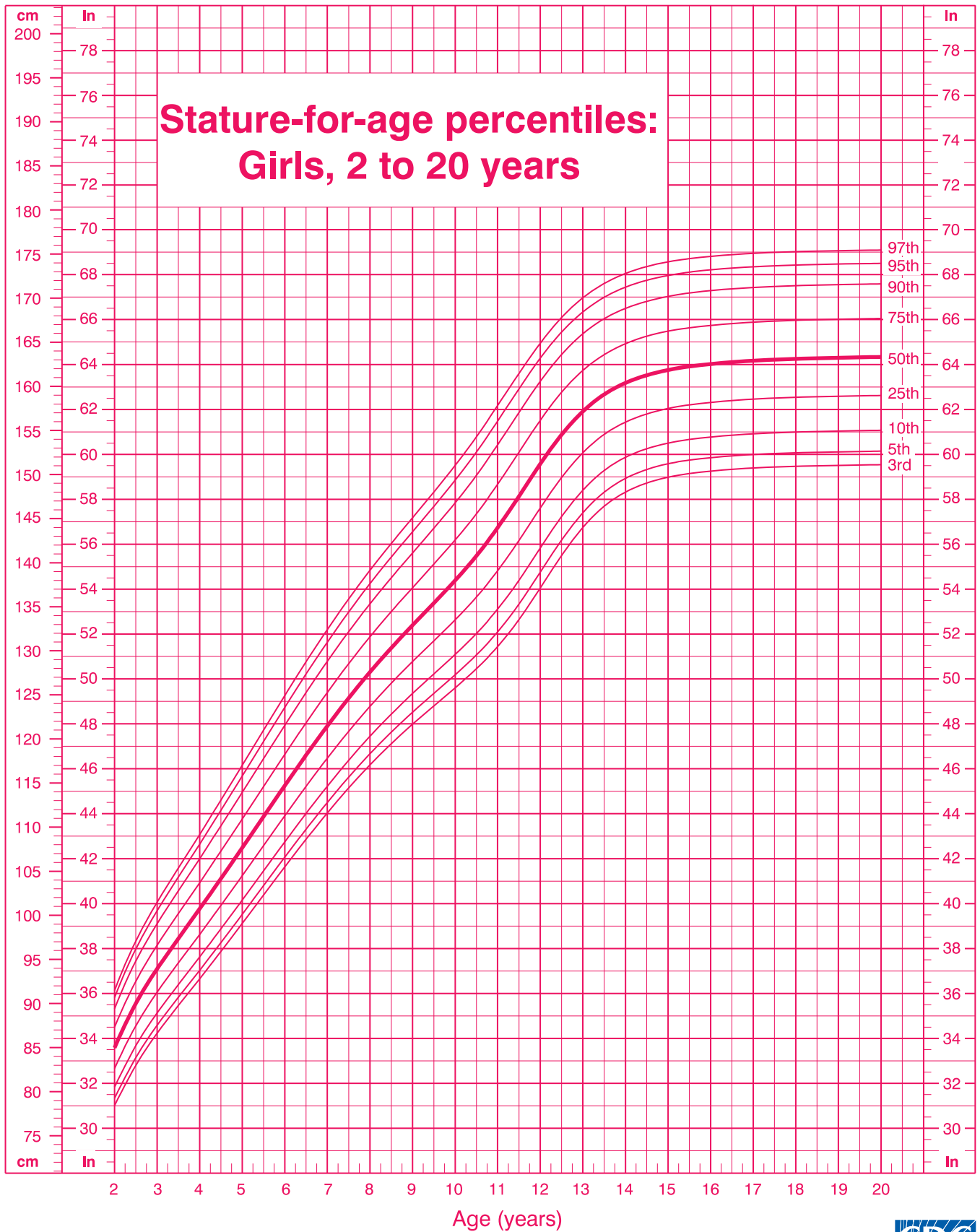
Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Figure 11. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, 2 to 20 years: Boys stature-for-age



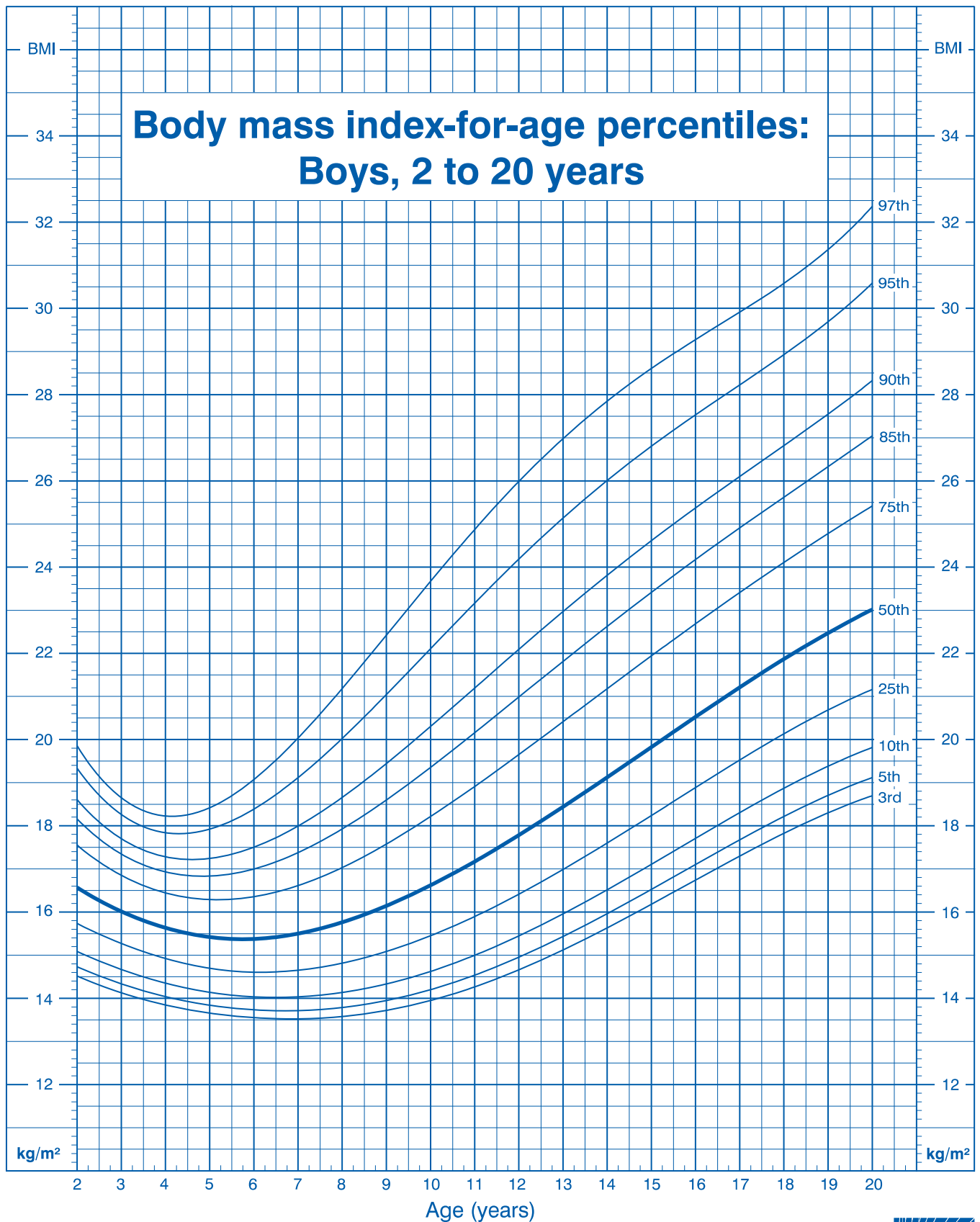
Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion



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Figure 12. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, 2 to 20 years: Girls stature-for-age



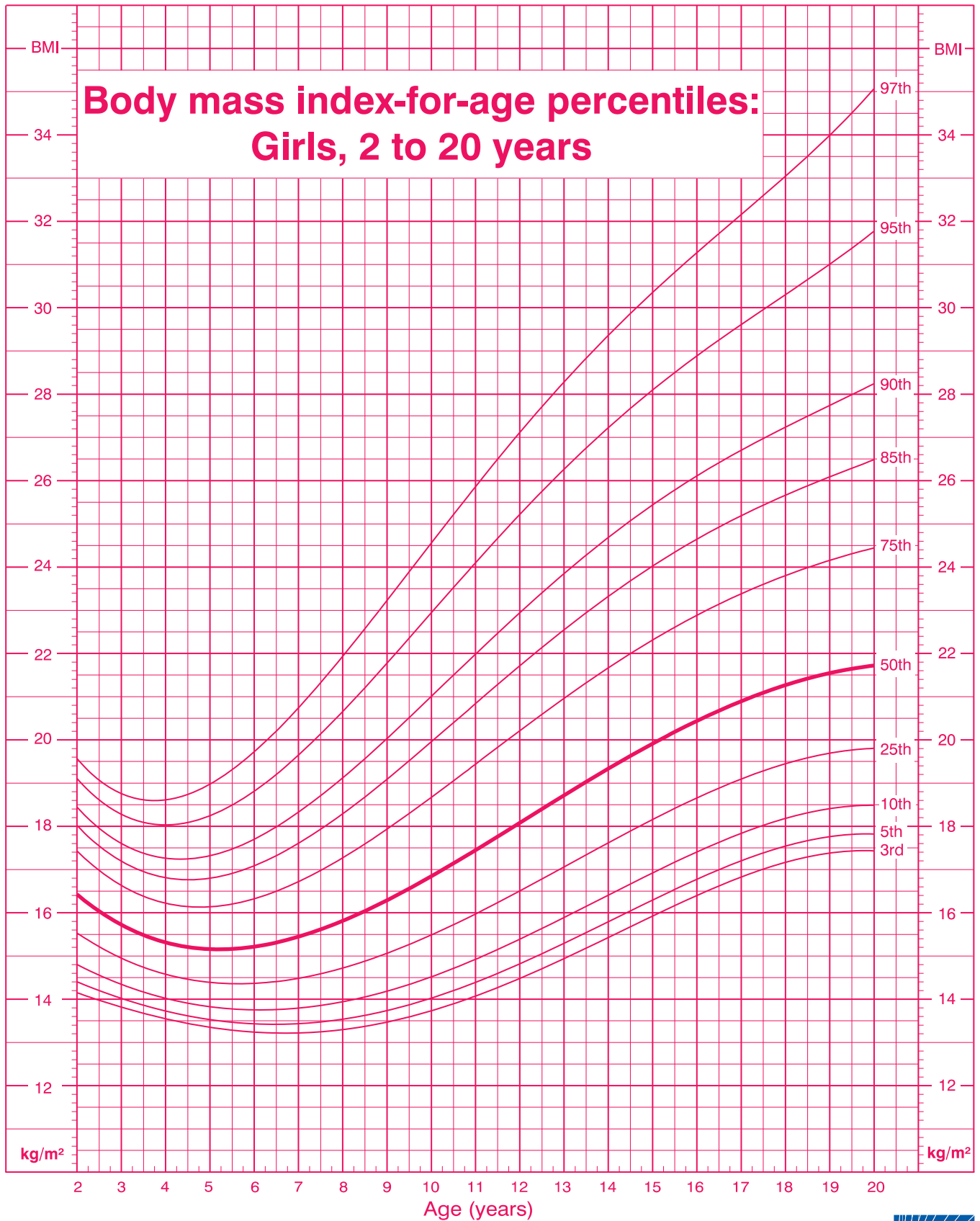
Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion



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Figure 13. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, 2 to 20 years: Boys body mass index-for-age



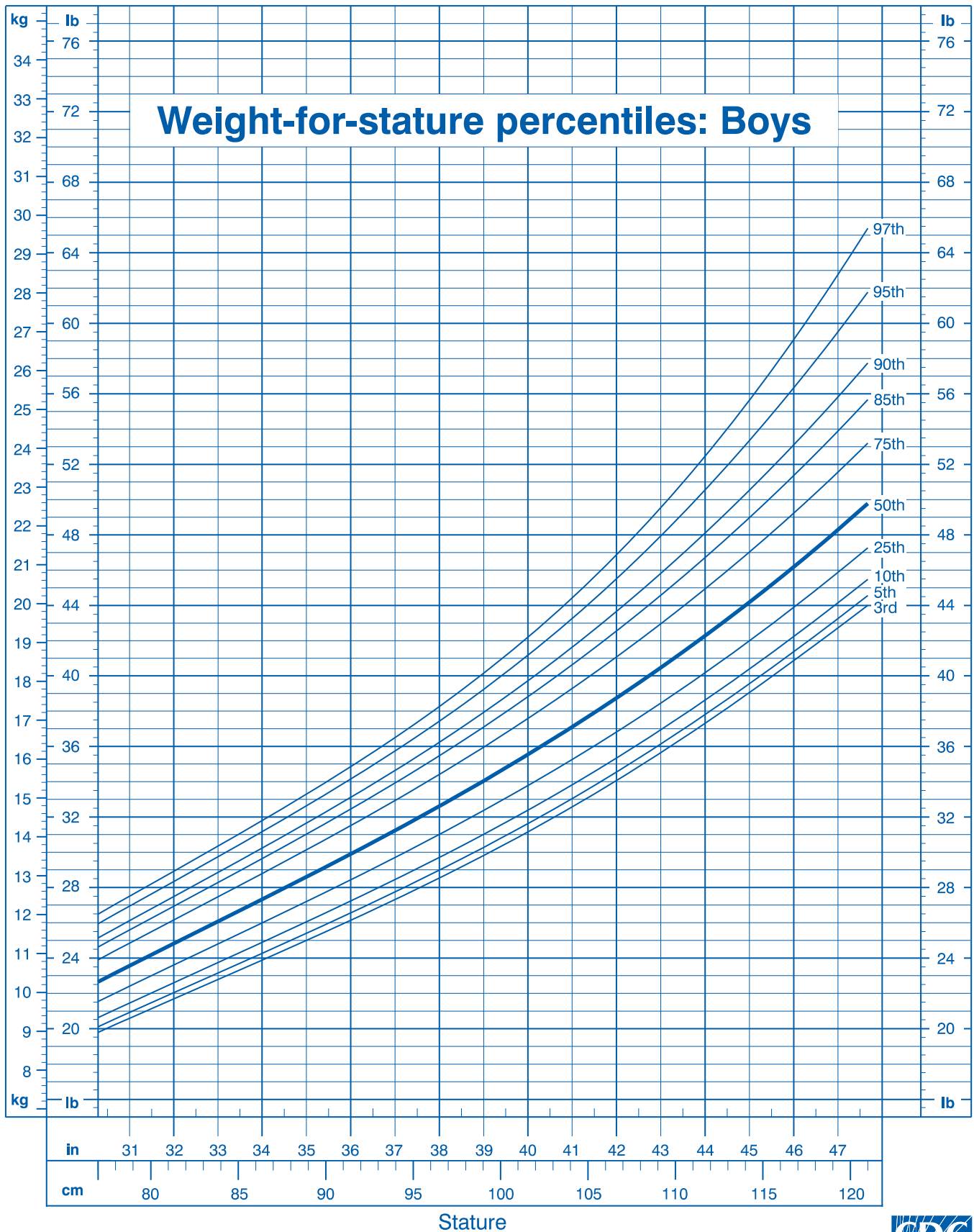
Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Figure 14. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 85th, 90th, 95th, 97th percentiles, 2 to 20 years: Girls body mass index-for-age



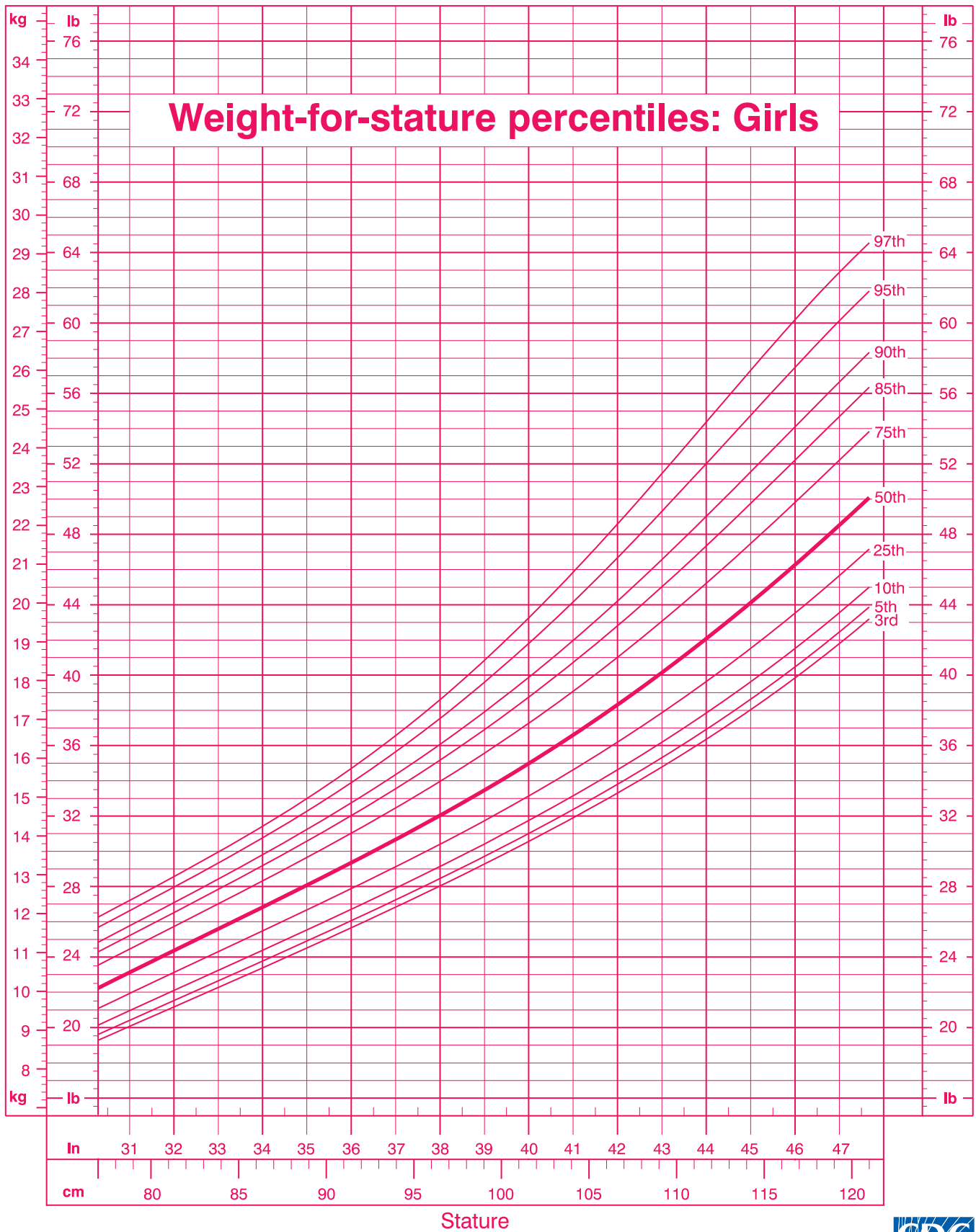
Published May 30, 2000 (modified 11/21/00).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion



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Figure 15. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 85th, 90th, 95th, 97th percentiles: Boys weight-for-stature



Published May 30, 2000 (modified 11/21/00).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion



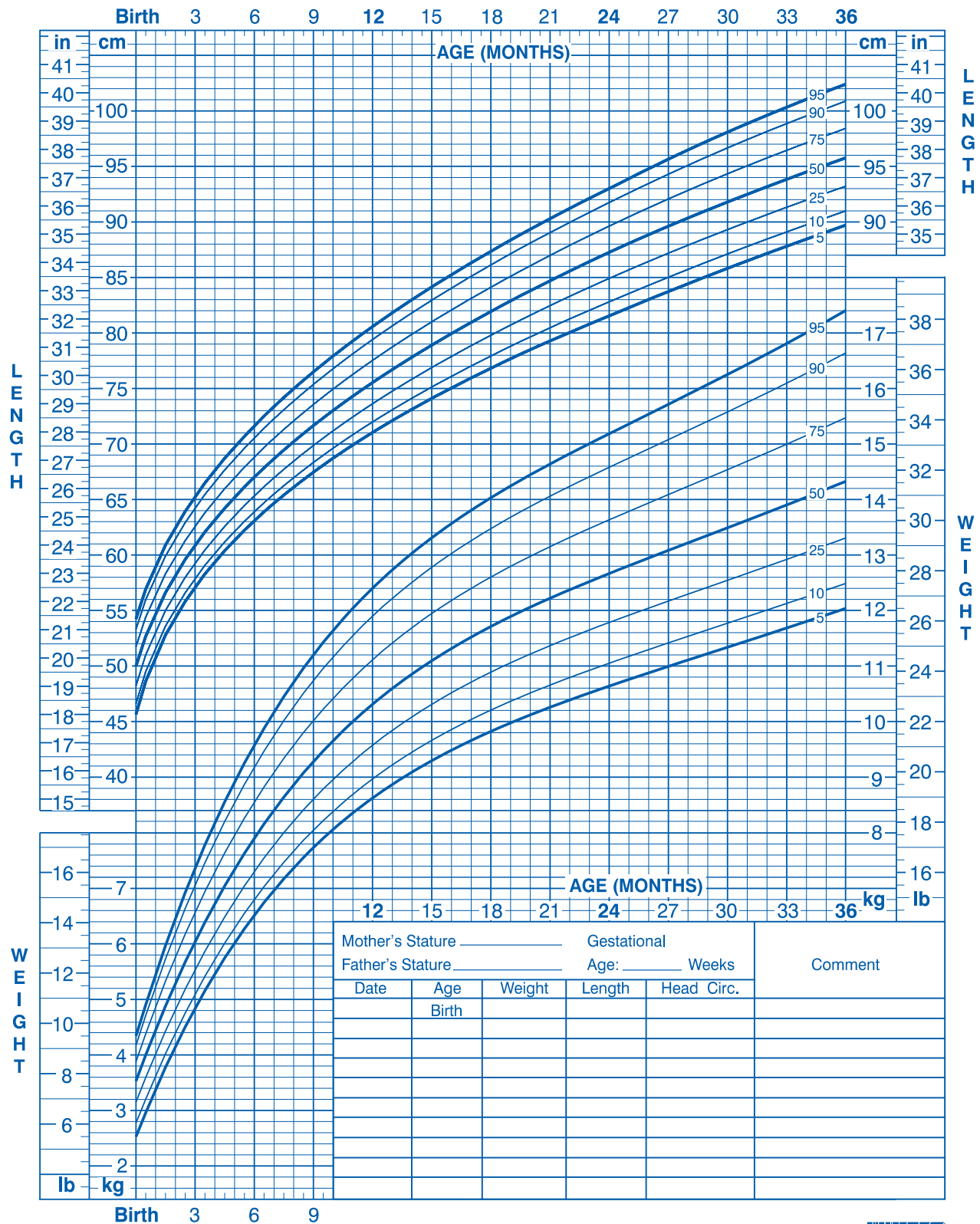
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Figure 16. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 85th, 90th, 95th, 97th percentiles: Girls weight-for-stature

Birth to 36 months: Boys Length-for-age and Weight-for-age percentiles

NAME _____

RECORD # _____



Published May 30, 2000 (modified 4/20/01).
 SOURCE: Developed by the National Center for Health Statistics in collaboration with
 the National Center for Chronic Disease Prevention and Health Promotion (2000).
<http://www.cdc.gov/growthcharts>

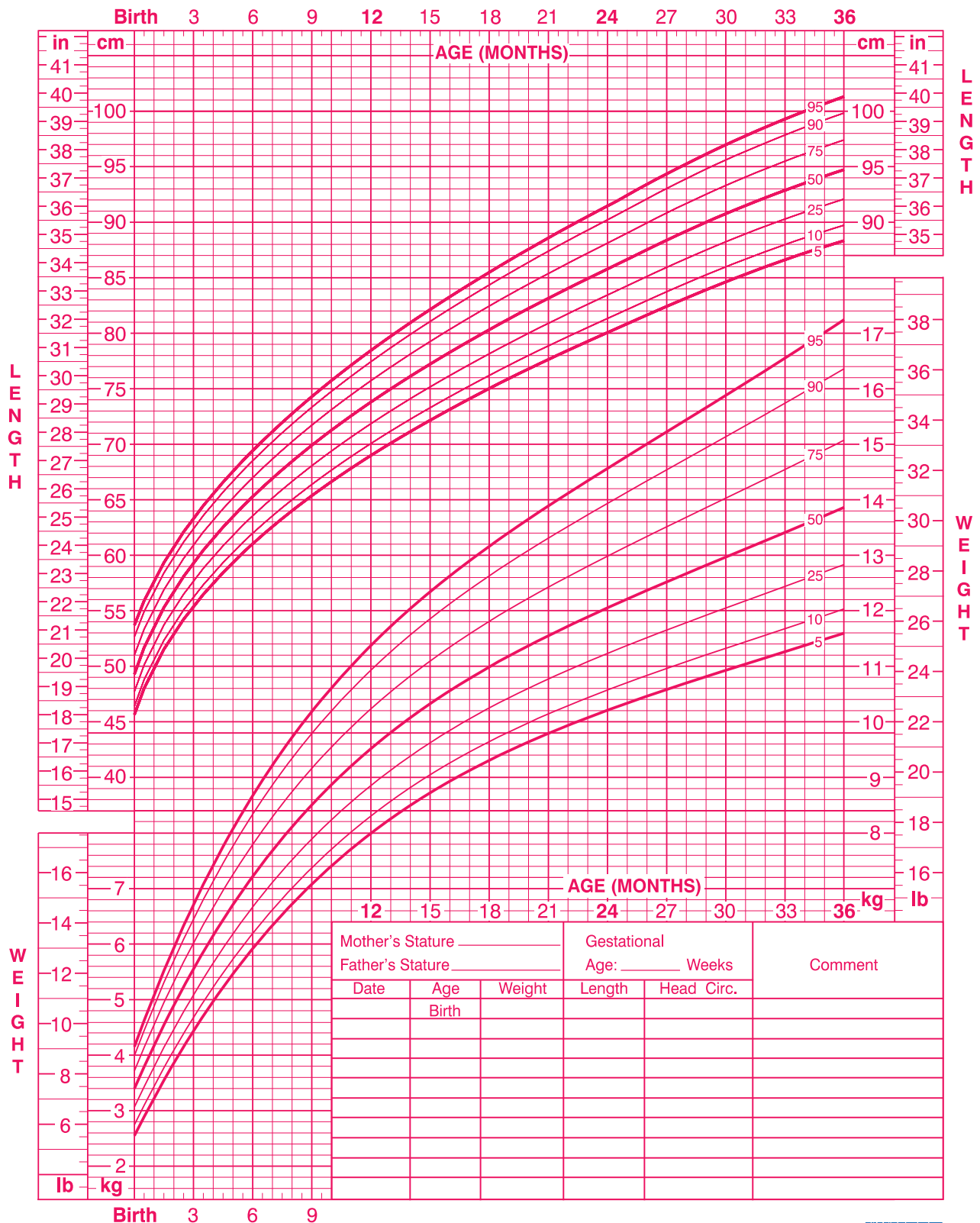


Figure 17. Clinical growth chart 5th, 10th, 25th, 50th, 75th, 90th, 95th percentiles, birth to 36 months: Boys length-for-age and weight-for-age percentiles

Birth to 36 months: Girls Length-for-age and Weight-for-age percentiles

NAME _____

RECORD # _____



Published May 30, 2000 (modified 4/20/01).
 SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
<http://www.cdc.gov/growthcharts>

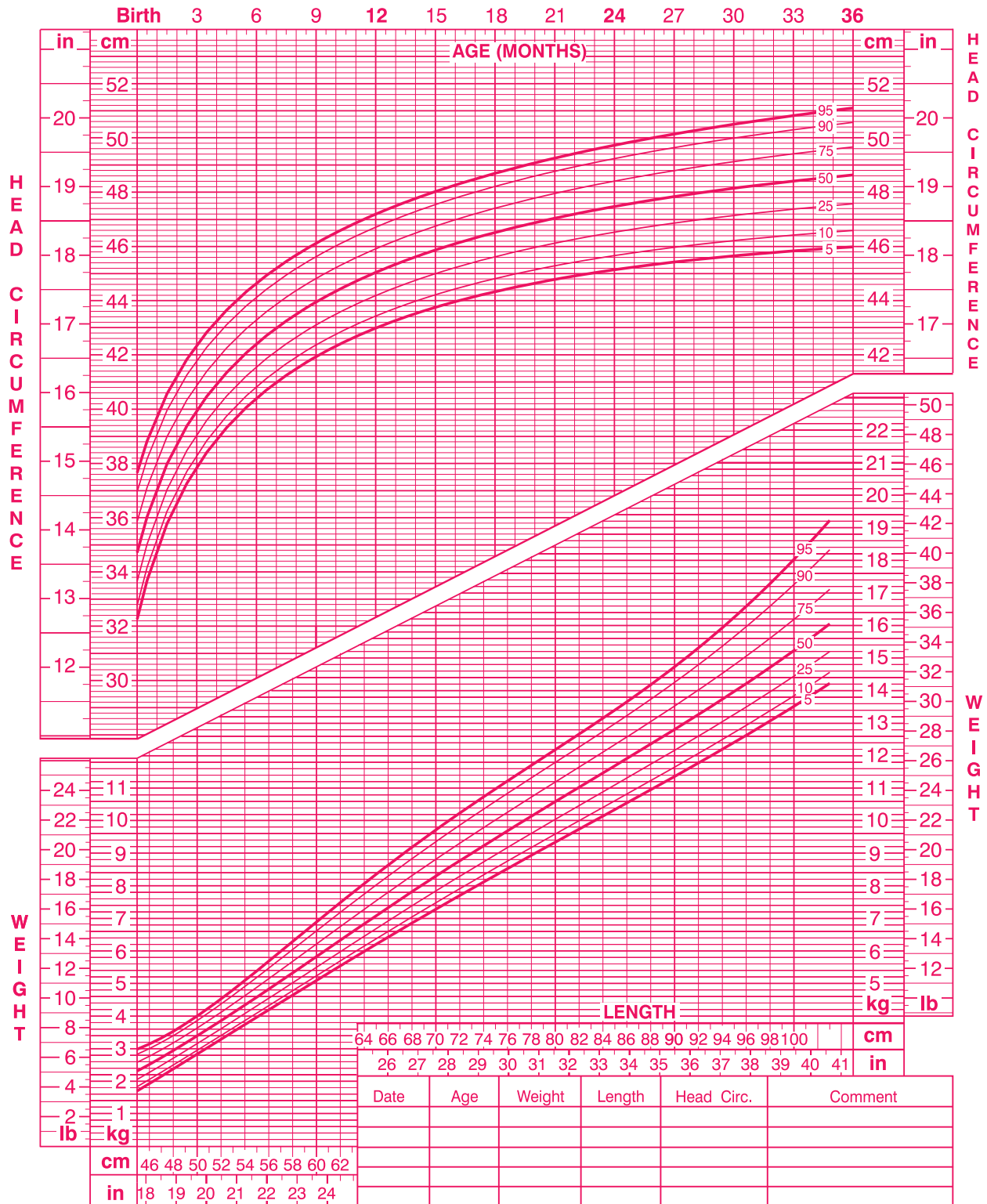


Figure 18. Clinical growth chart 5th, 10th, 25th, 50th, 75th, 90th, 95th percentiles, birth to 36 months: Girls length-for-age and weight-for-age percentiles

Birth to 36 months: Girls Head circumference-for-age and Weight-for-length percentiles

NAME _____

RECORD # _____



Published May 30, 2000 (modified 10/16/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
<http://www.cdc.gov/growthcharts>



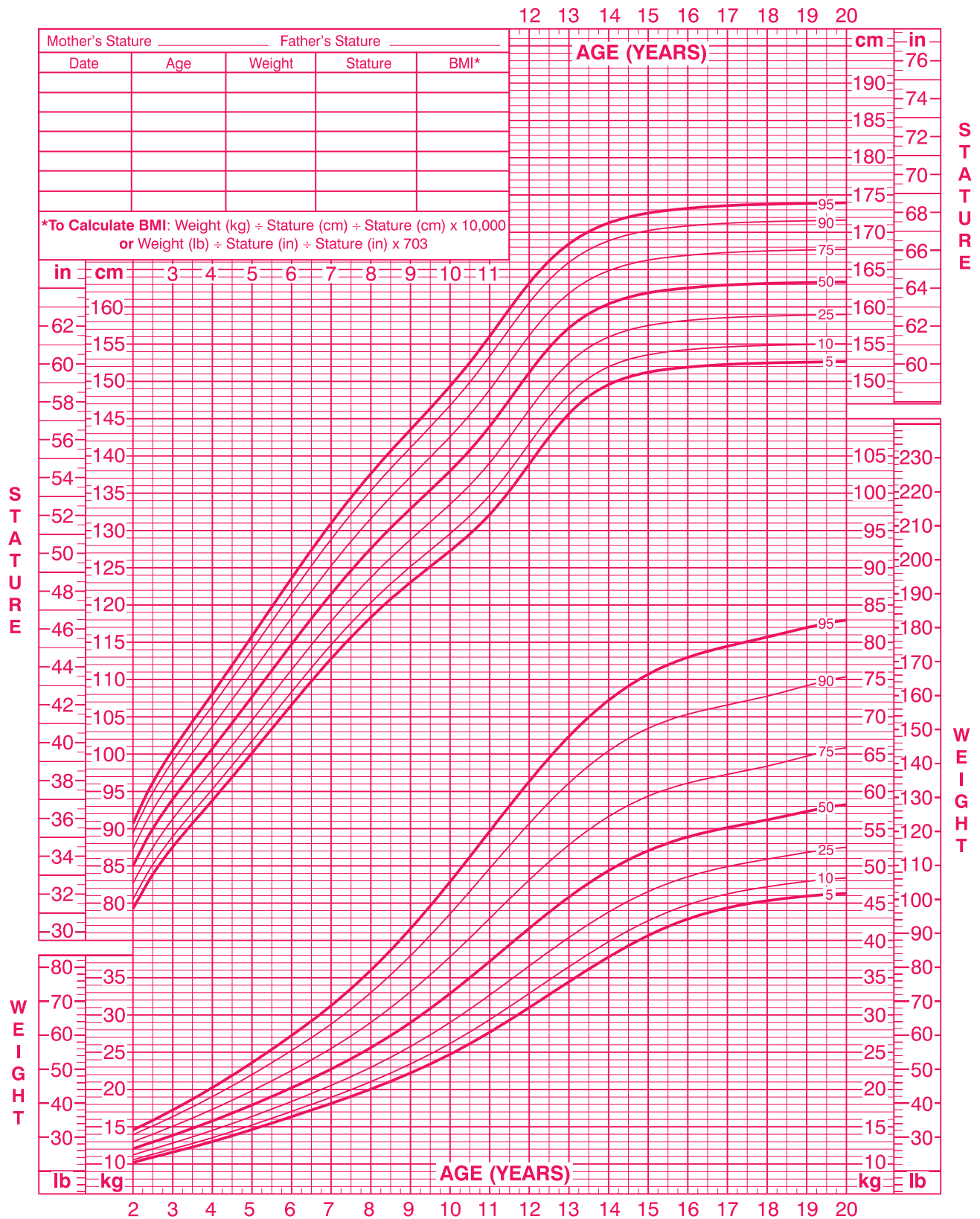
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Figure 20. Clinical growth chart 5th, 10th, 25th, 50th, 75th, 90th, 95th percentiles, birth to 36 months: Girls head circumference-for-age and weight-for-length

2 to 20 years: Girls Stature-for-age and Weight-for-age percentiles

NAME _____

RECORD # _____



Published May 30, 2000 (modified 11/21/00).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
<http://www.cdc.gov/growthcharts>



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Figure 22. Clinical growth chart 5th, 10th, 25th, 50th, 75th, 90th, 95th percentiles, 2 to 20 years: Girls stature-for-age and weight-for-age

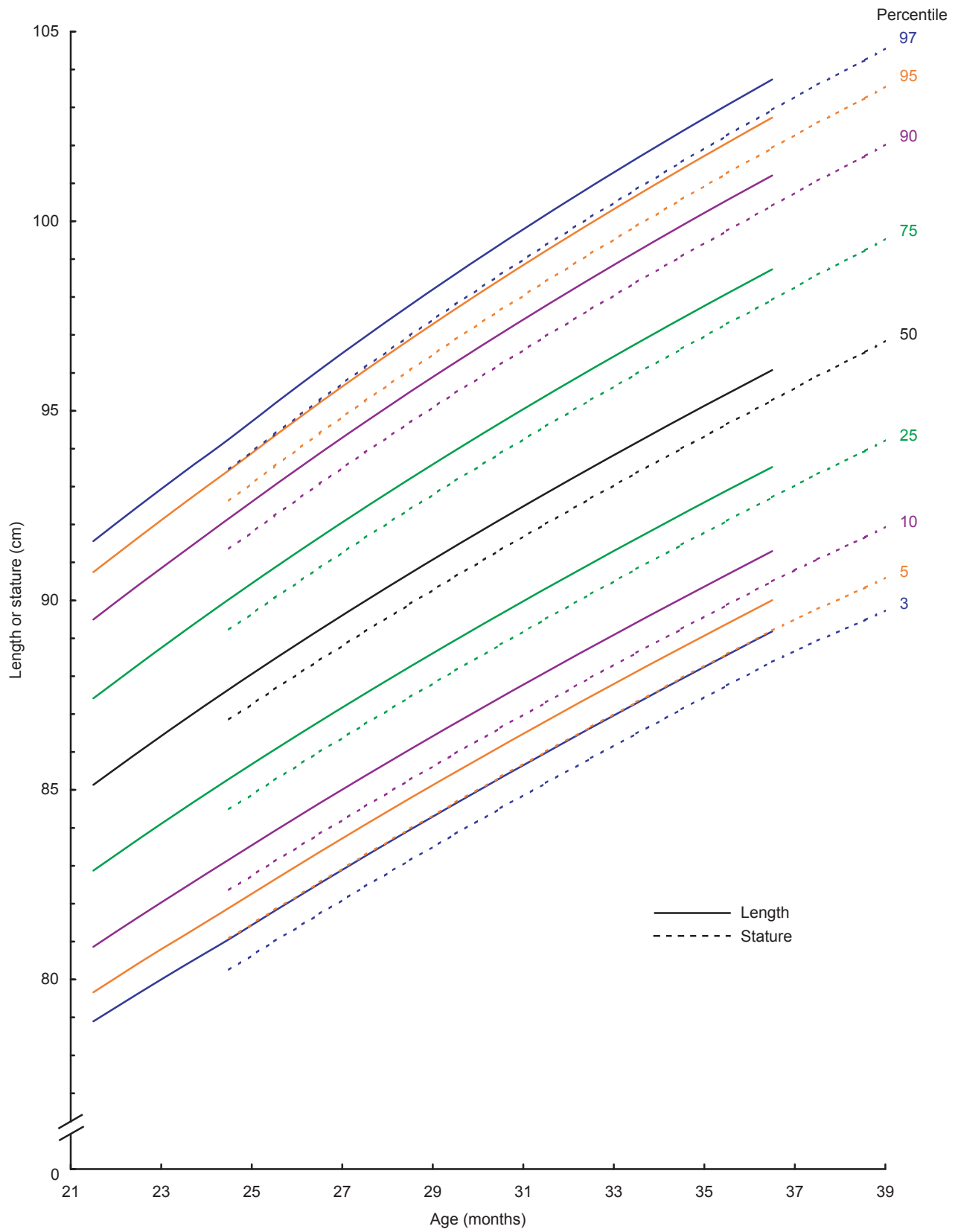


Figure 27. Smoothed percentile curves, 22–39 months: Boys length-for-age and stature-for-age

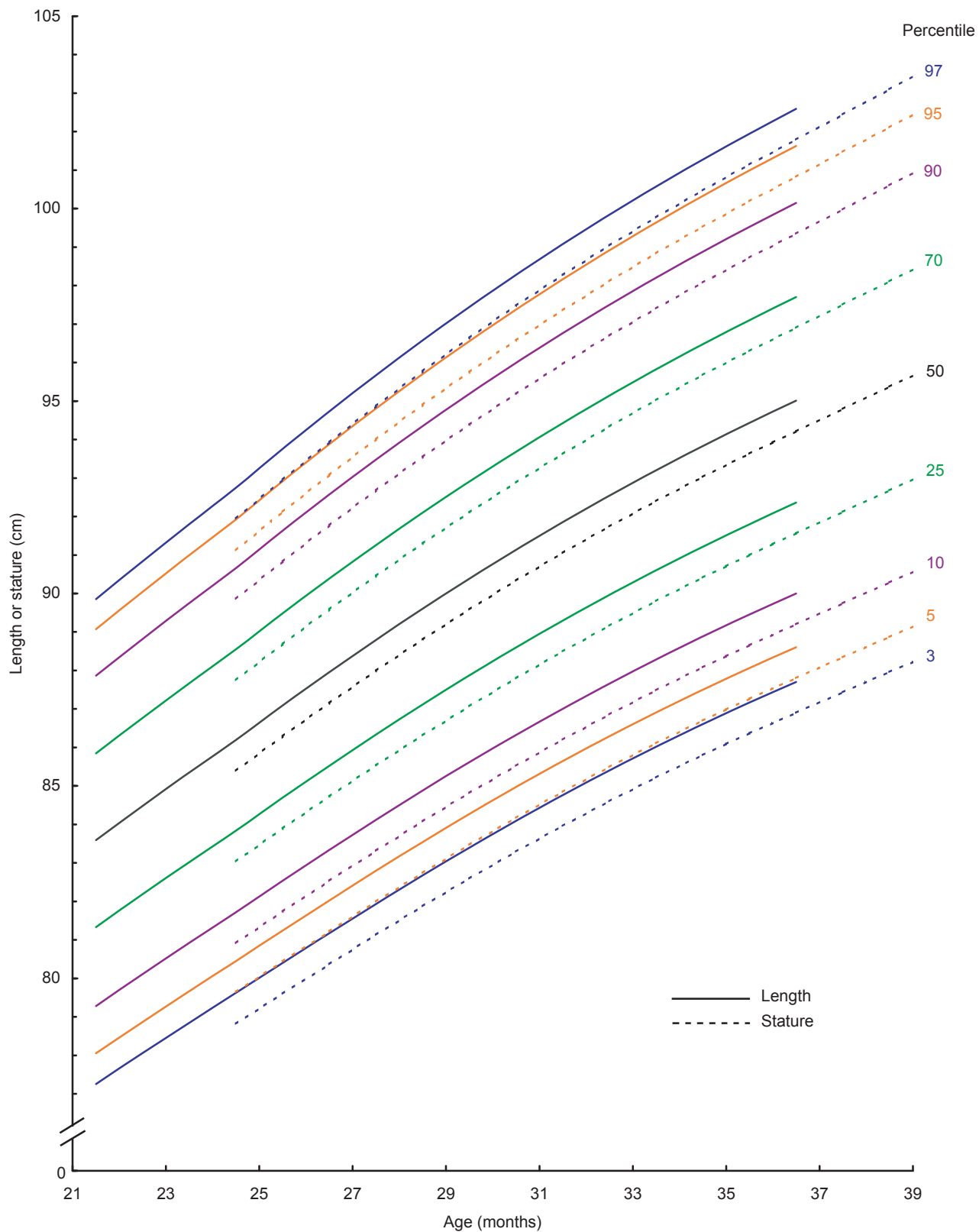


Figure 28. Smoothed percentile curves, 22–39 months: Girls length-for-age and stature-for-age

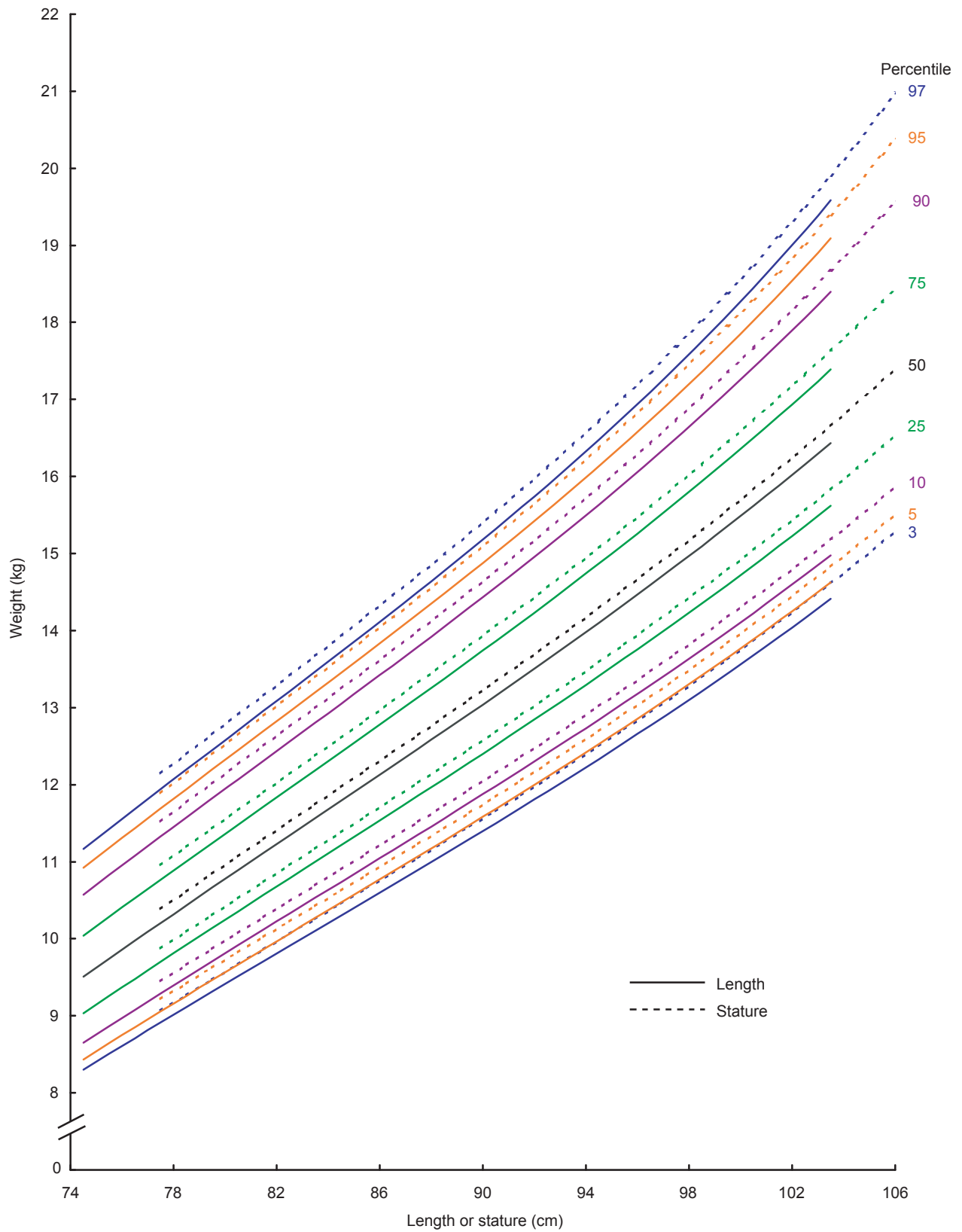


Figure 29. Smoothed percentile curves, 75–106 cm: Boys weight-for-length and weight-for-stature

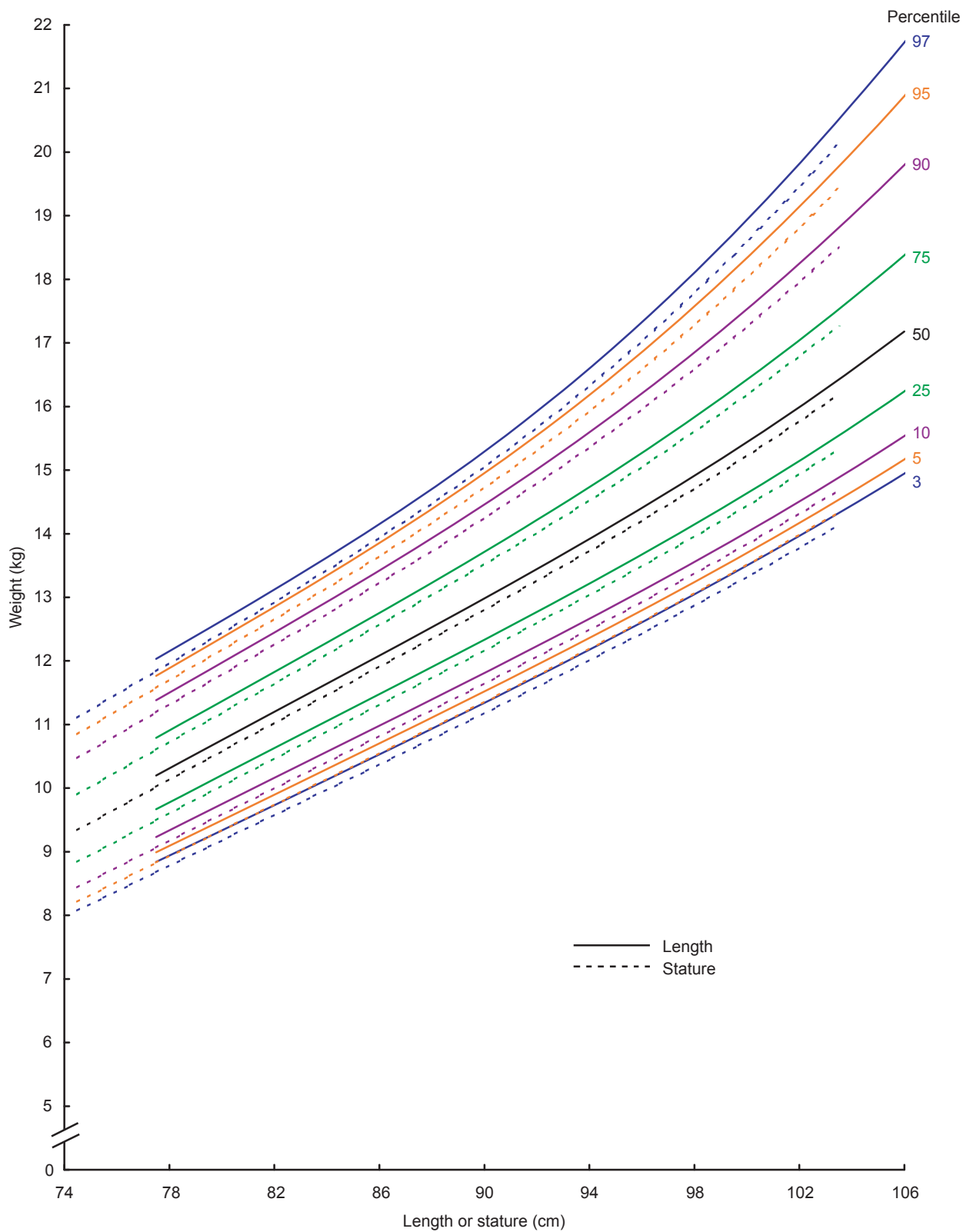


Figure 30. Smoothed percentile curves, 75–106 cm: Girls weight-for-length and weight-for-stature

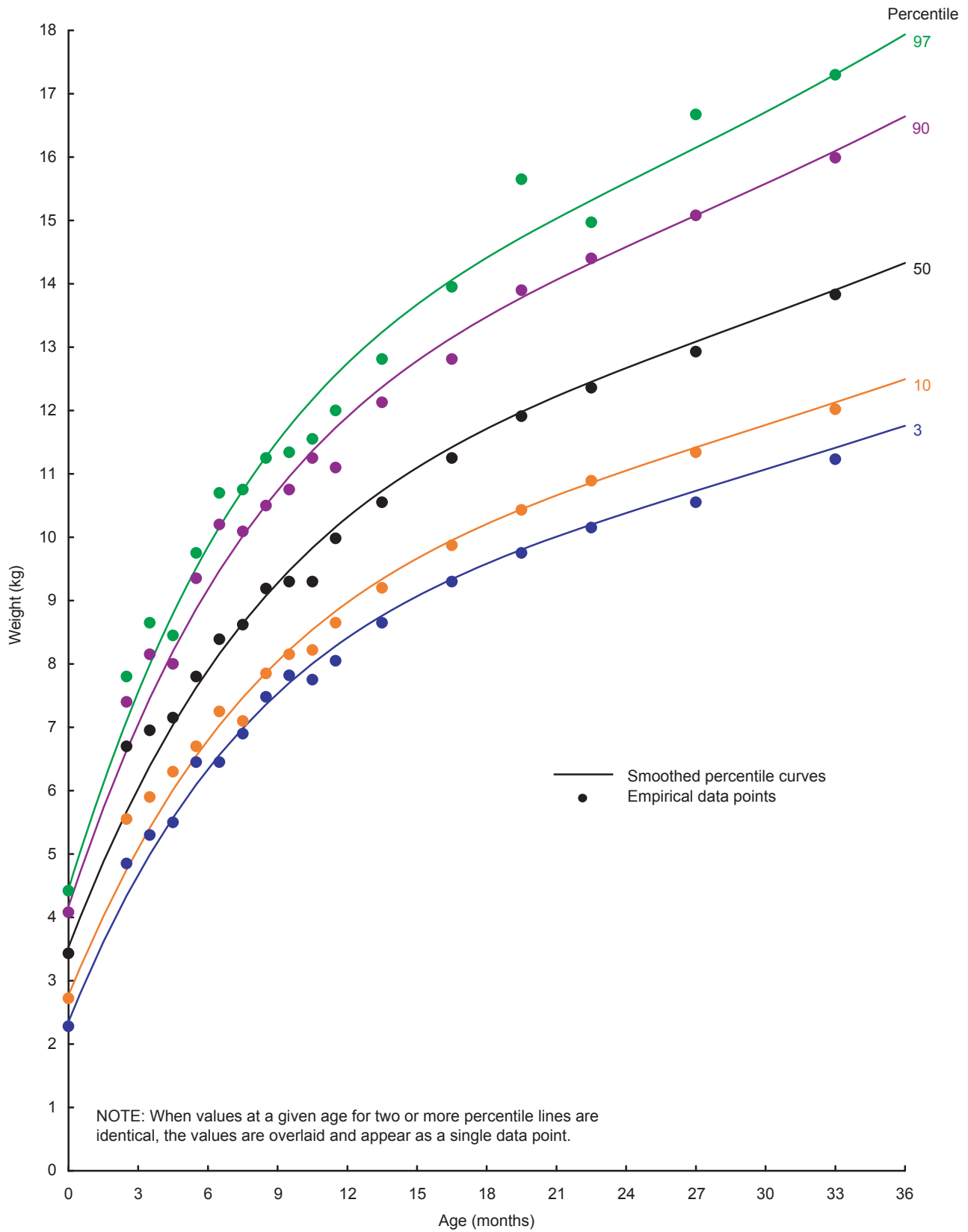


Figure 31. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, birth to 36 months: Boys weight-for-age

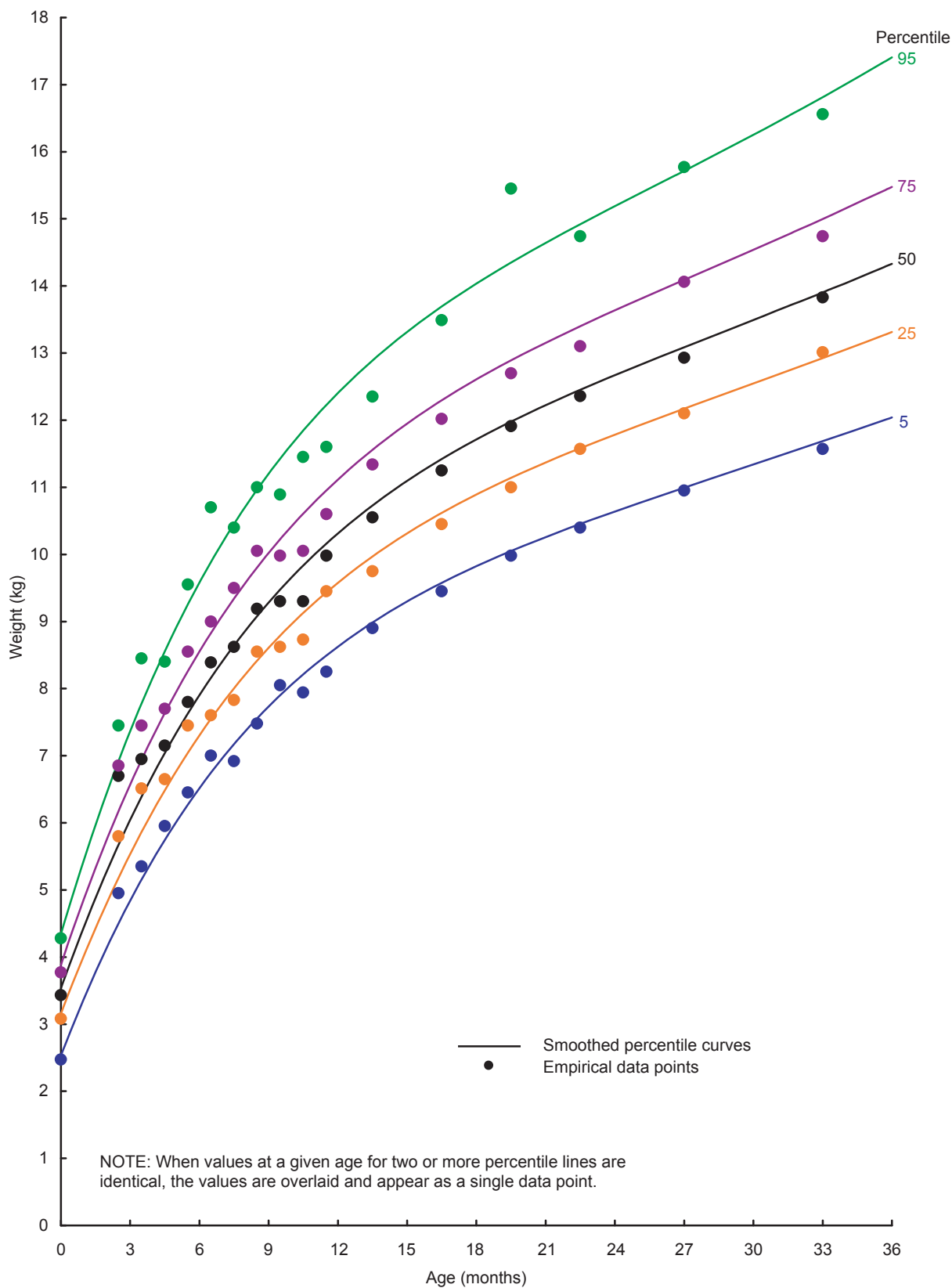


Figure 32. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, birth to 36 months: Boys weight-for-age

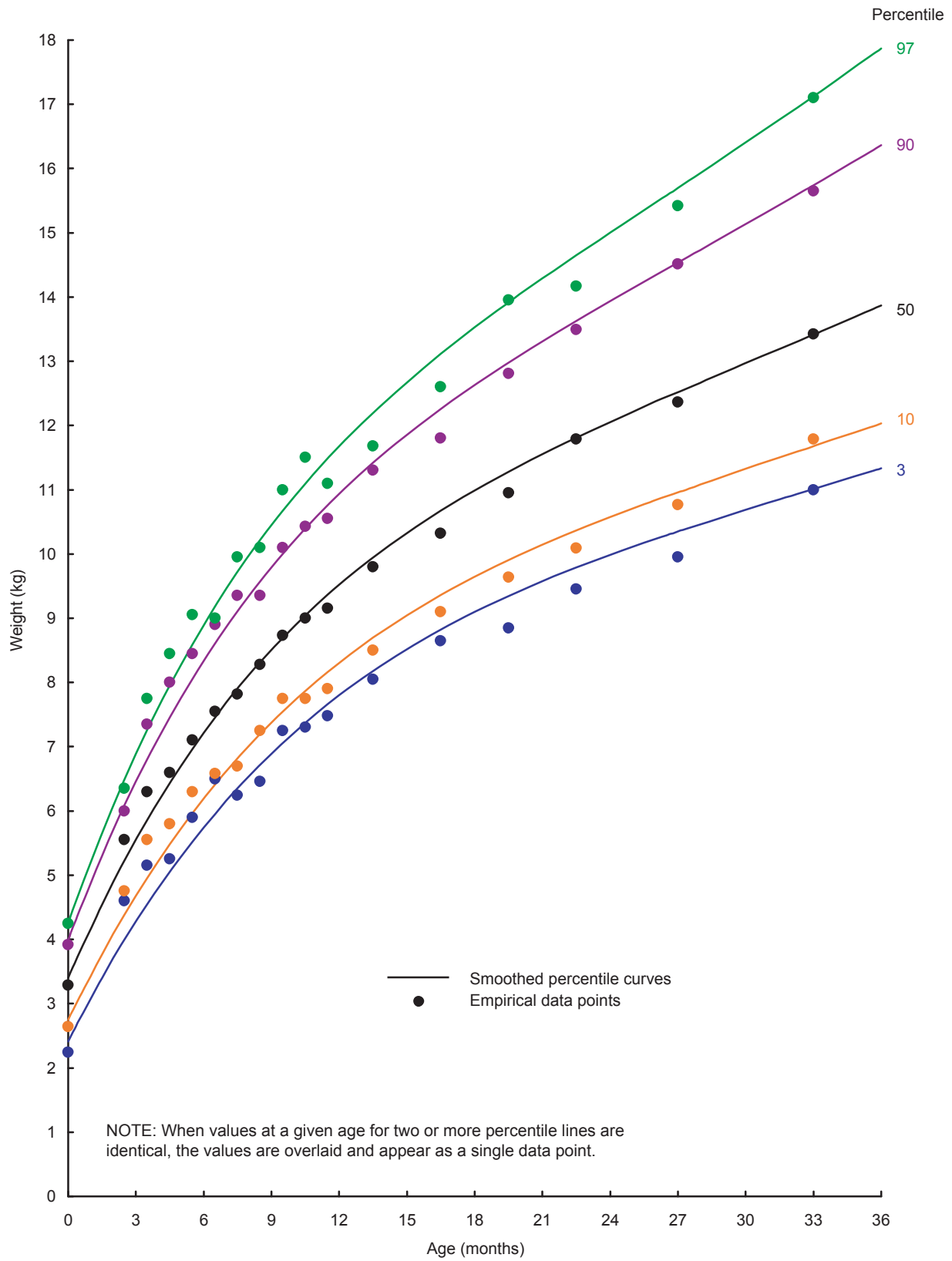


Figure 33. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, birth to 36 months: Girls weight-for-age

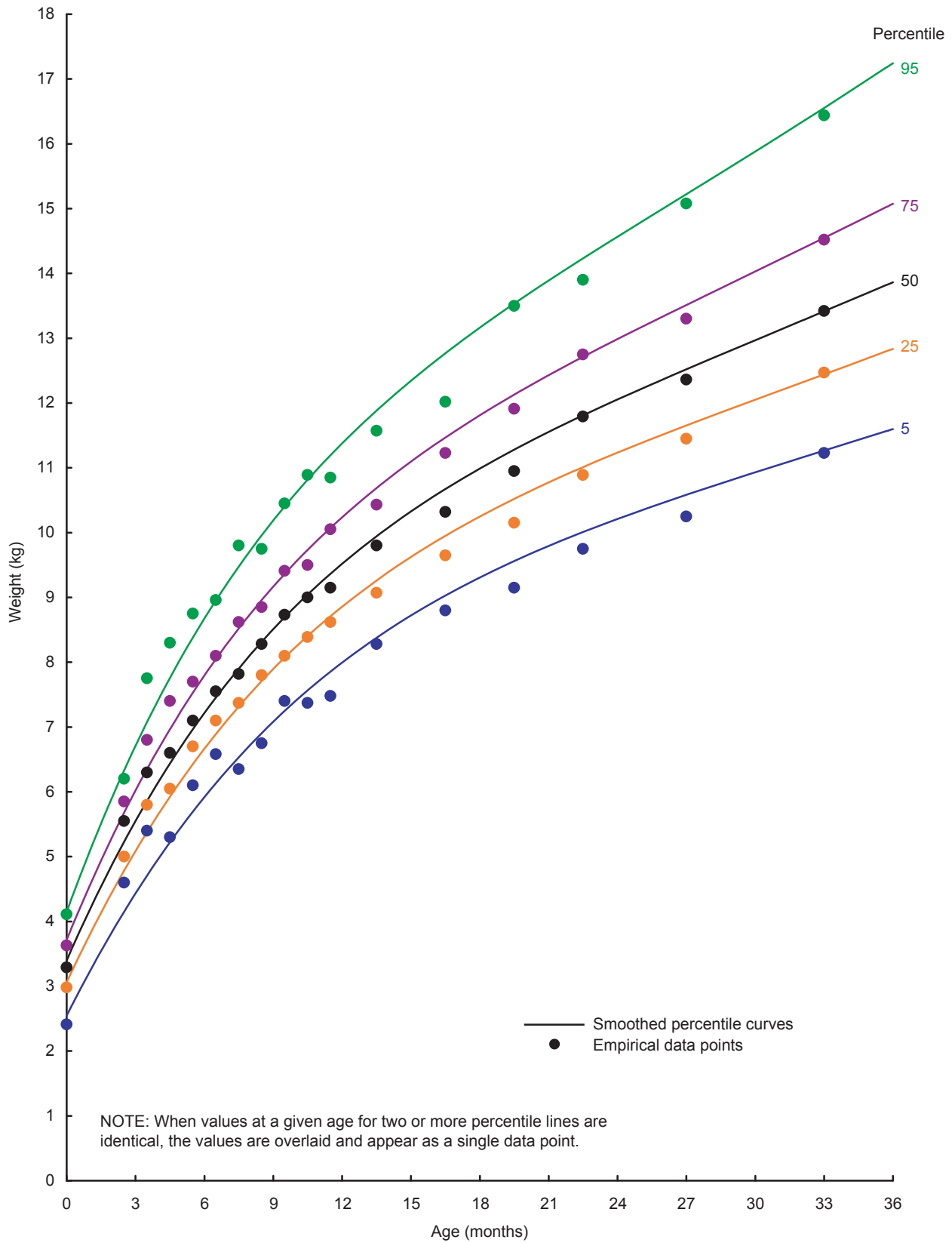


Figure 34. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, birth to 36 months: Girls weight-for-age

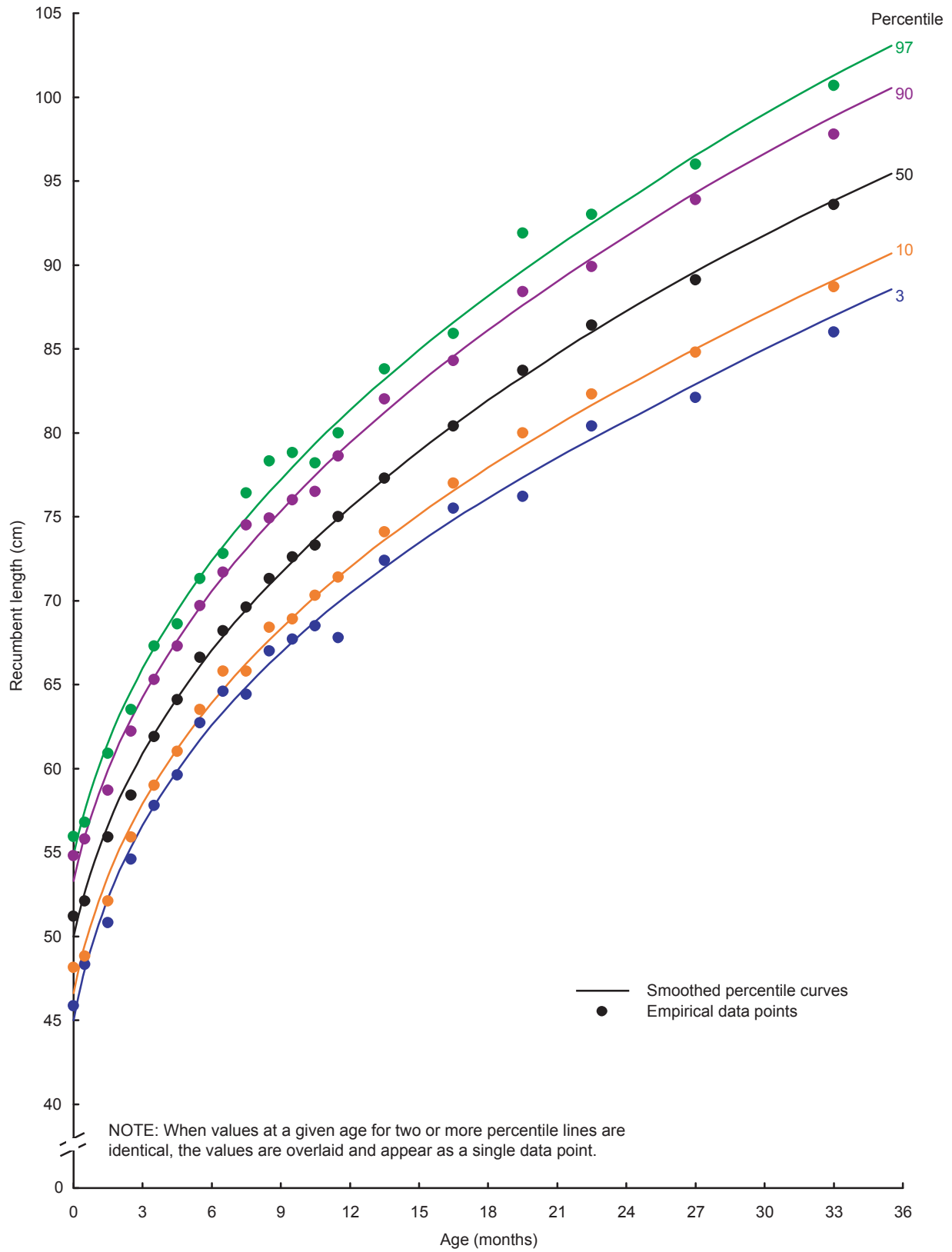


Figure 35. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, birth to 36 months: Boys recumbent length-for-age

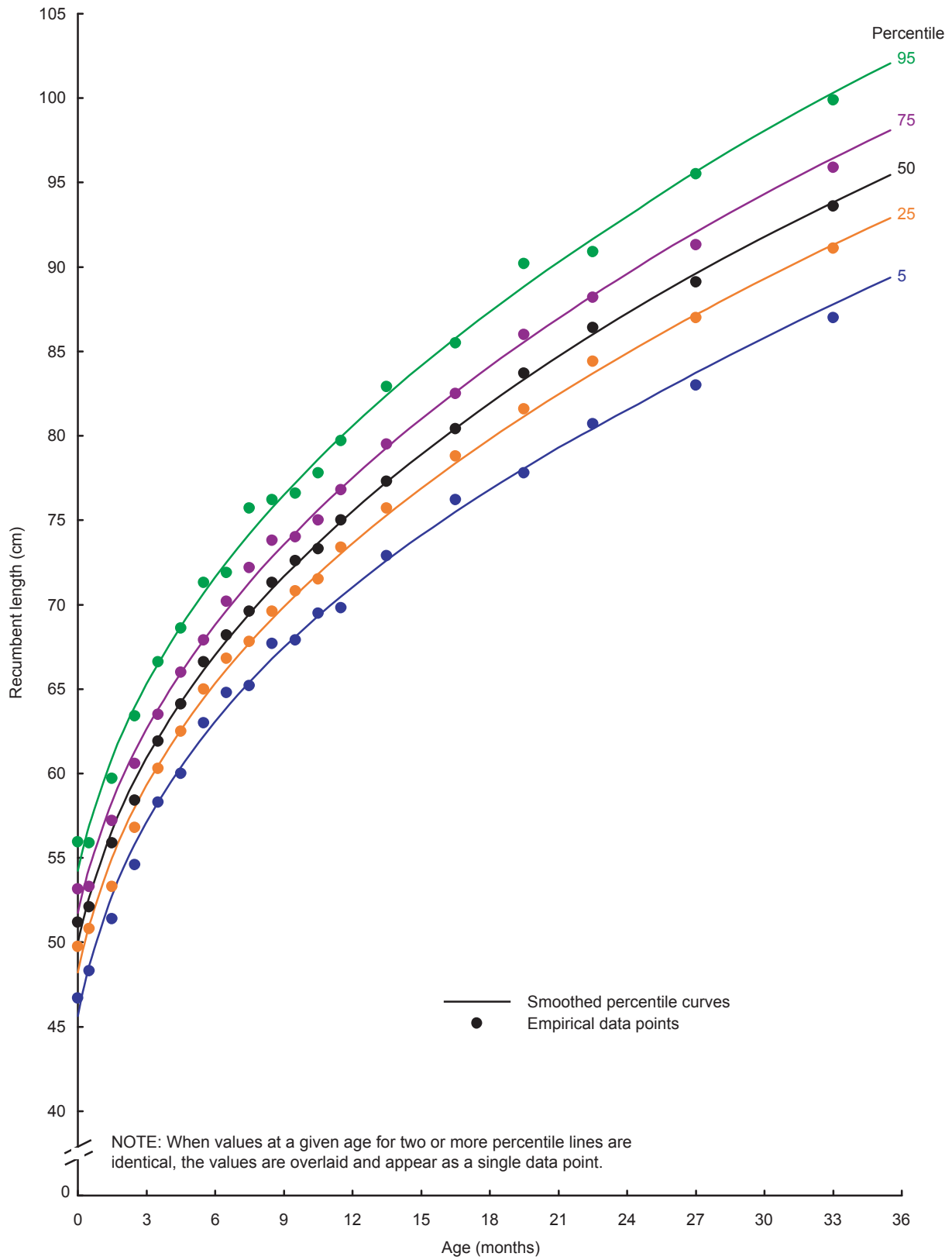


Figure 36. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, birth to 36 months: Boys recumbent length-for-age

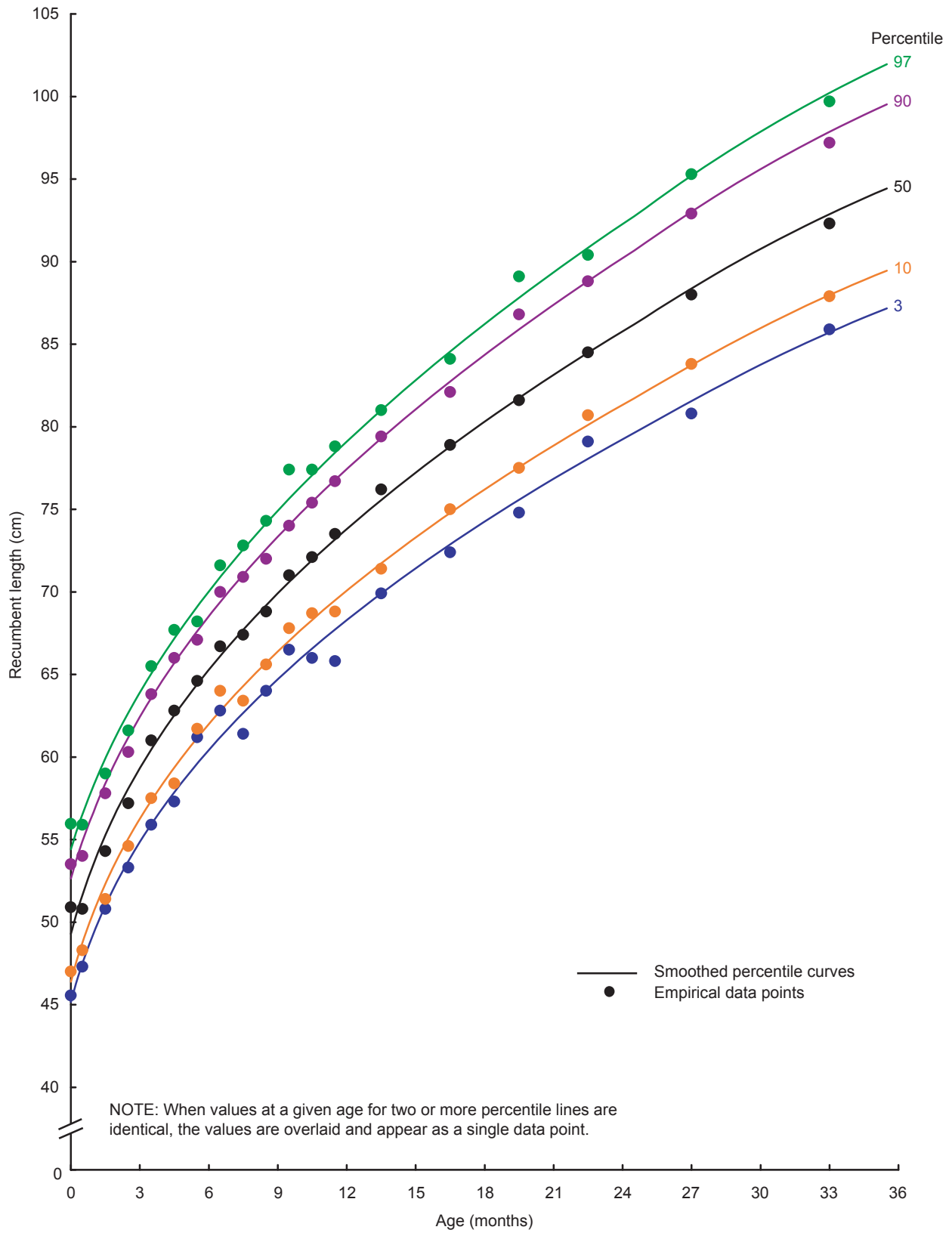


Figure 37. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, birth to 36 months: Girls recumbent length-for-age

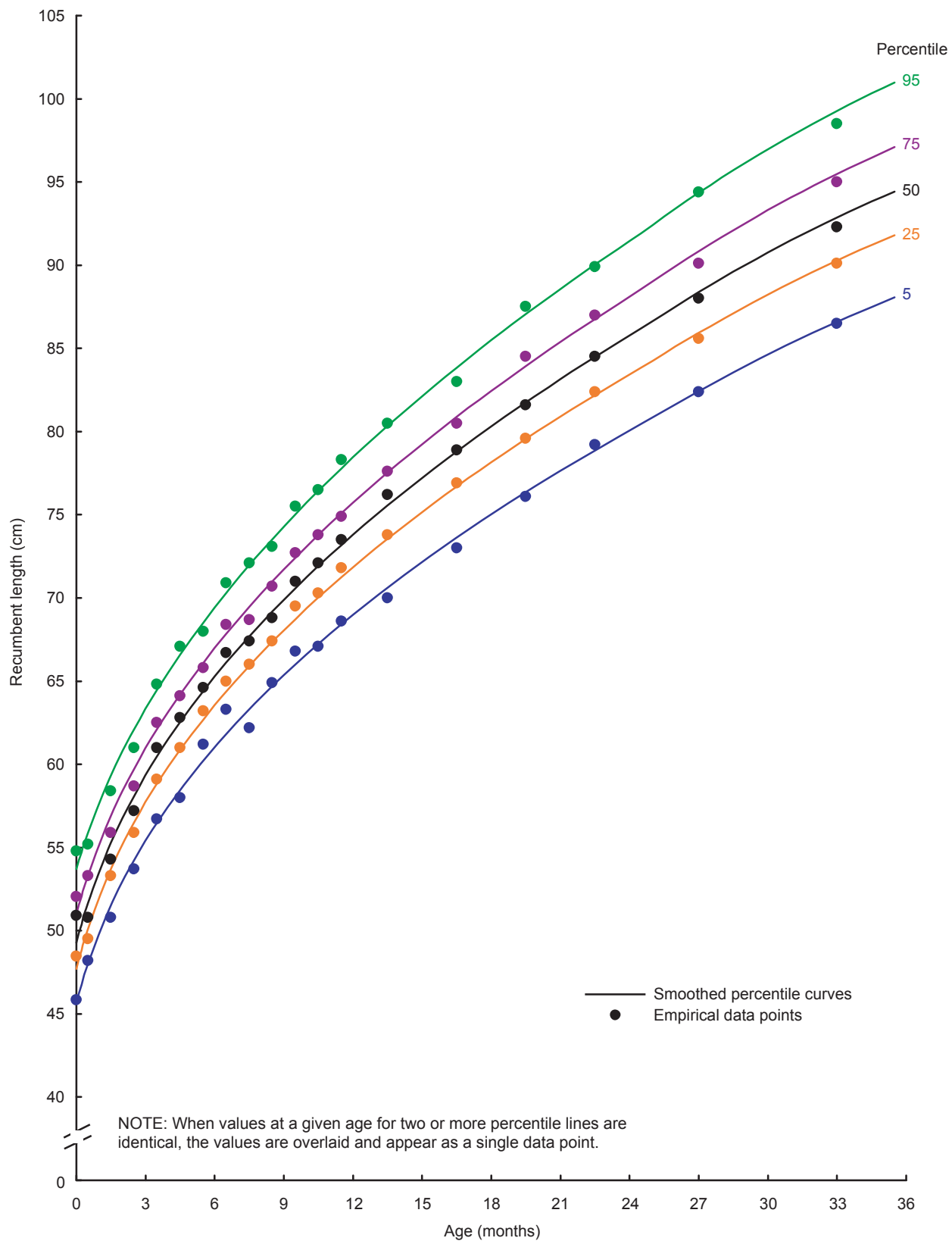


Figure 38. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, birth to 36 months: Girls recumbent length-for-age

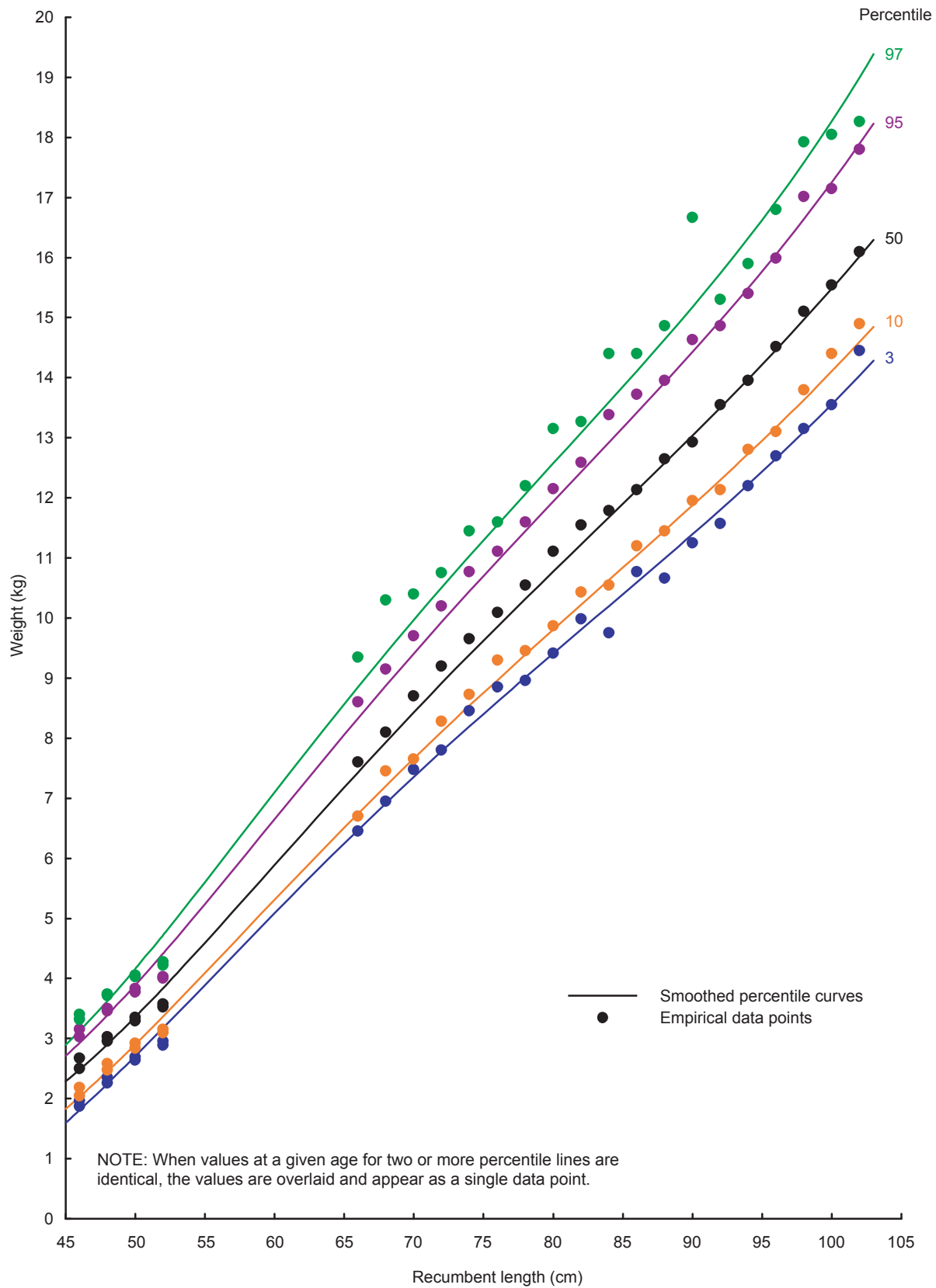


Figure 39. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, 46–102 cm: Boys weight-for-length

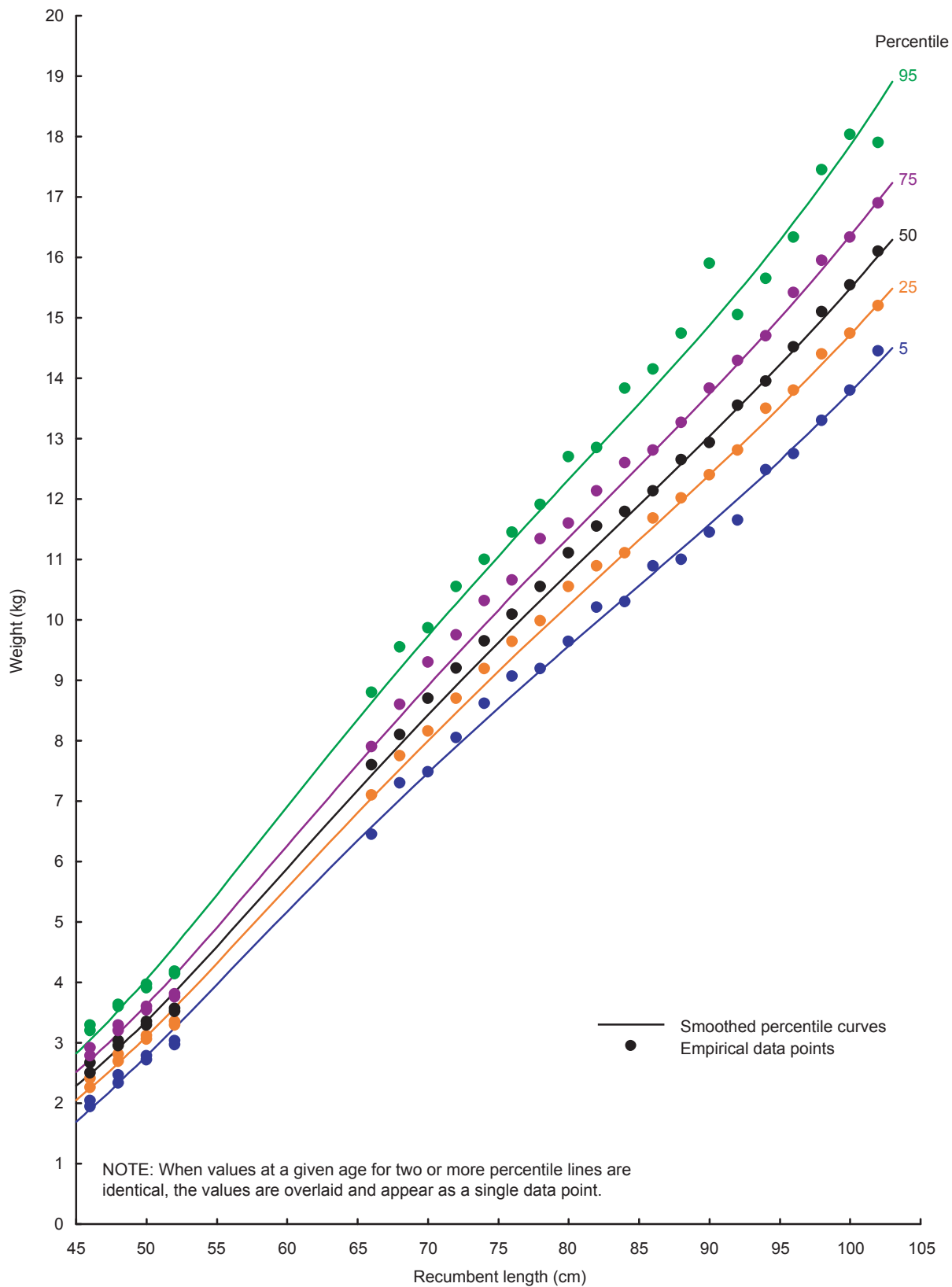


Figure 40. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, 46–102 cm: Boys weight-for-length

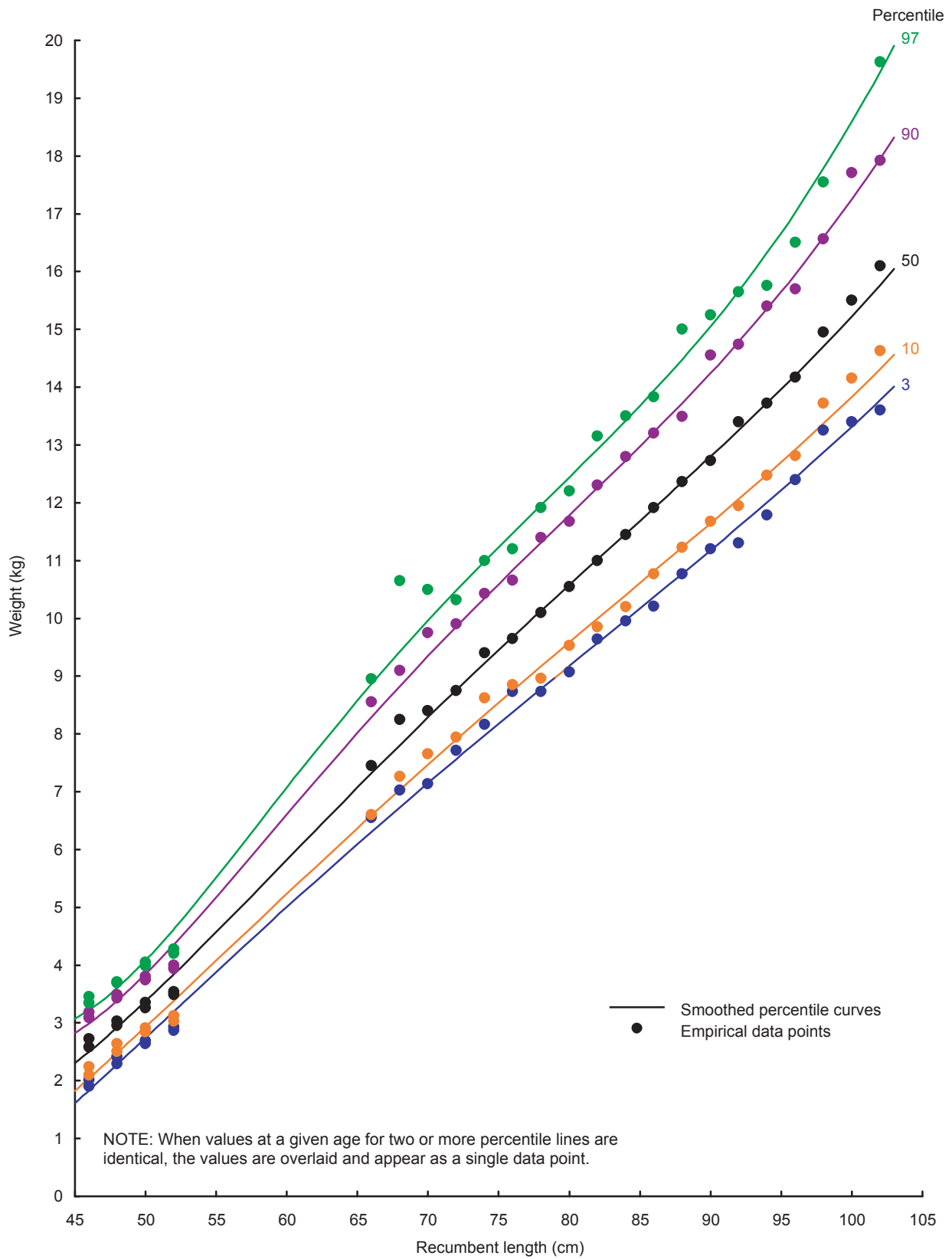


Figure 41. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, 46–102 cm: Girls weight-for-length

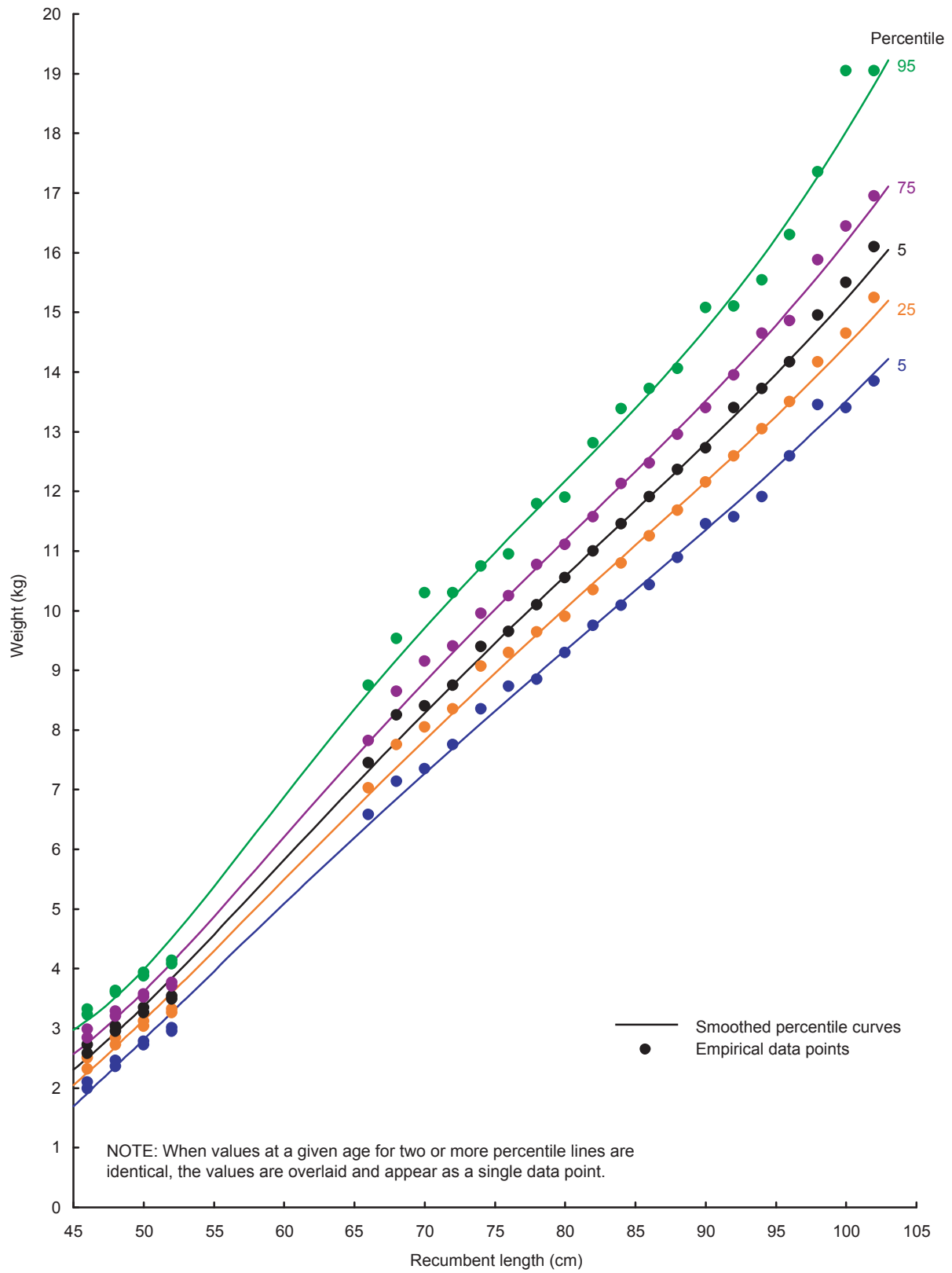


Figure 42. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, 46–102 cm: Girls weight-for-length

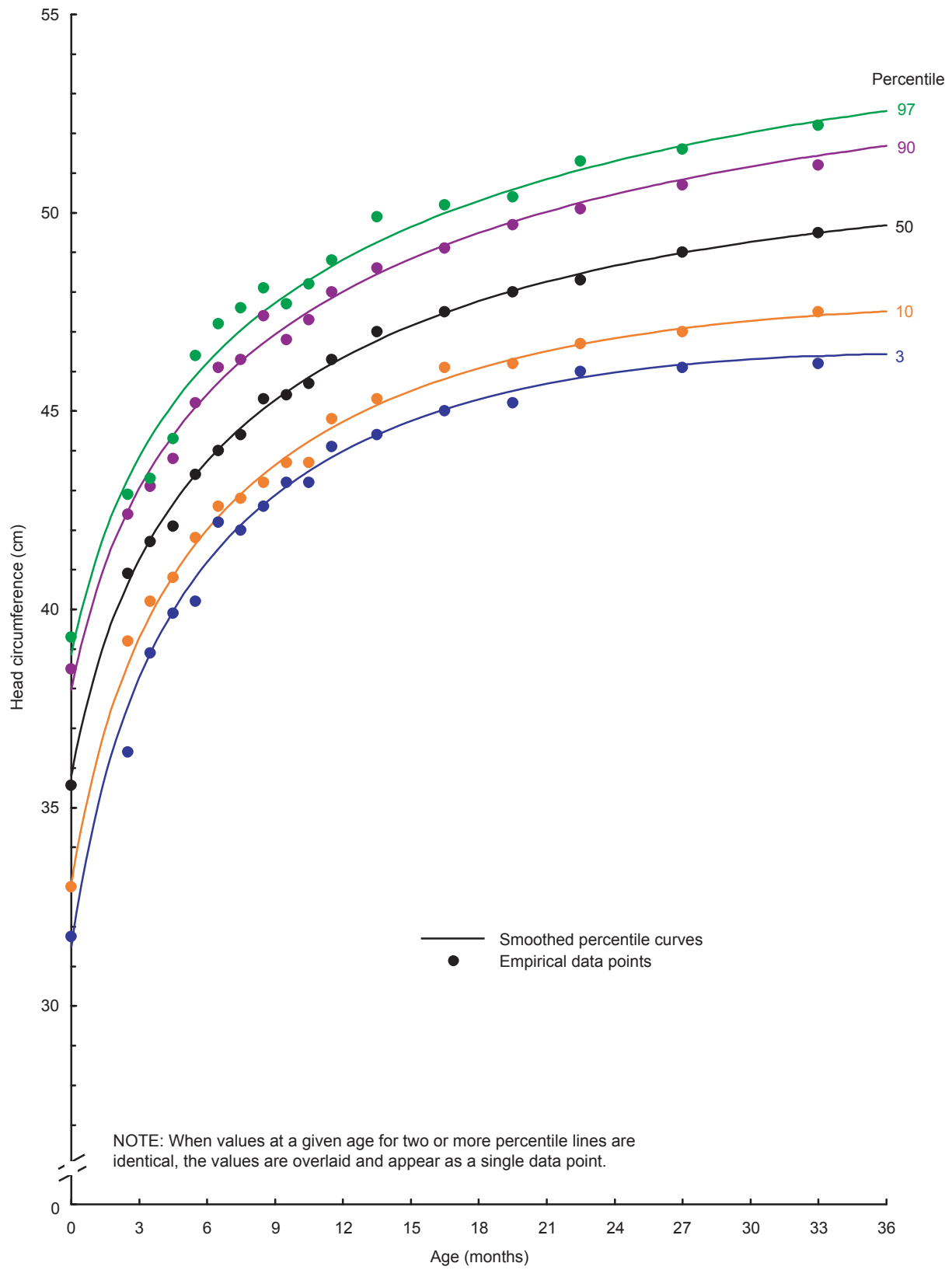


Figure 43. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, birth to 36 months: Boys head circumference-for-age

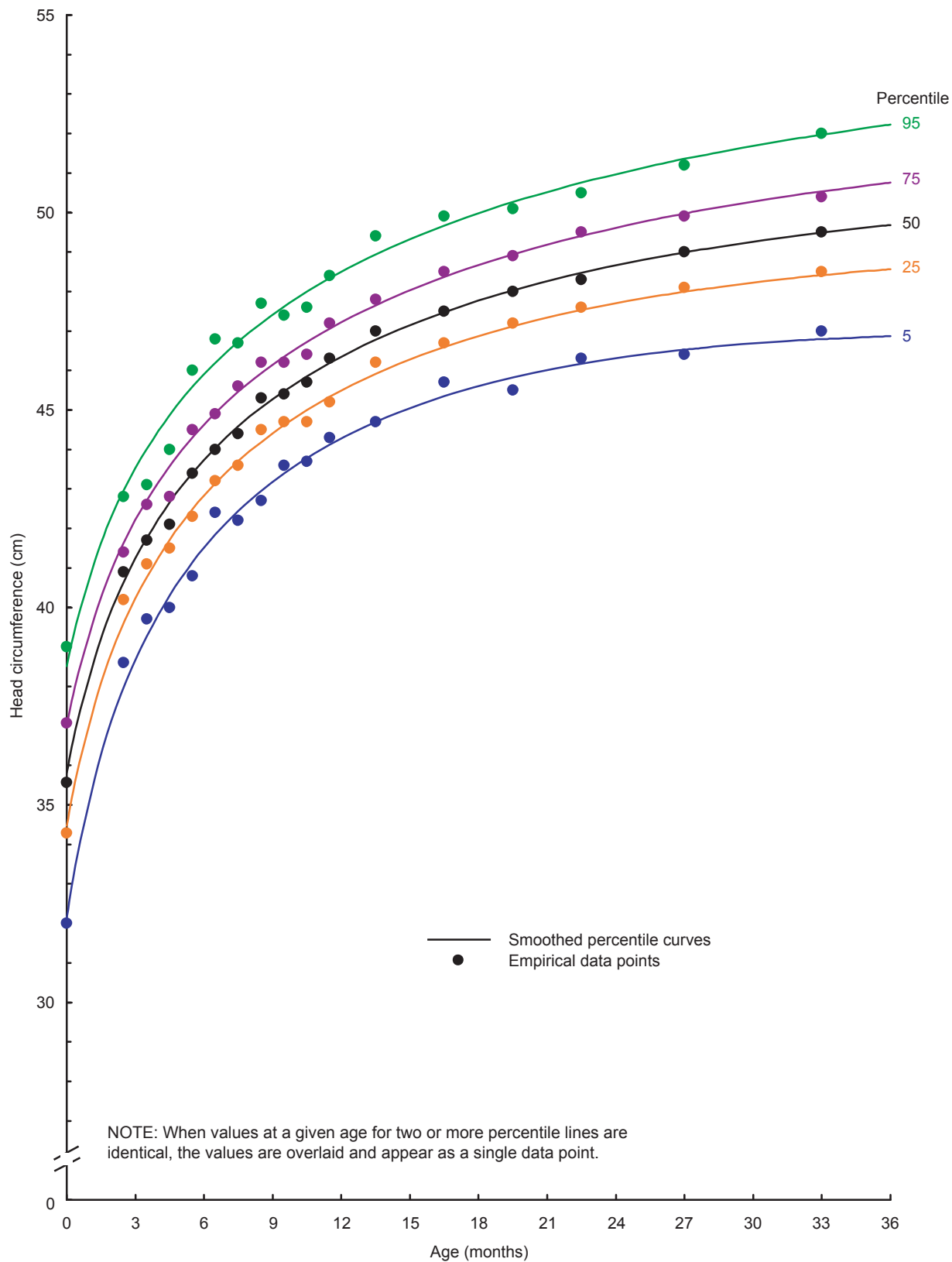


Figure 44. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, birth to 36 months: Boys head circumference-for-age

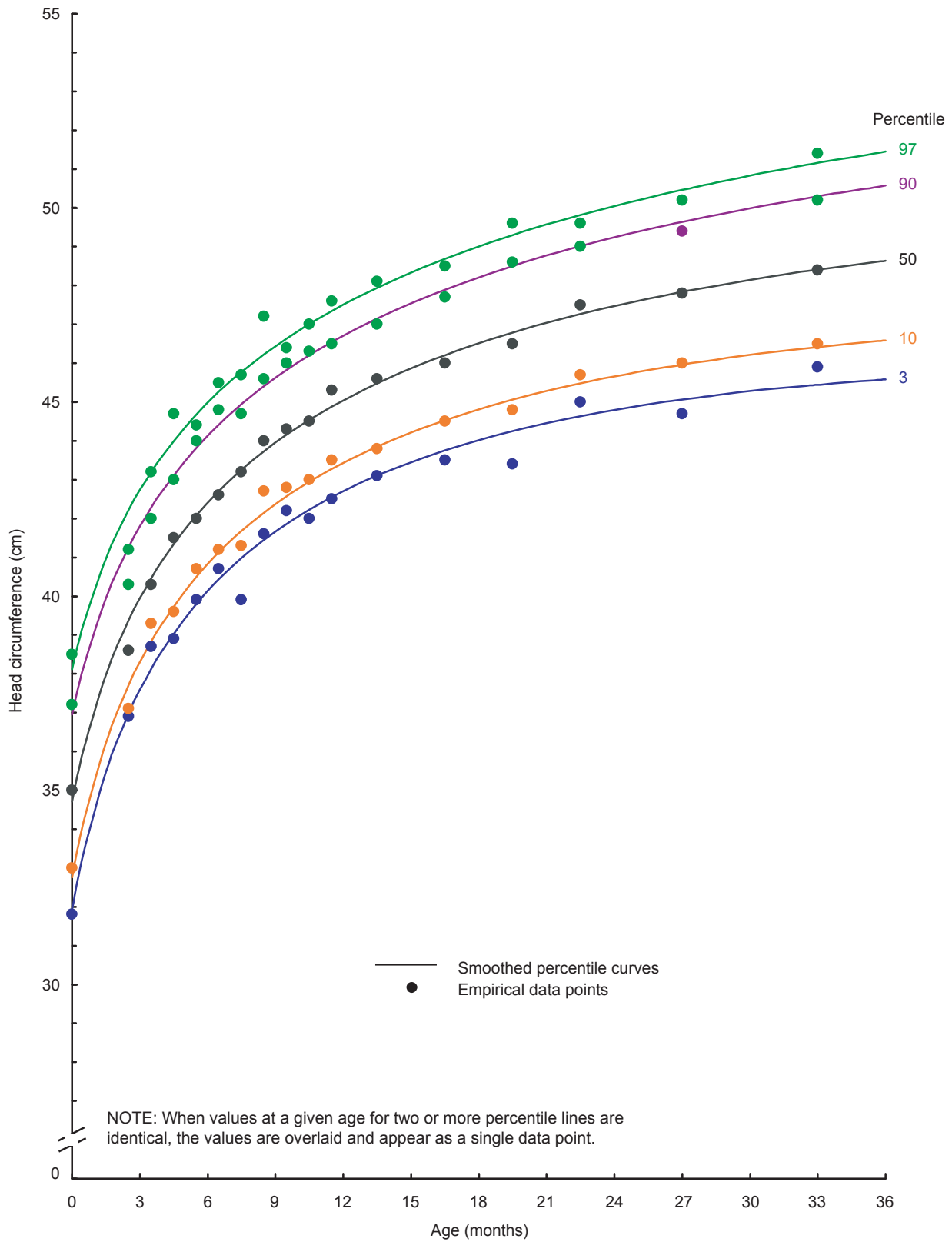


Figure 45. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, birth to 36 months: Girls head circumference-for-age

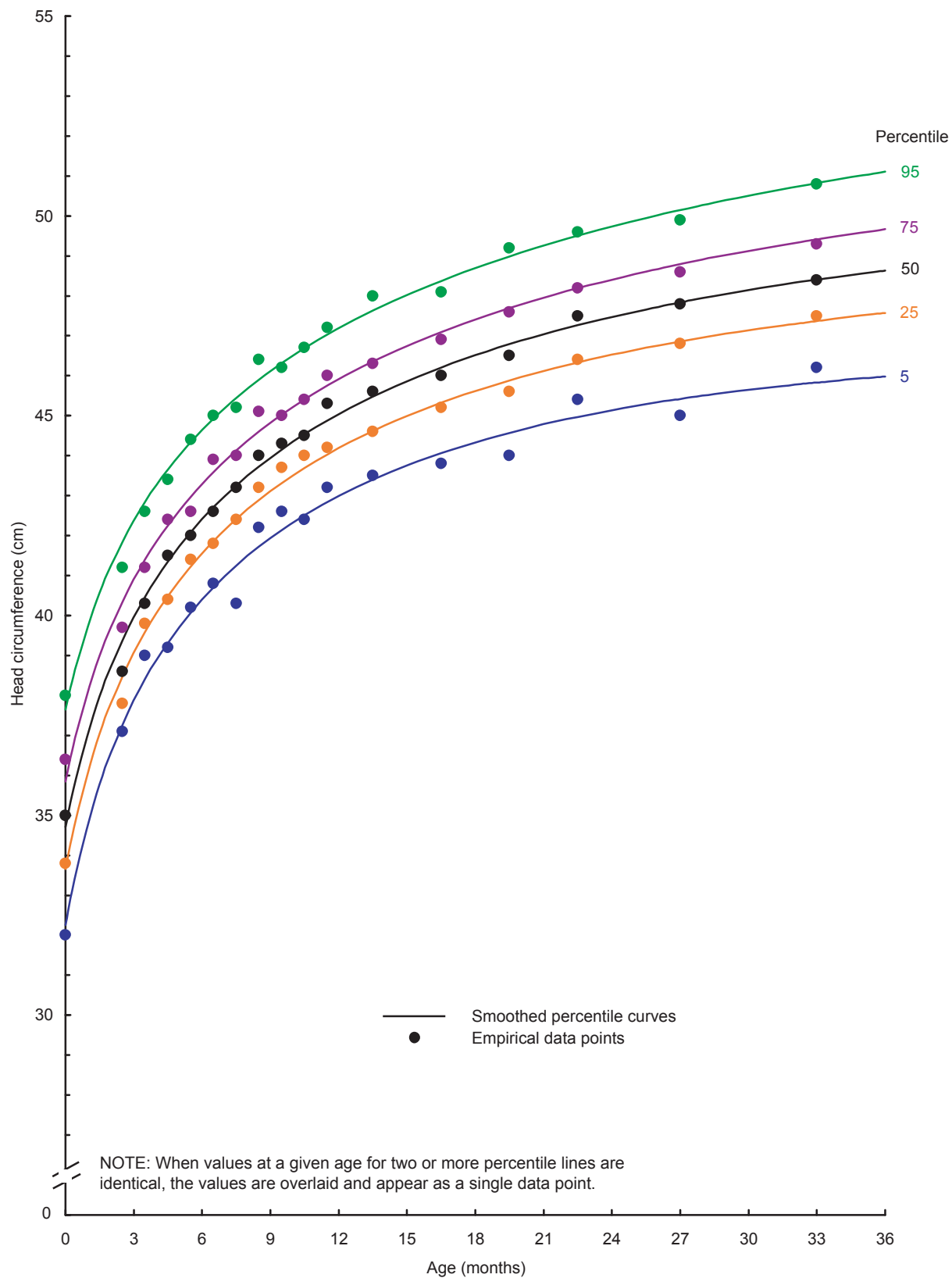


Figure 46. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, birth to 36 months: Girls head circumference-for-age

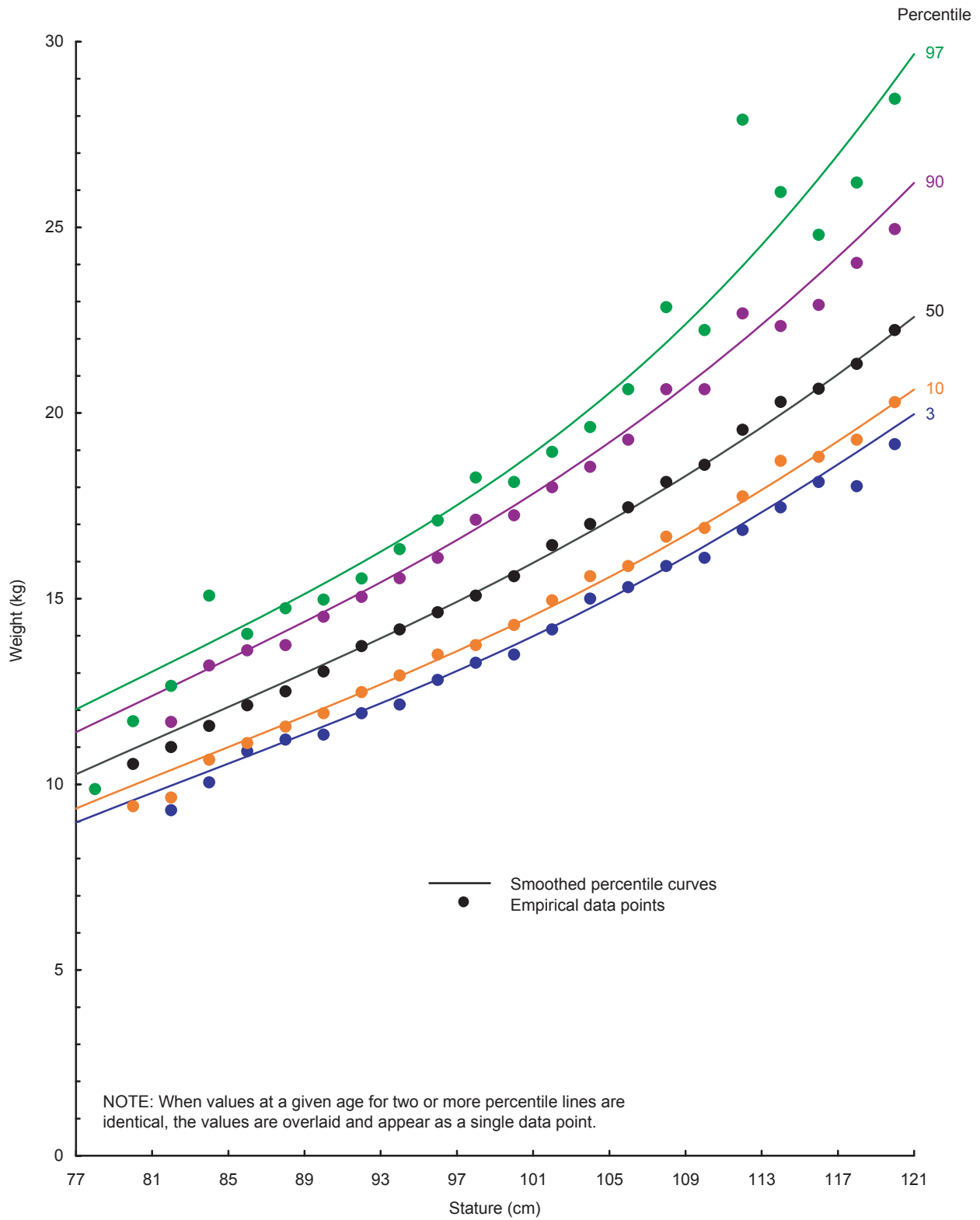


Figure 47. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, 78–120 cm: Boys weight-for-stature

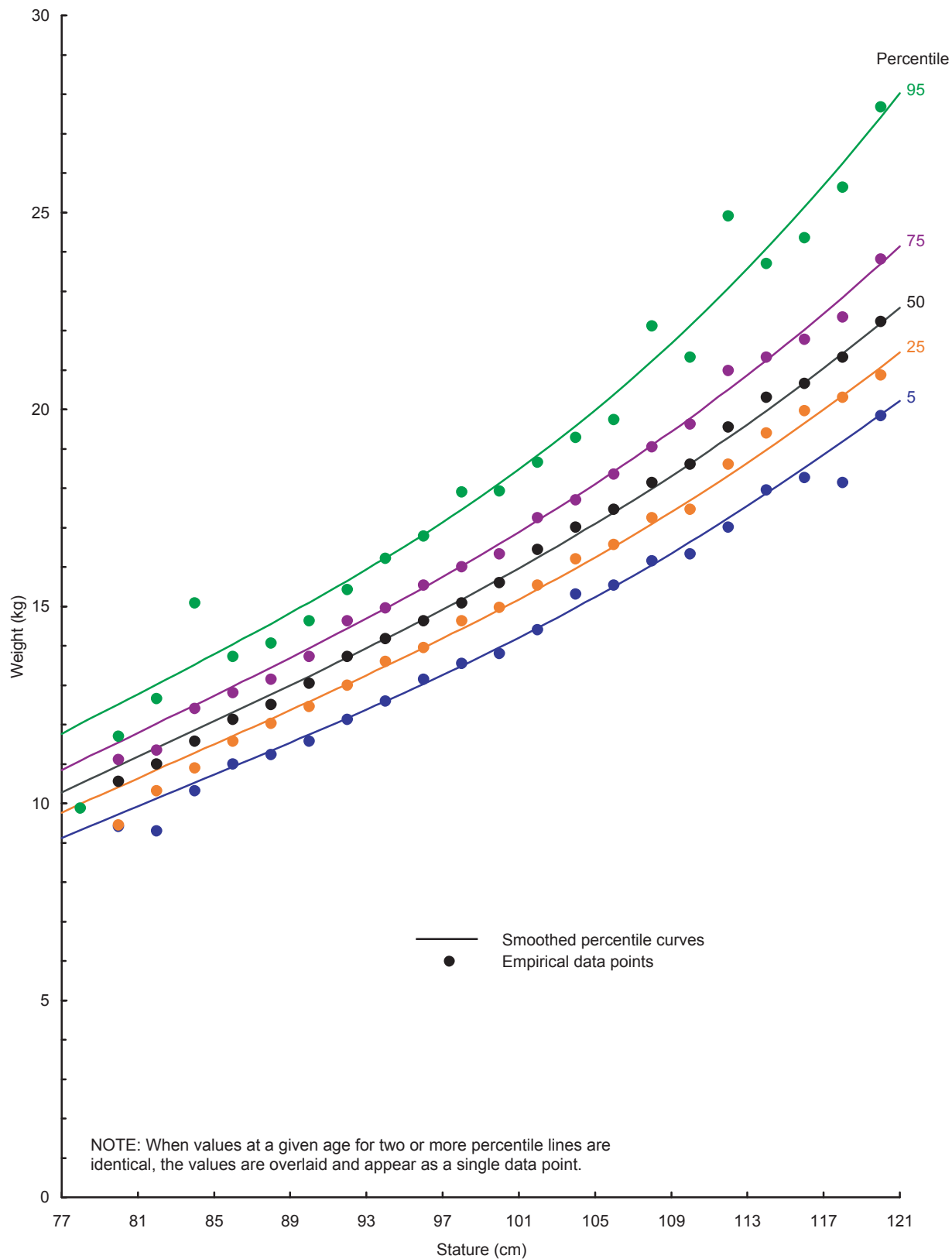


Figure 48. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, 78–120 cm: Boys weight-for-stature

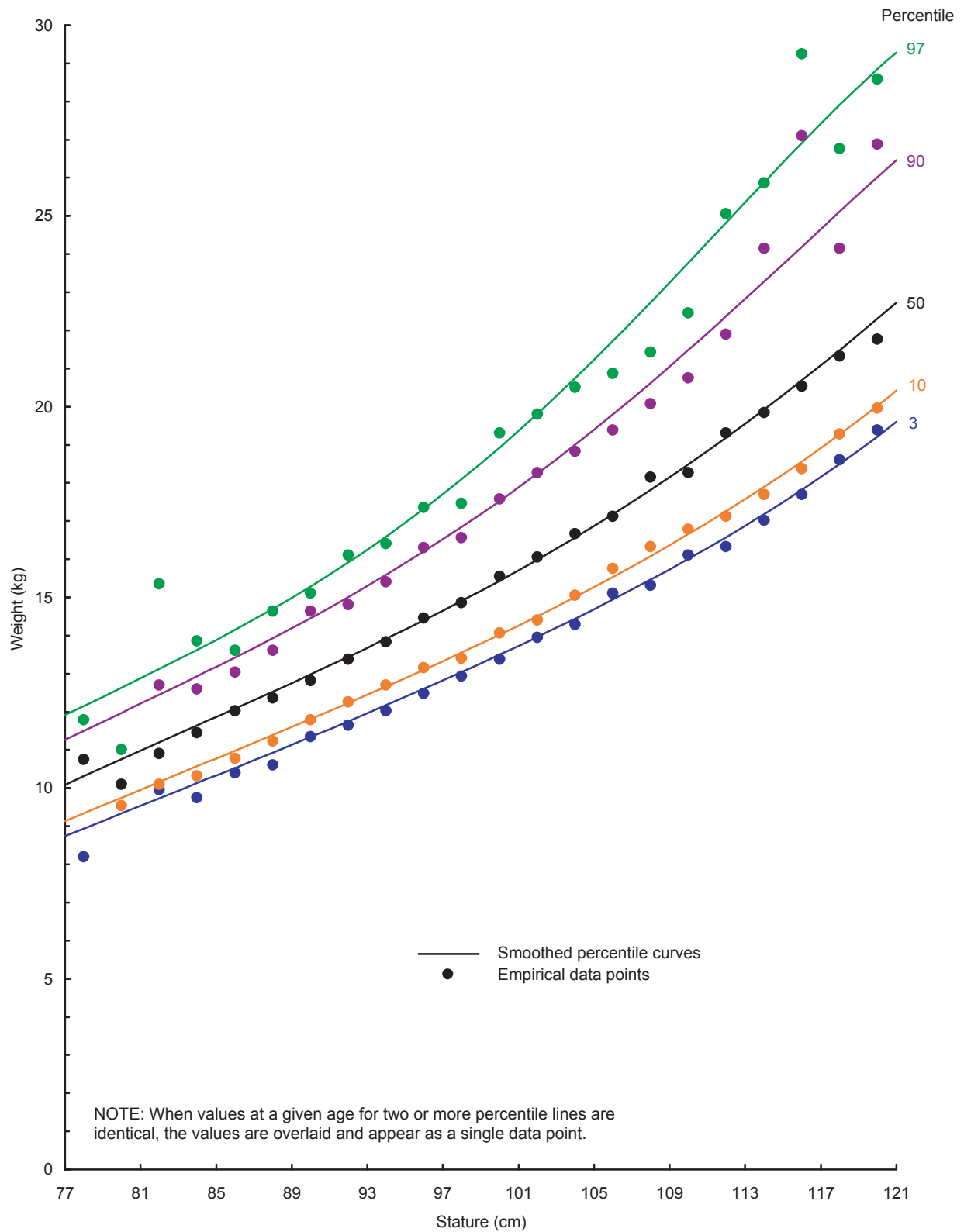


Figure 49. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, 78–120 cm: Girls weight-for-stature

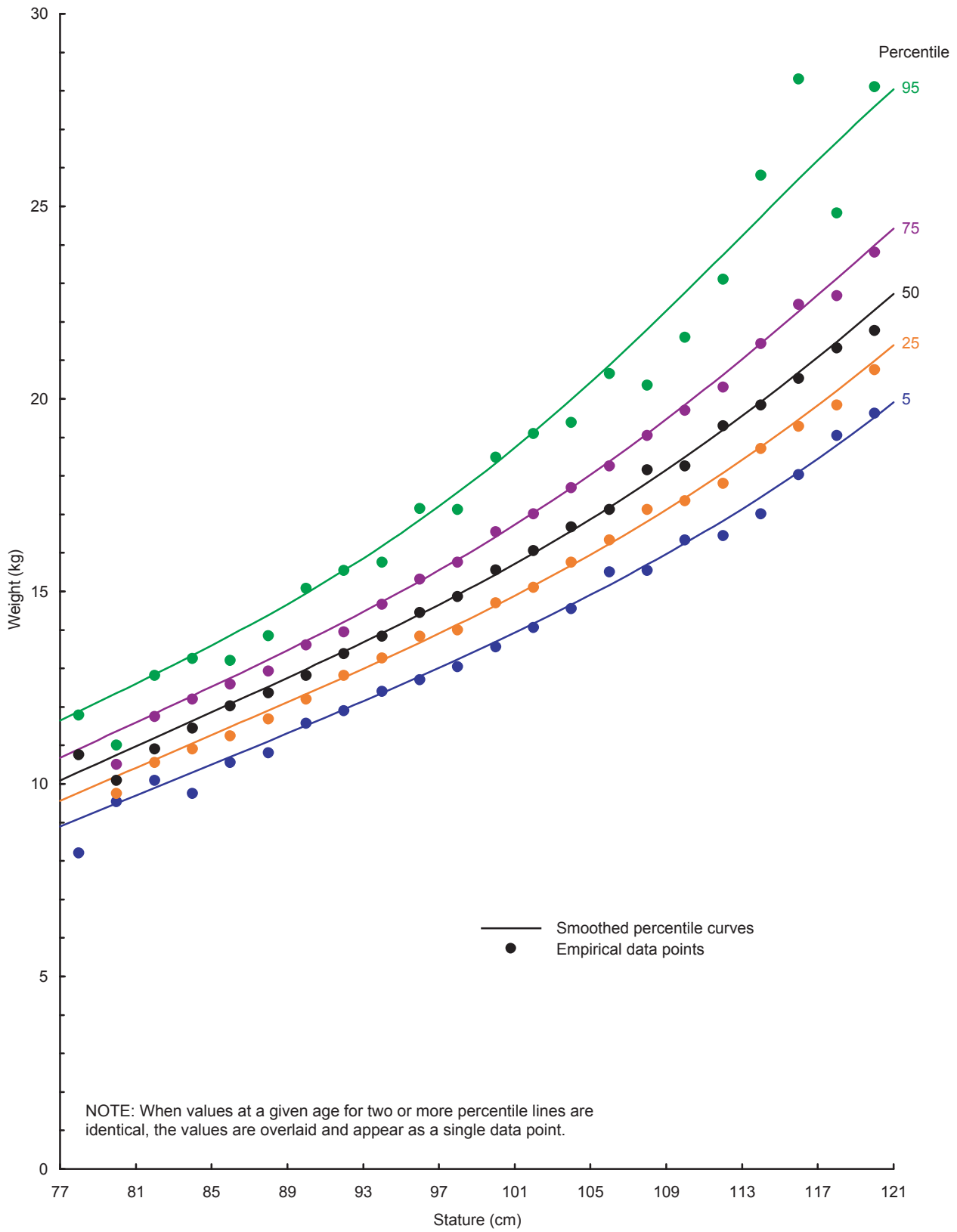


Figure 50. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, 78–120 cm: Girls weight-for-stature

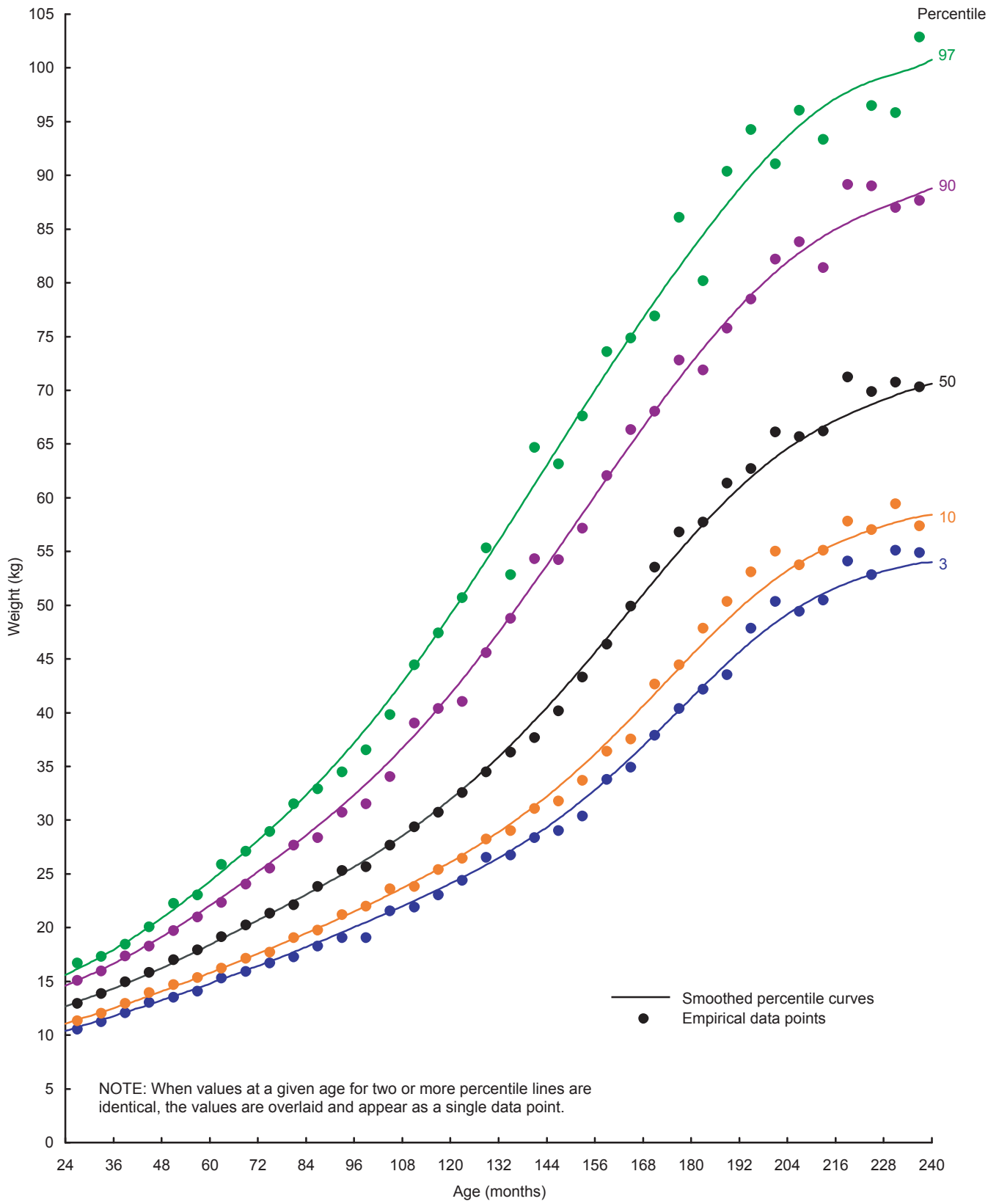


Figure 51. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, 24–237 months: Boys weight-for-age

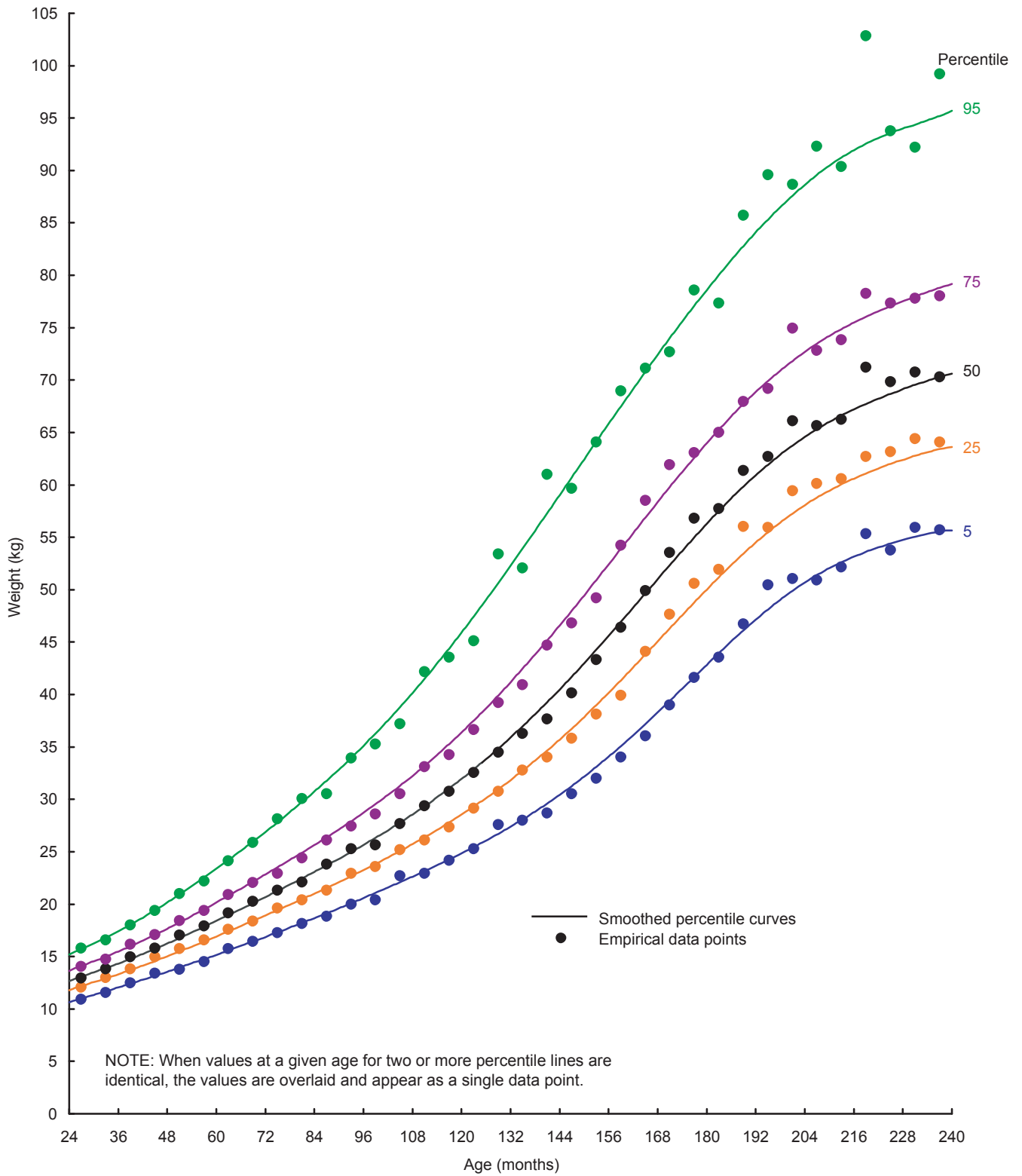


Figure 52. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, 24–237 months: Boys weight-for-age

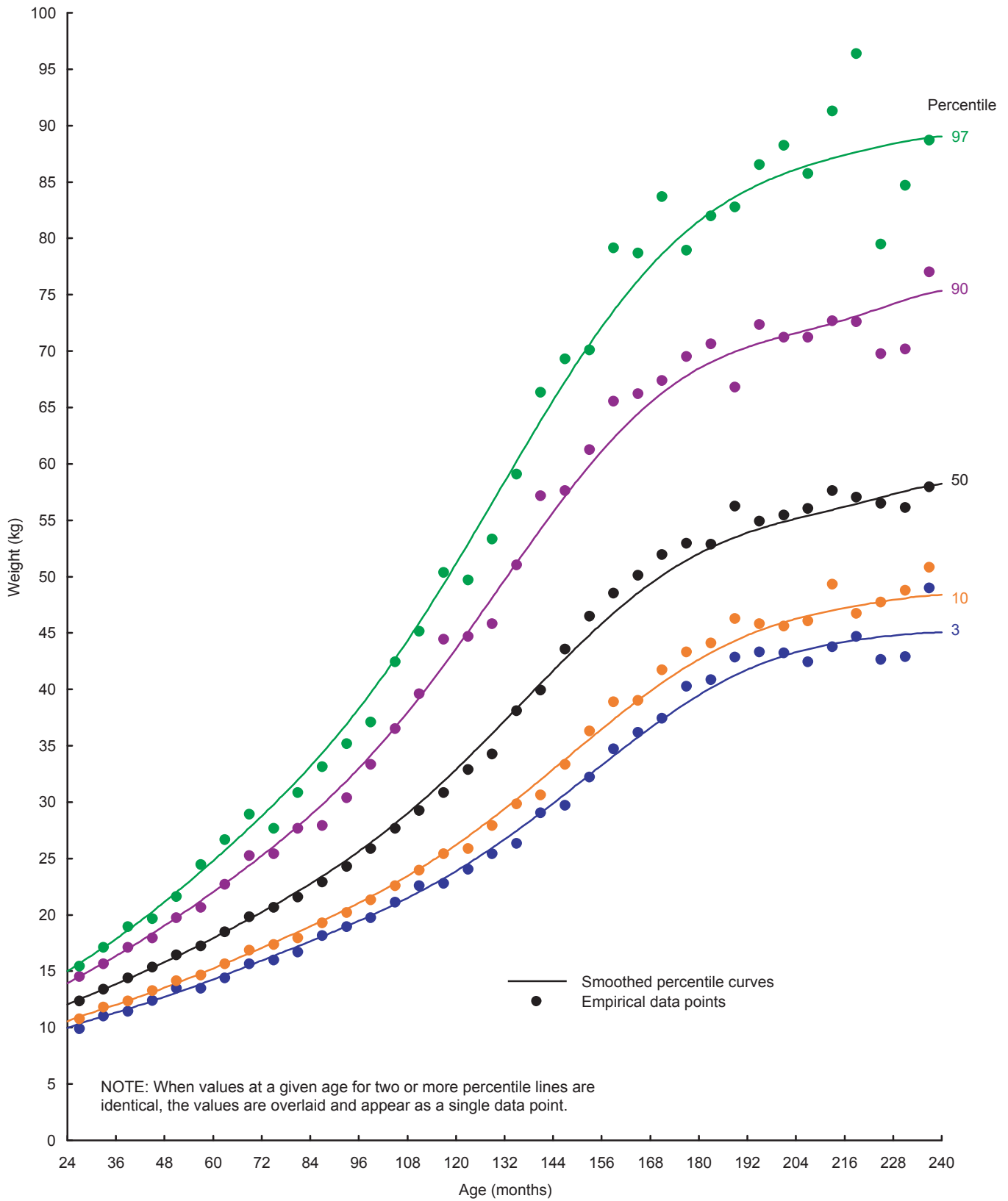


Figure 53. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, 24–237 months: Girls weight-for-age

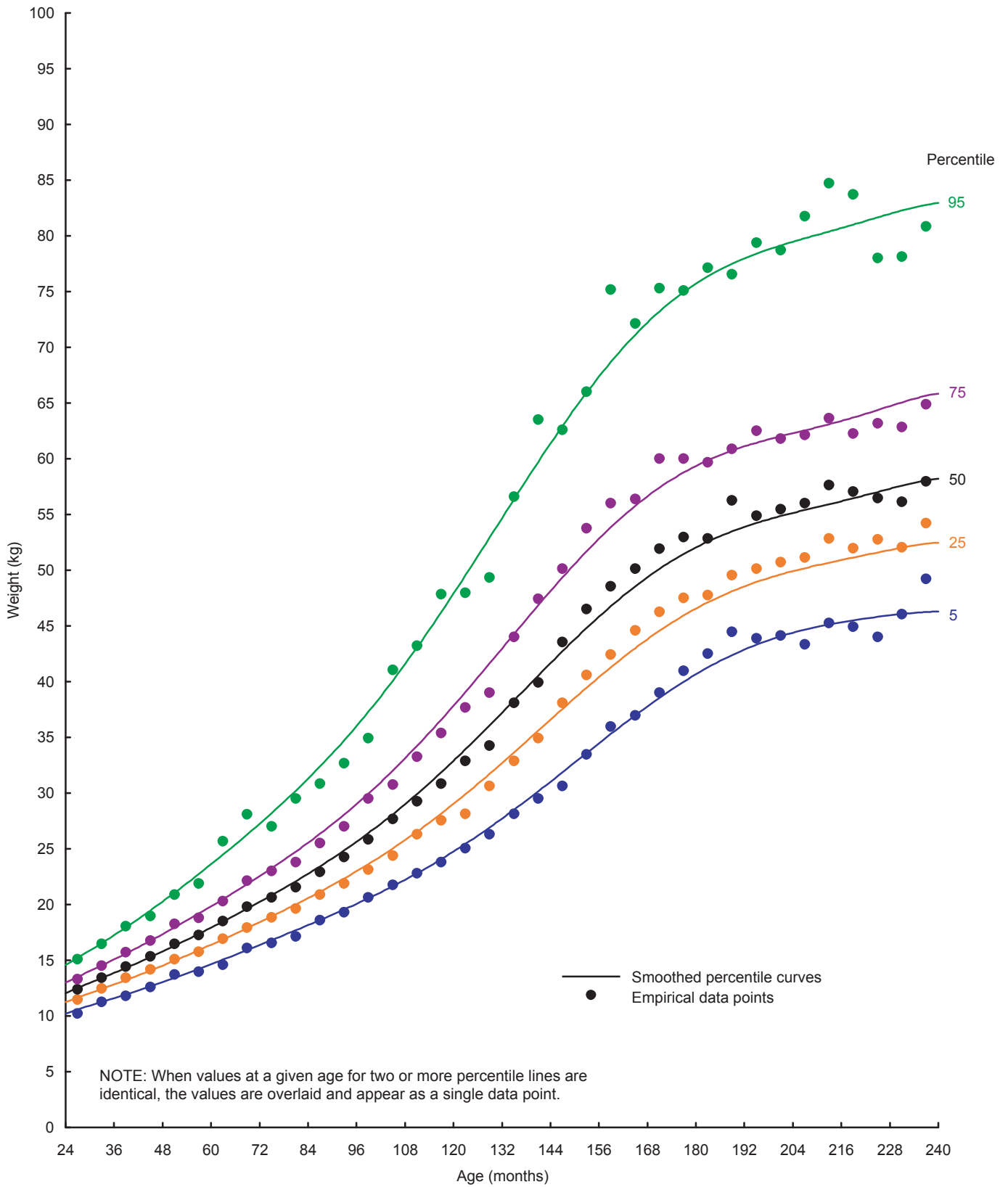


Figure 54. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, 24–237 months: Girls weight-for-age

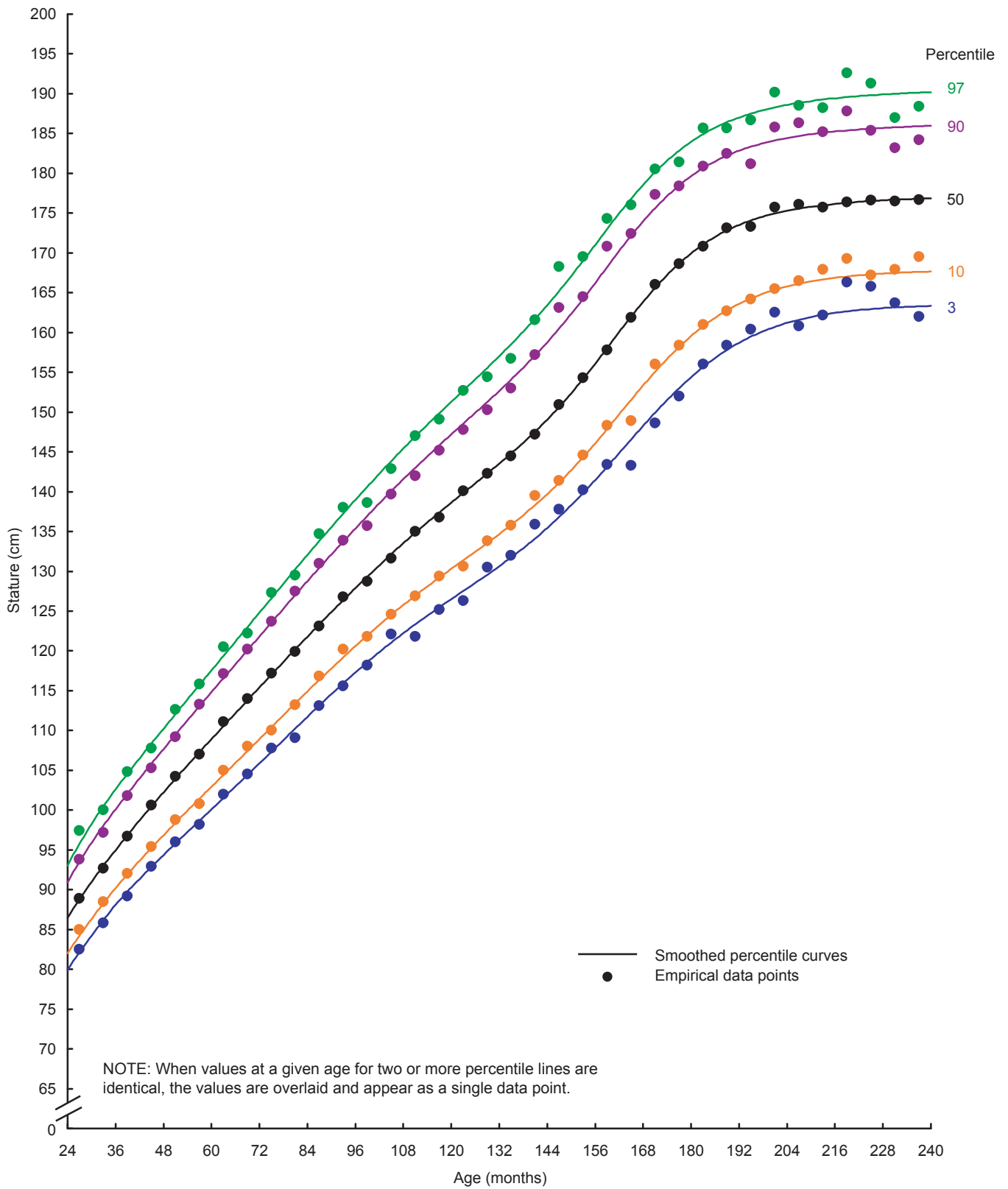


Figure 55. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, 24–237 months: Boys stature-for-age

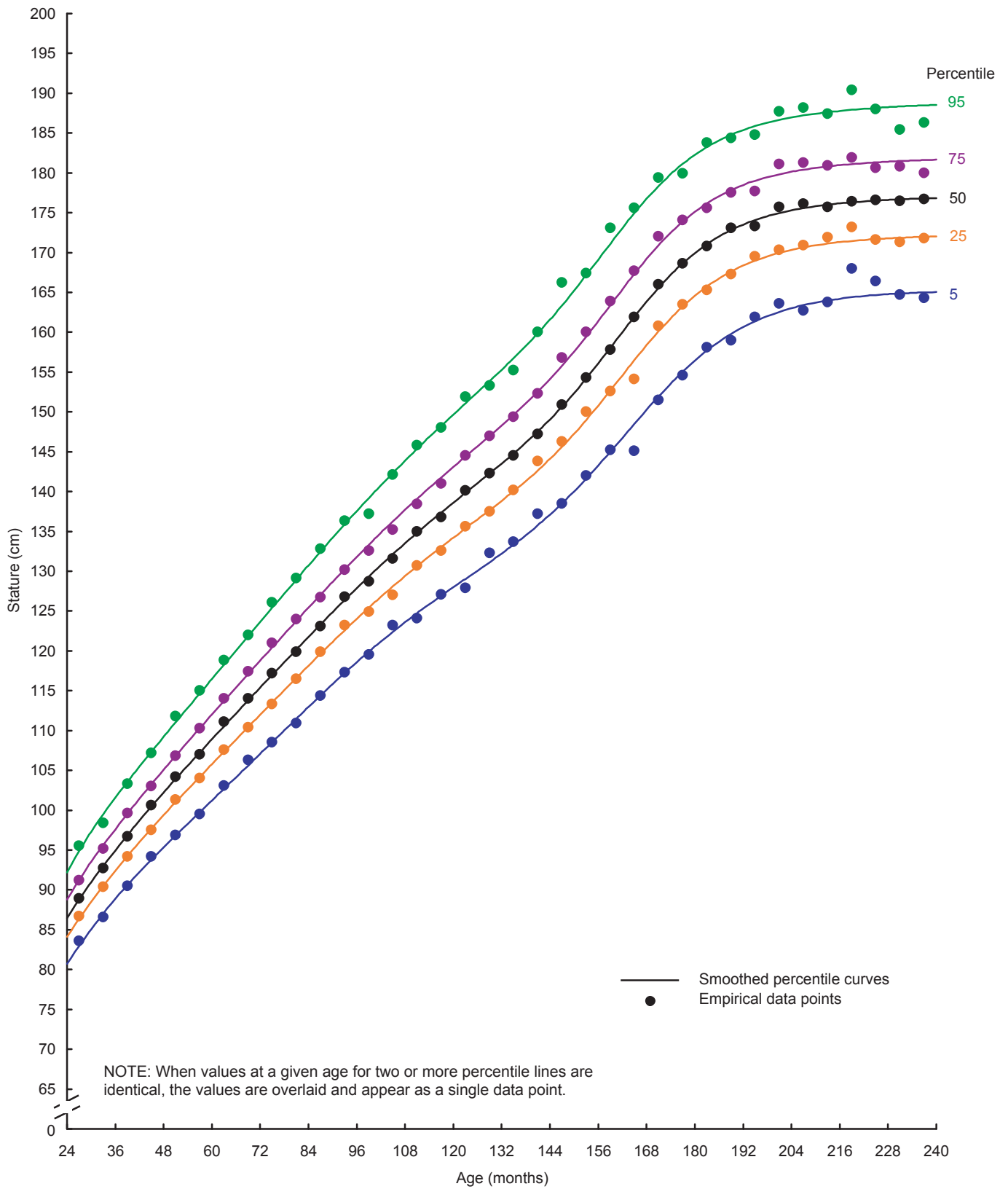


Figure 56. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, 24–237 months: Boys stature-for-age

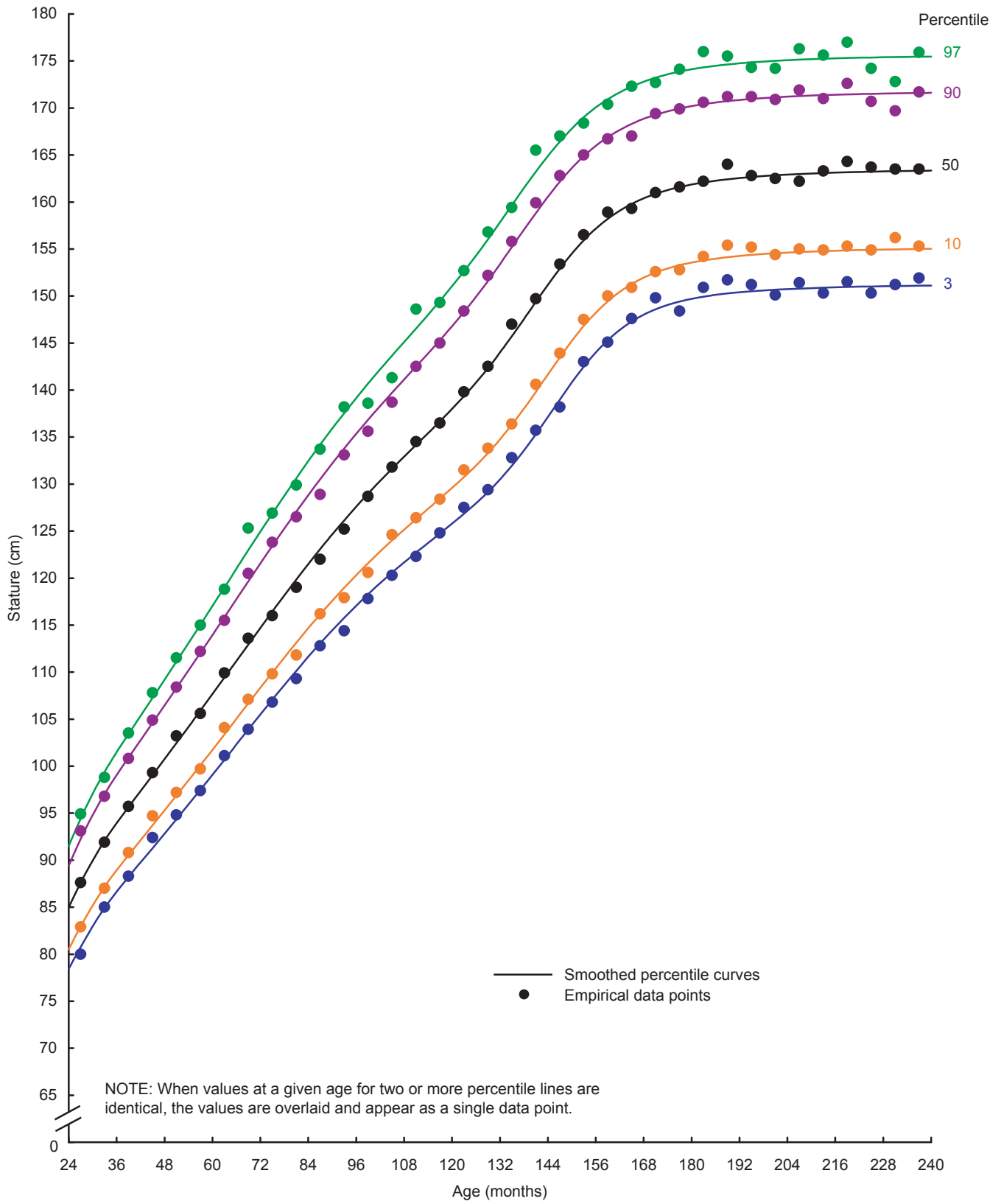


Figure 57. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, 24–237 months: Girls stature-for-age

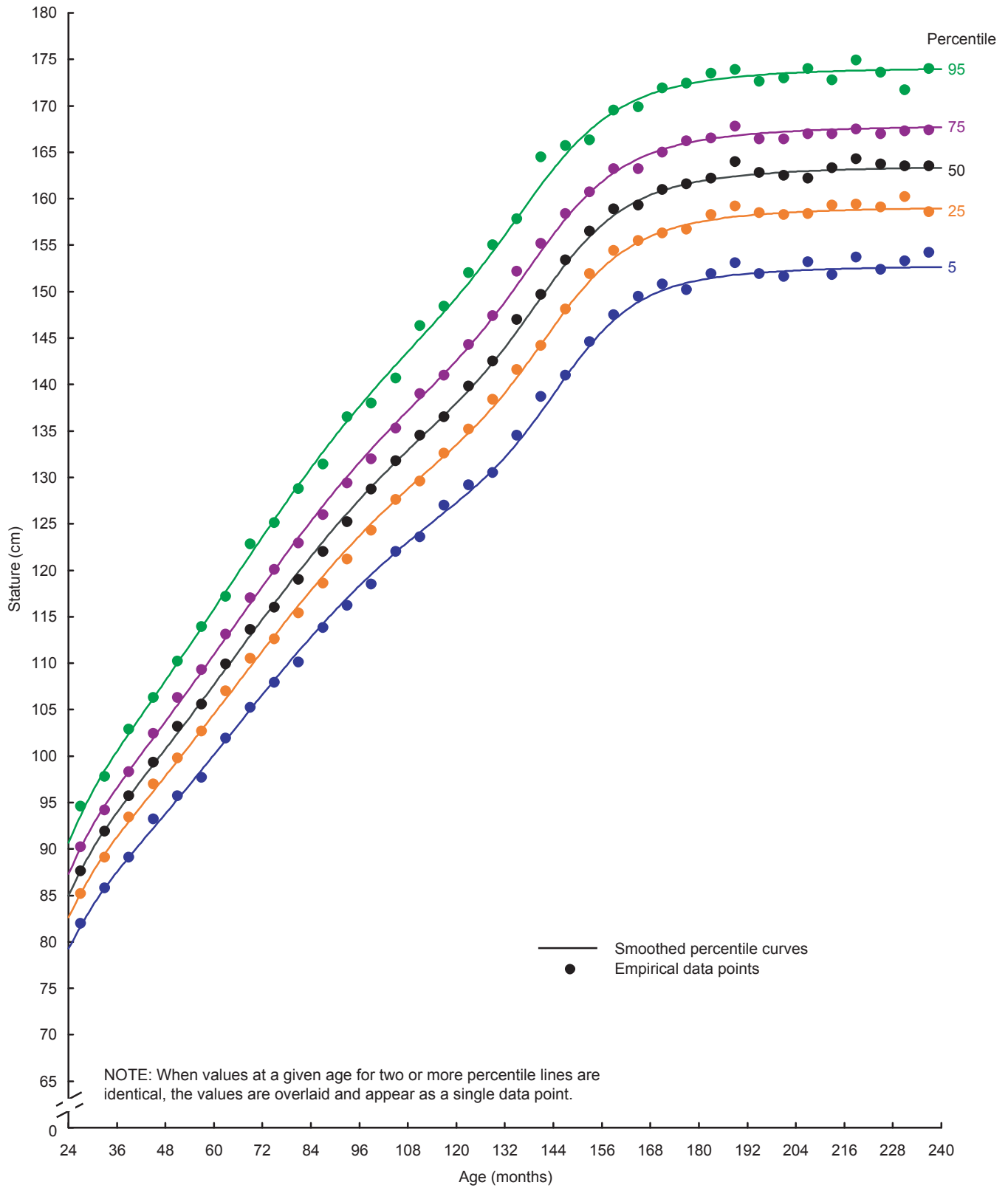


Figure 58. Comparison of smoothed 5th, 25th, 50th, 75th, 95th percentile curves to empirical data points, 24–237 months: Girls stature-for-age

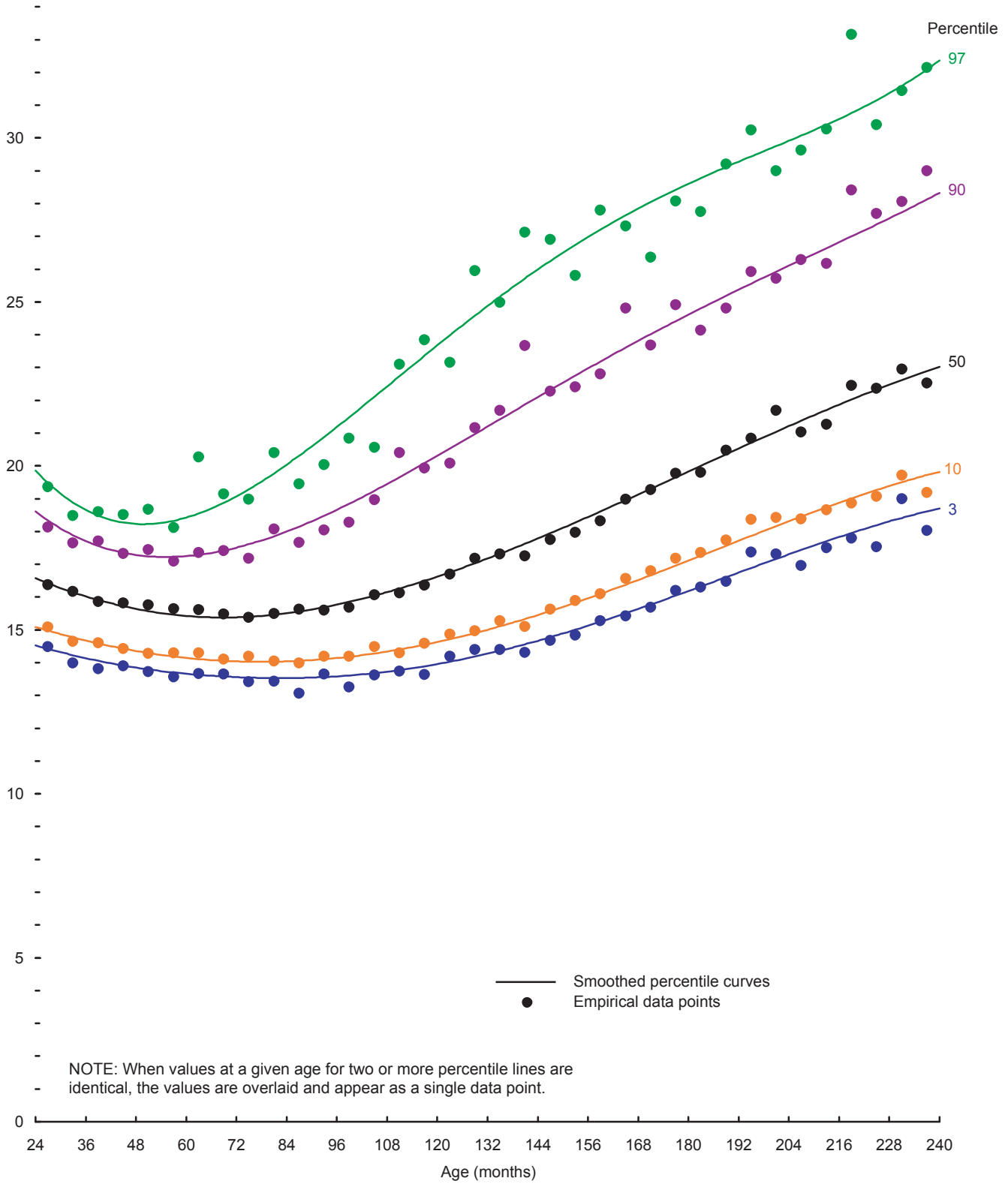


Figure 59. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, 24–237 months: Boys body mass index-for-age

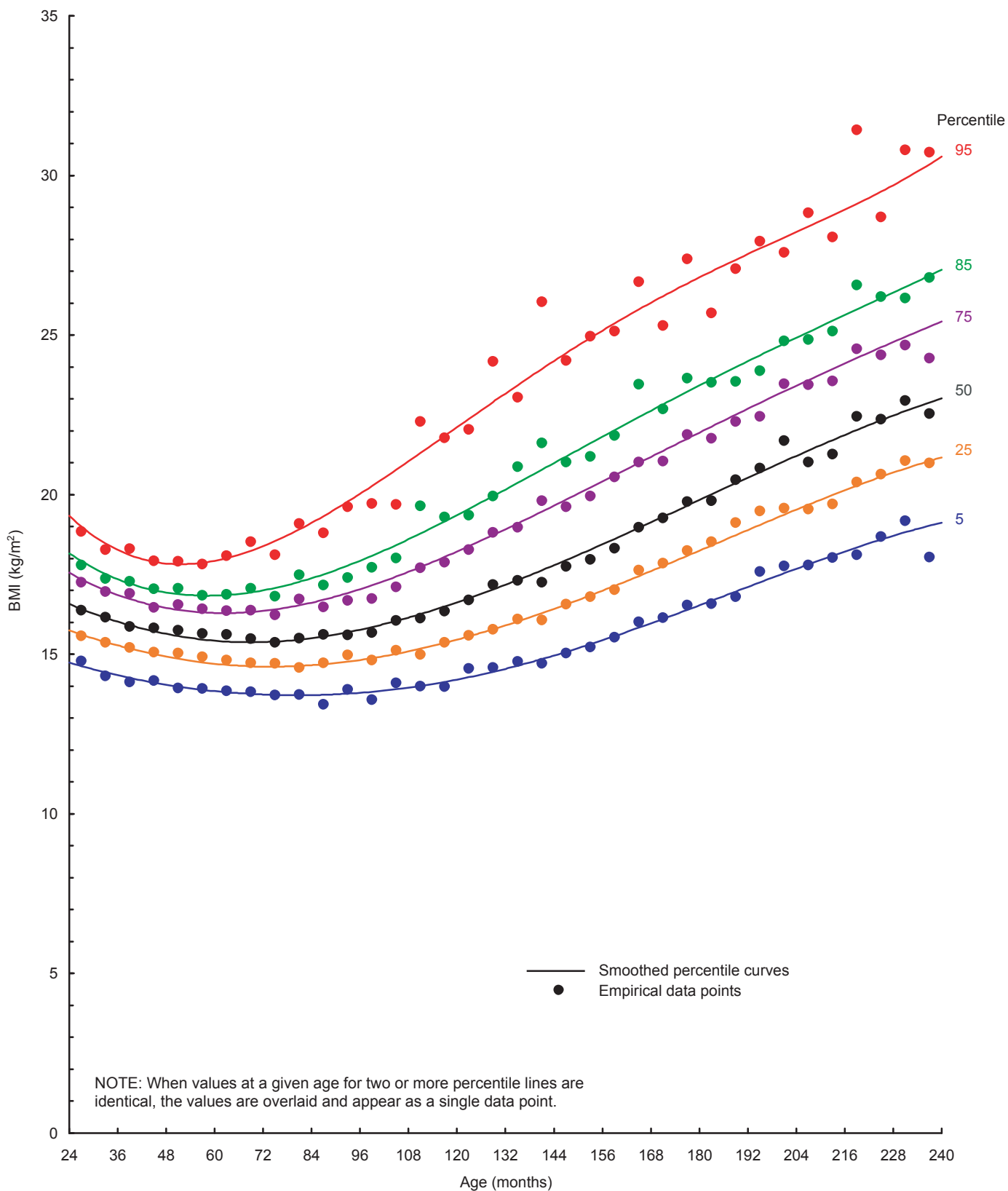


Figure 60. Comparison of smoothed 5th, 25th, 50th, 75th, 85th, 95th percentile curves to empirical data points, 24–237 months: Boys body mass index-for-age

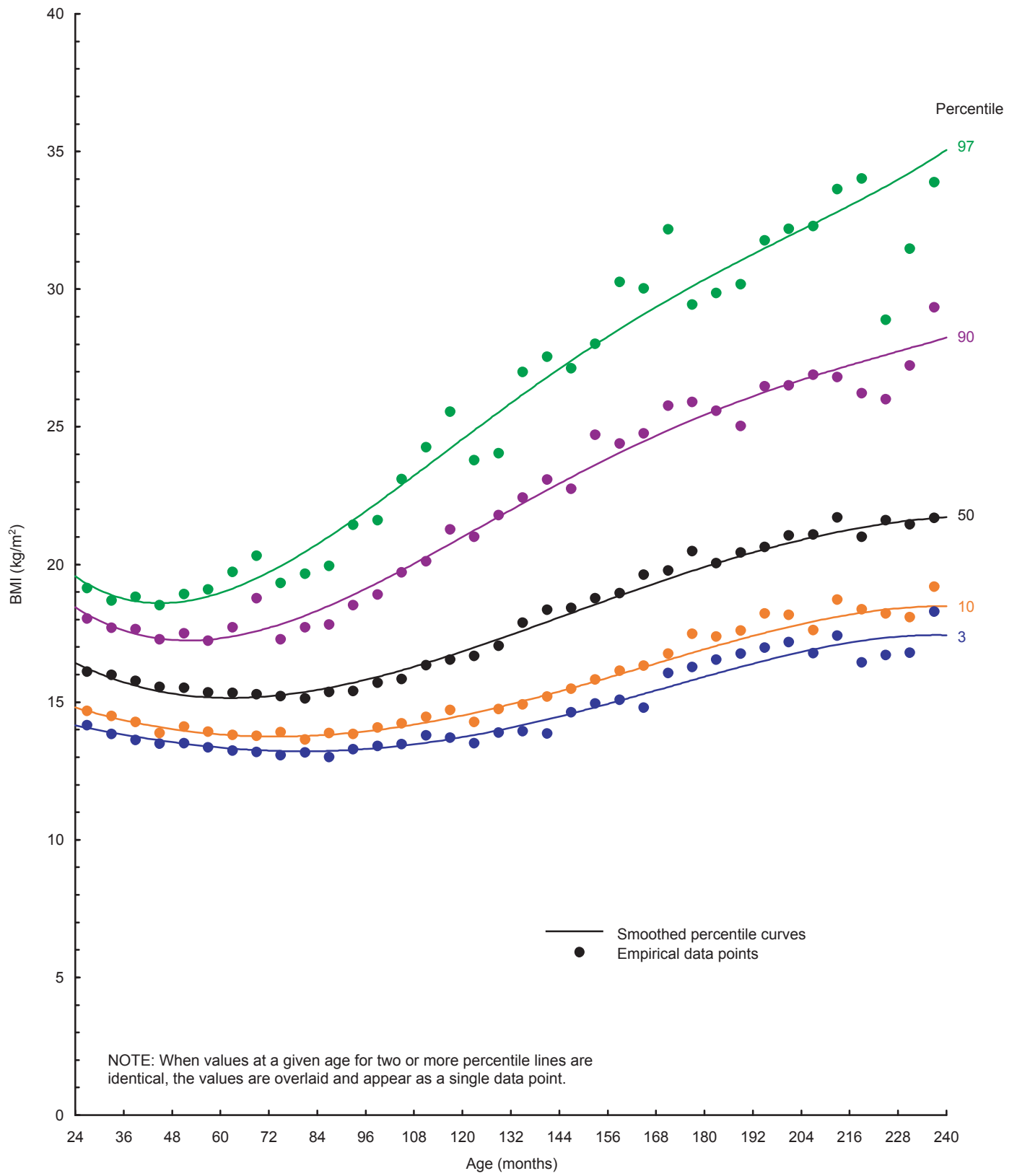


Figure 61. Comparison of smoothed 3rd, 10th, 50th, 90th, 97th percentile curves to empirical data points, 24–237 months: Girls body mass index-for-age

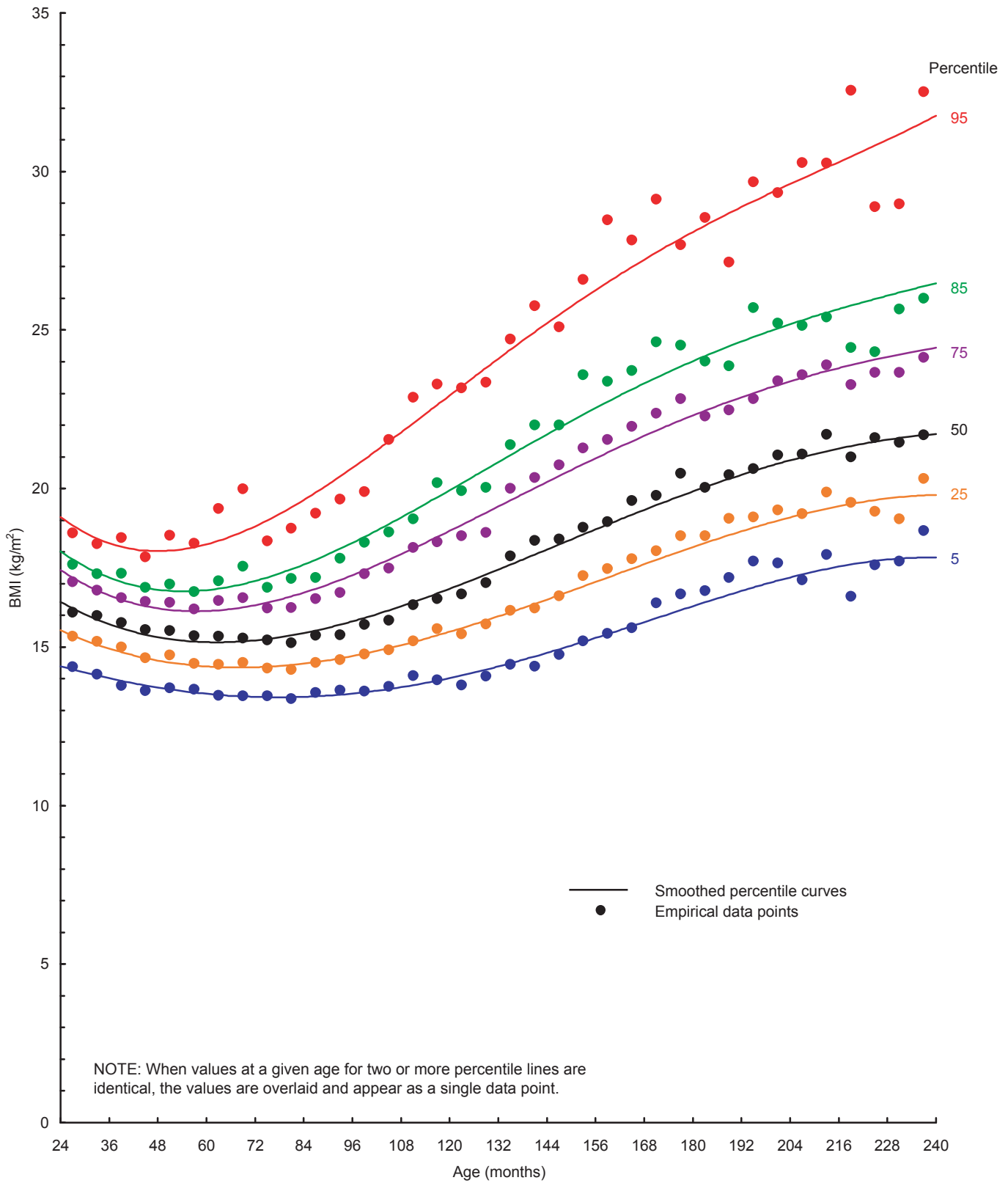


Figure 62. Comparison of smoothed 5th, 25th, 50th, 75th, 85th, 95th percentile curves to empirical data points, 24–237 months: Girls body mass index-for-age

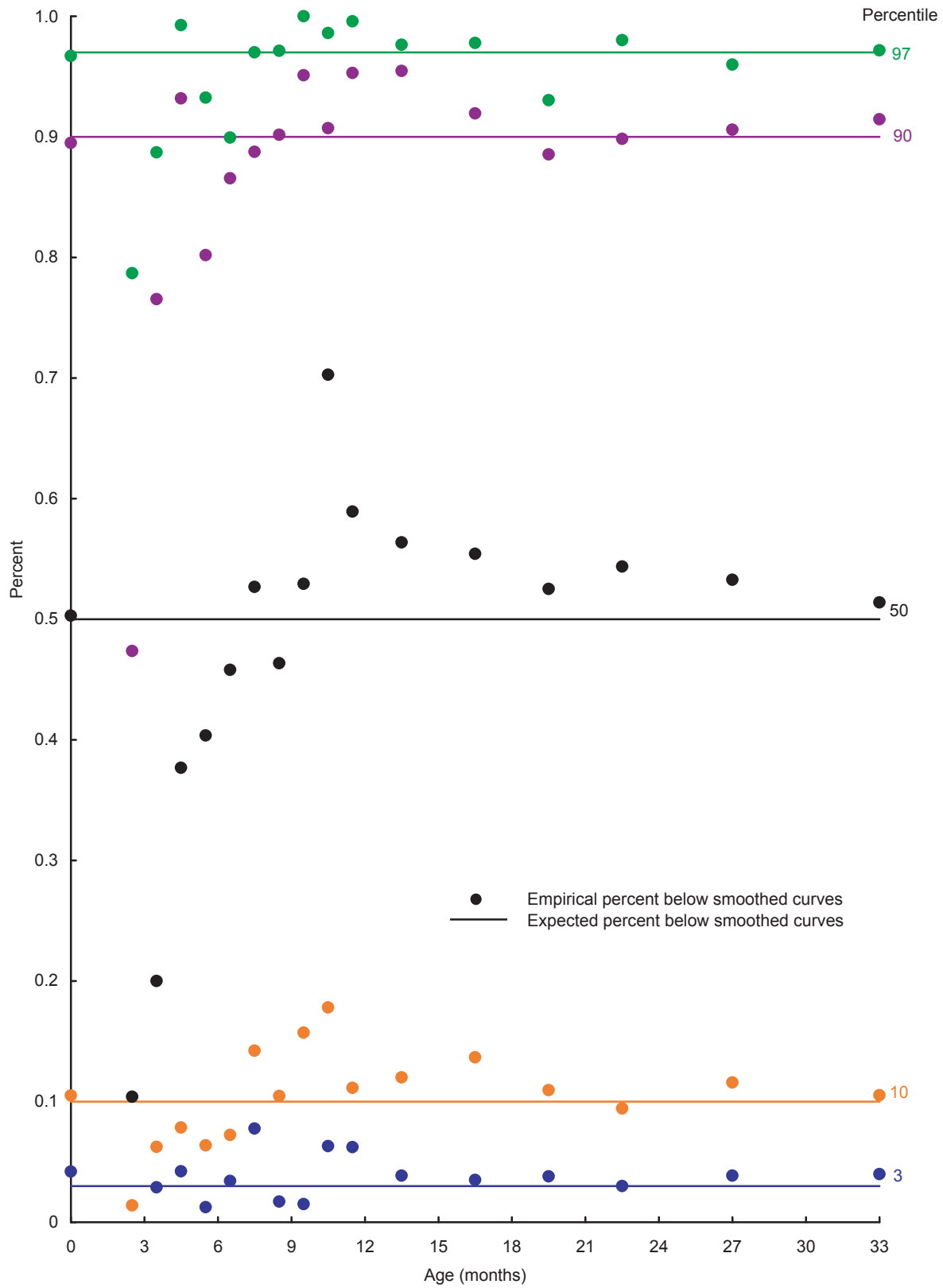


Figure 63. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, birth to 33 months: Boys weight-for-age

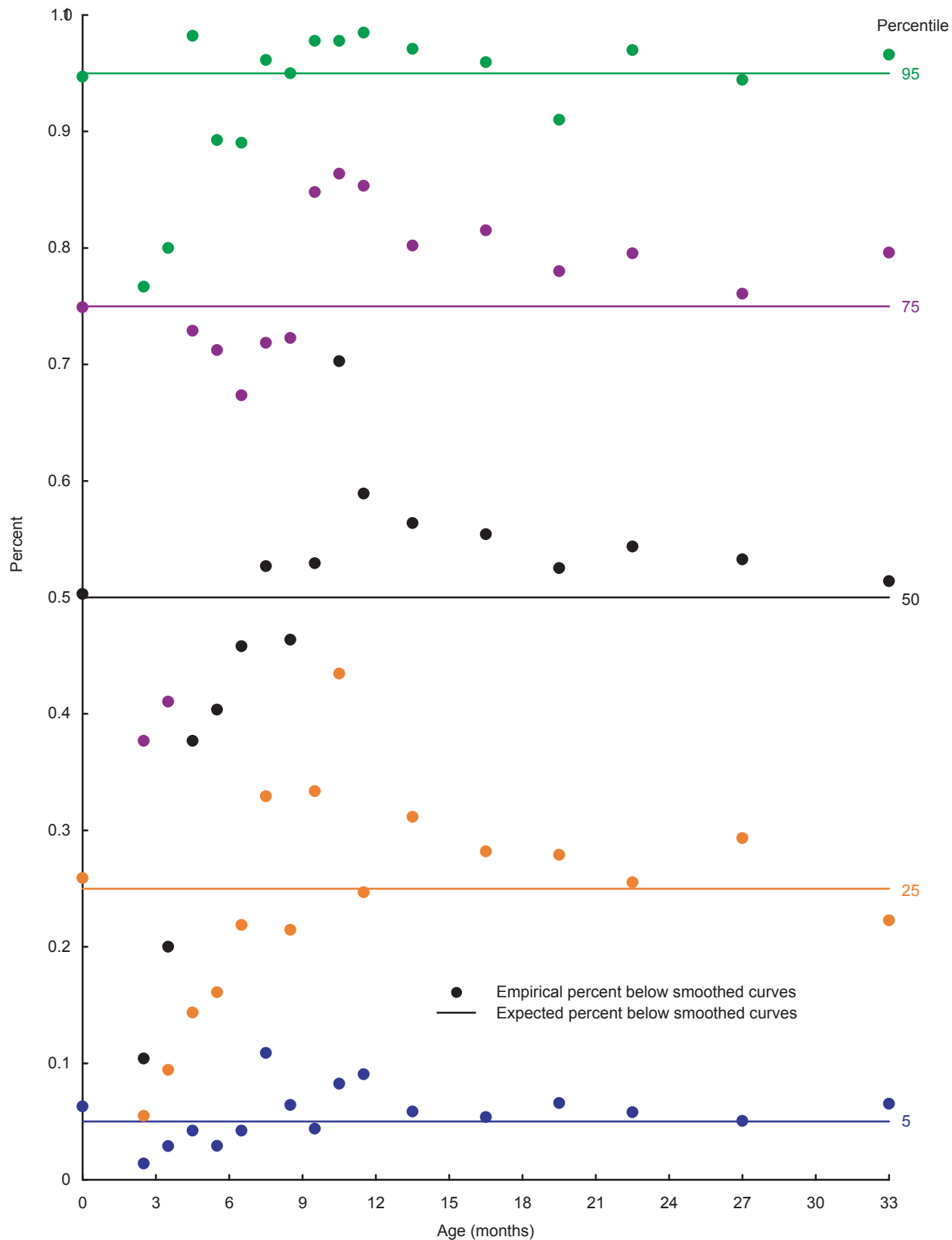


Figure 64. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, birth to 33 months: Boys weight-for-age

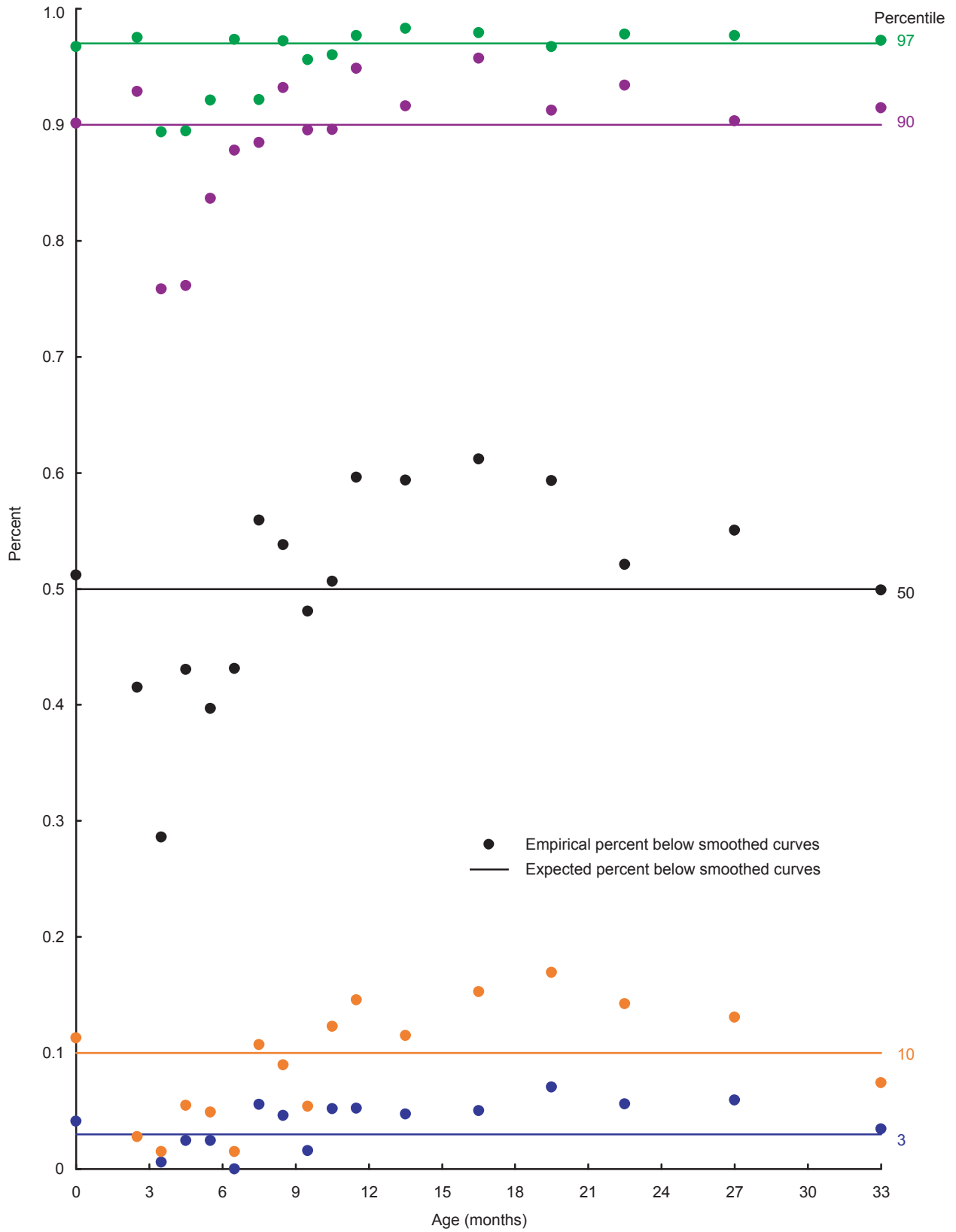


Figure 65. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, birth to 33 months: Girls weight-for-age

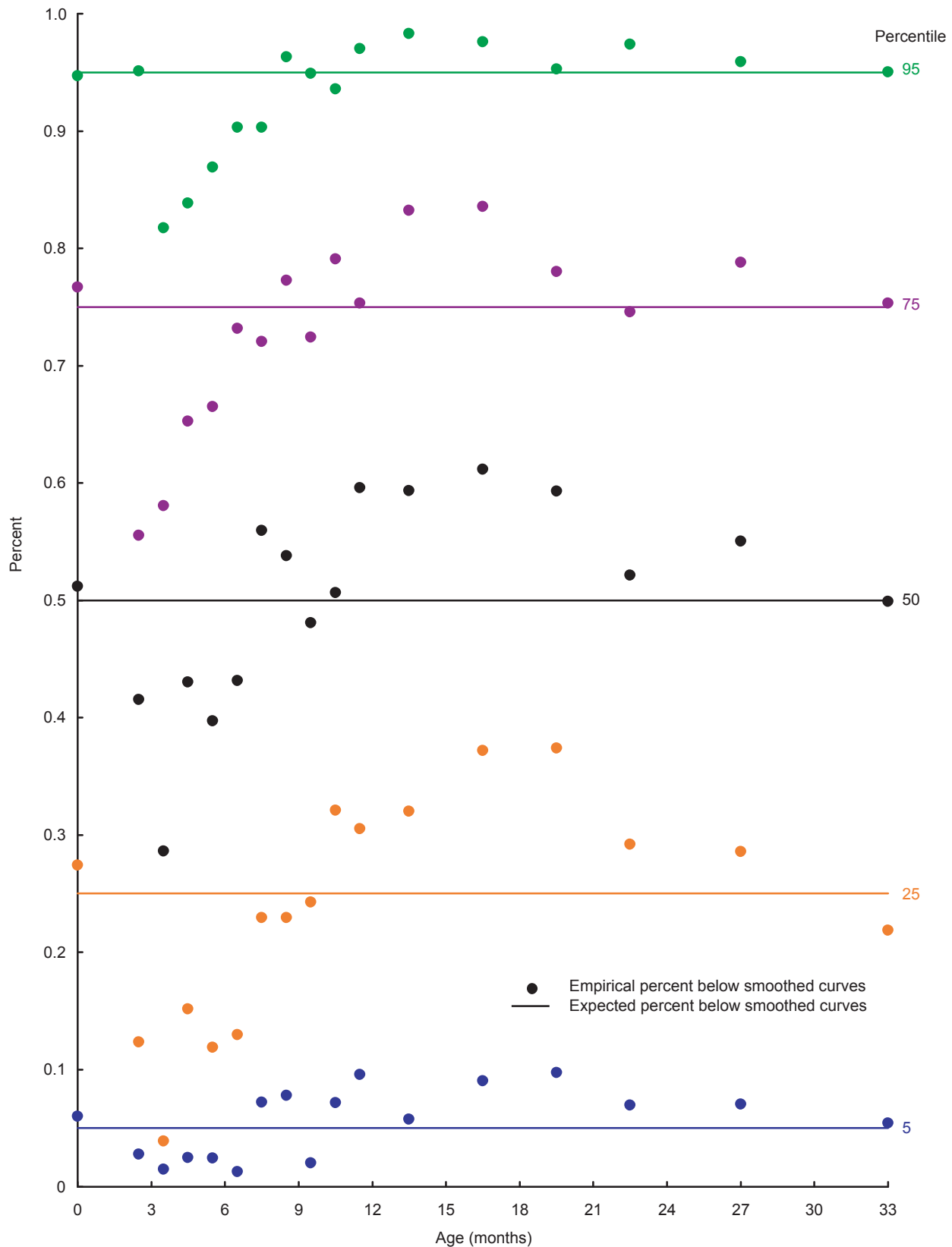


Figure 66. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, birth to 33 months: Girls weight-for-age

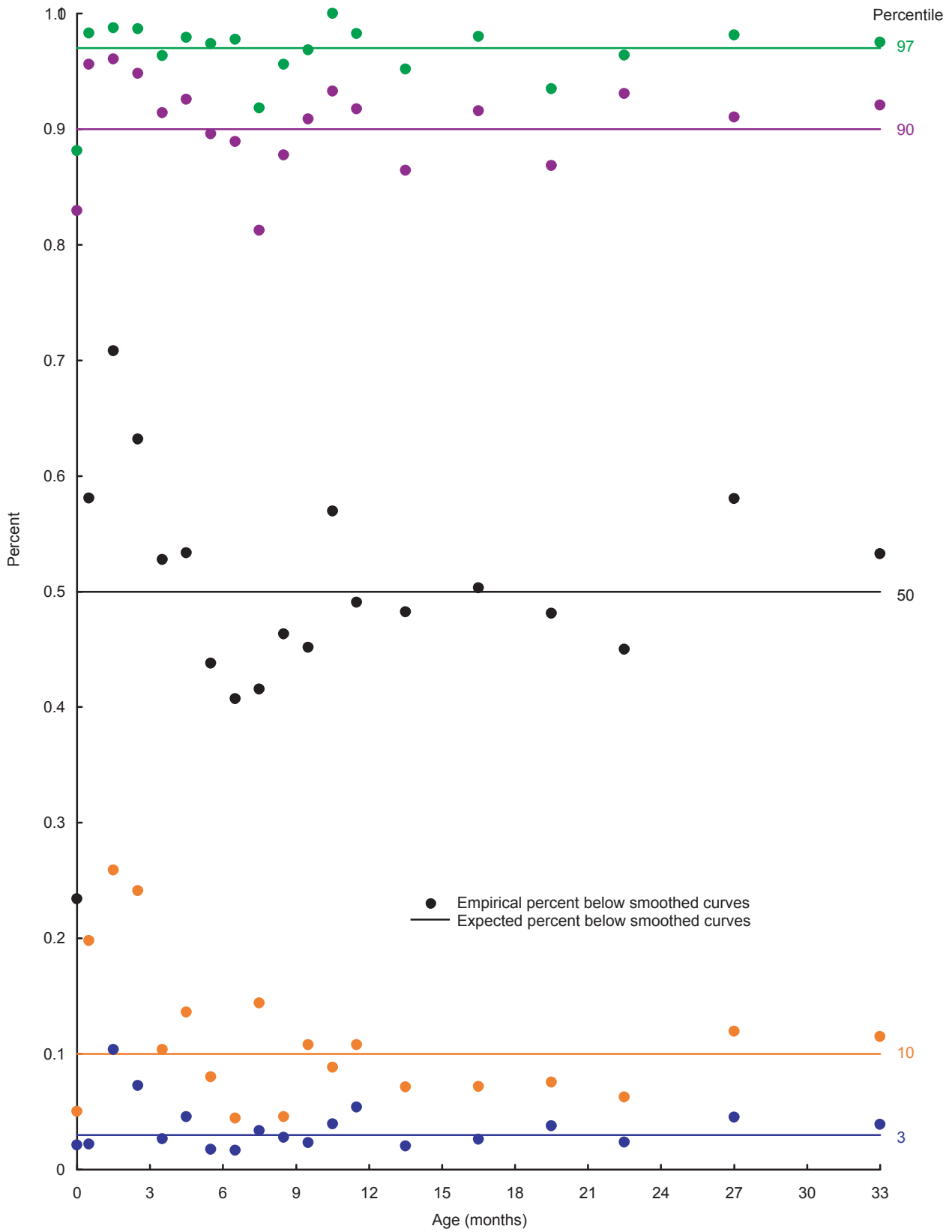


Figure 67. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, birth to 33 months: Boys length-for-age

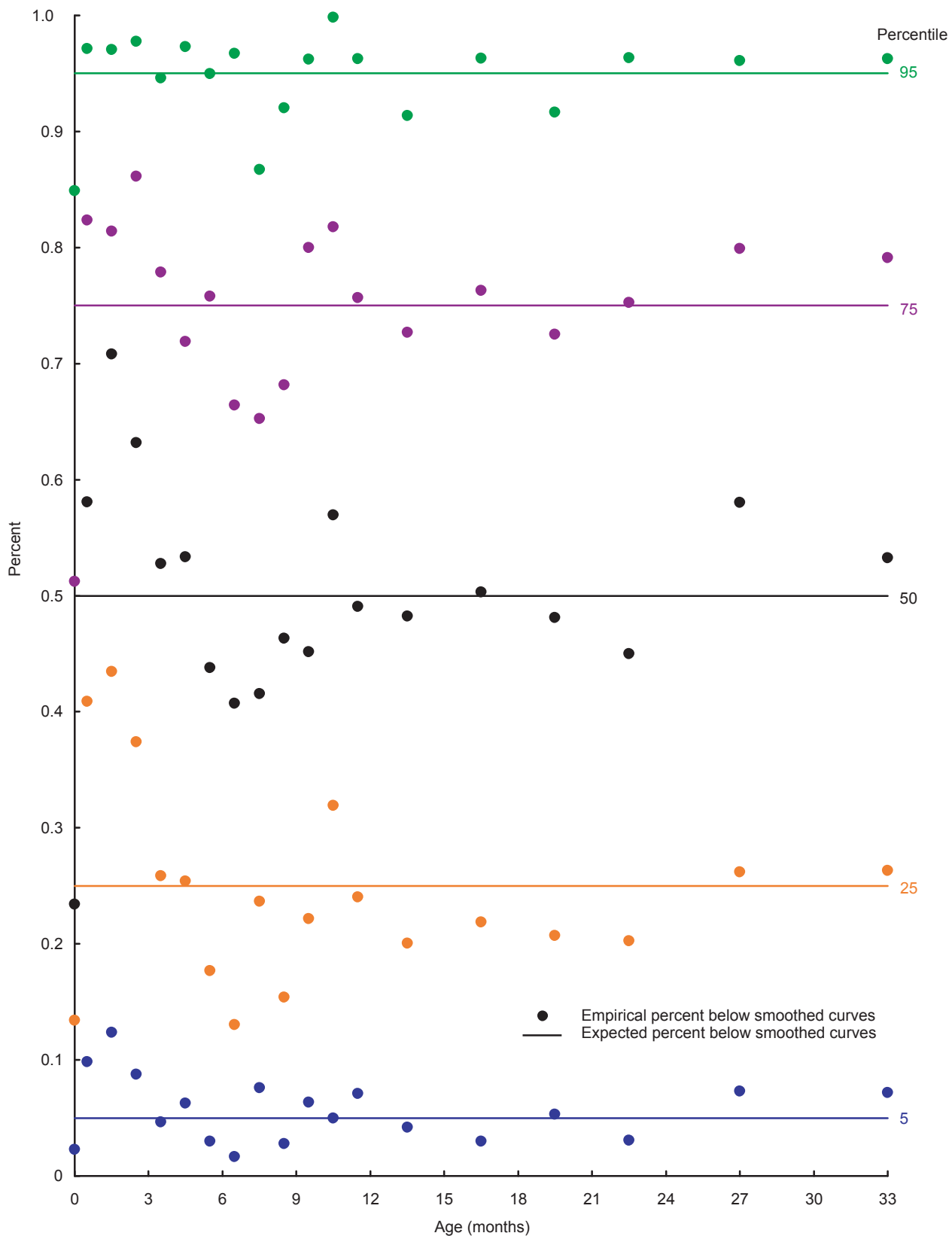


Figure 68. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, birth to 33 months: Boys length-for-age

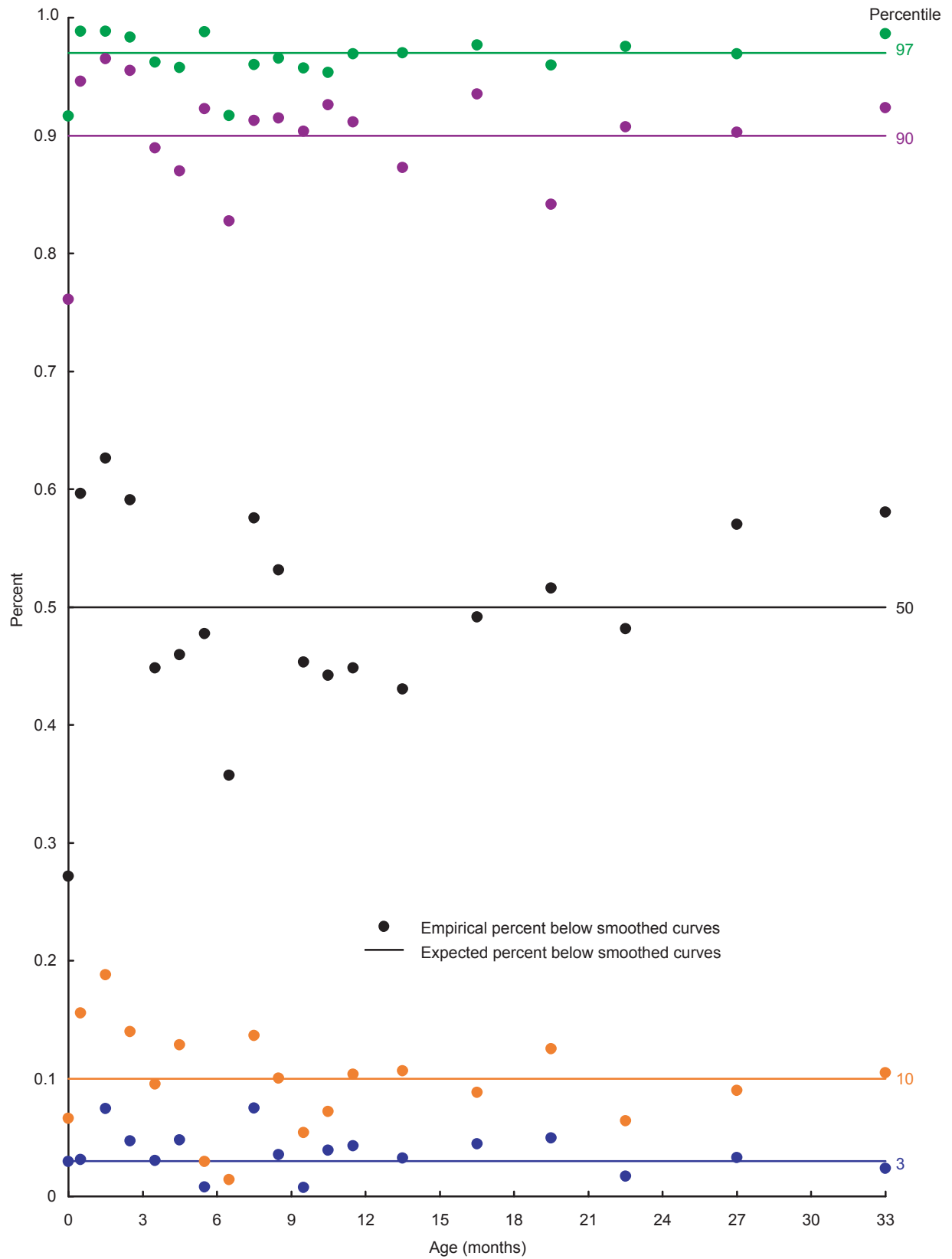


Figure 69. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, birth to 33 months: Girls length-for-age

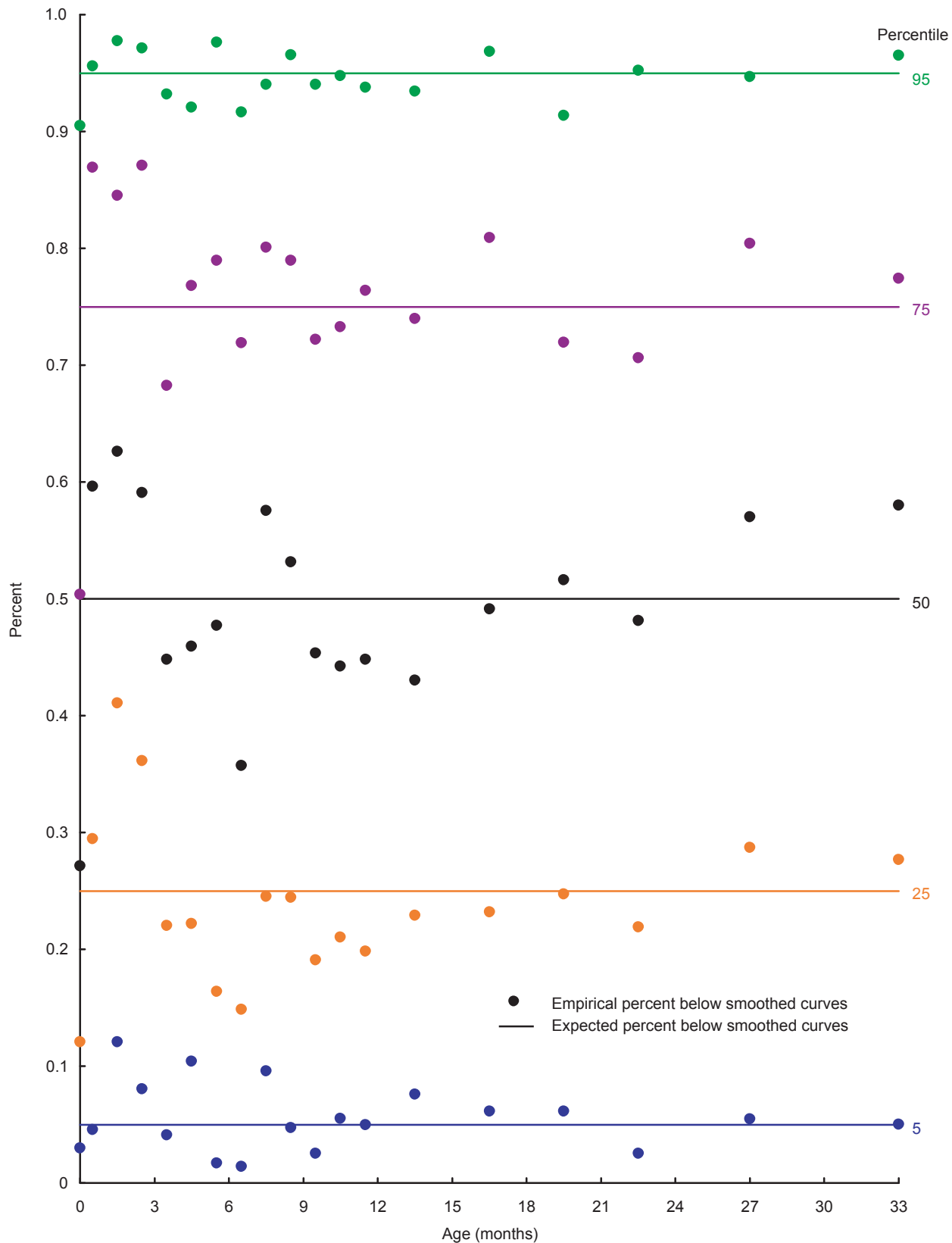


Figure 70. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, birth to 33 months: Girls length-for-age

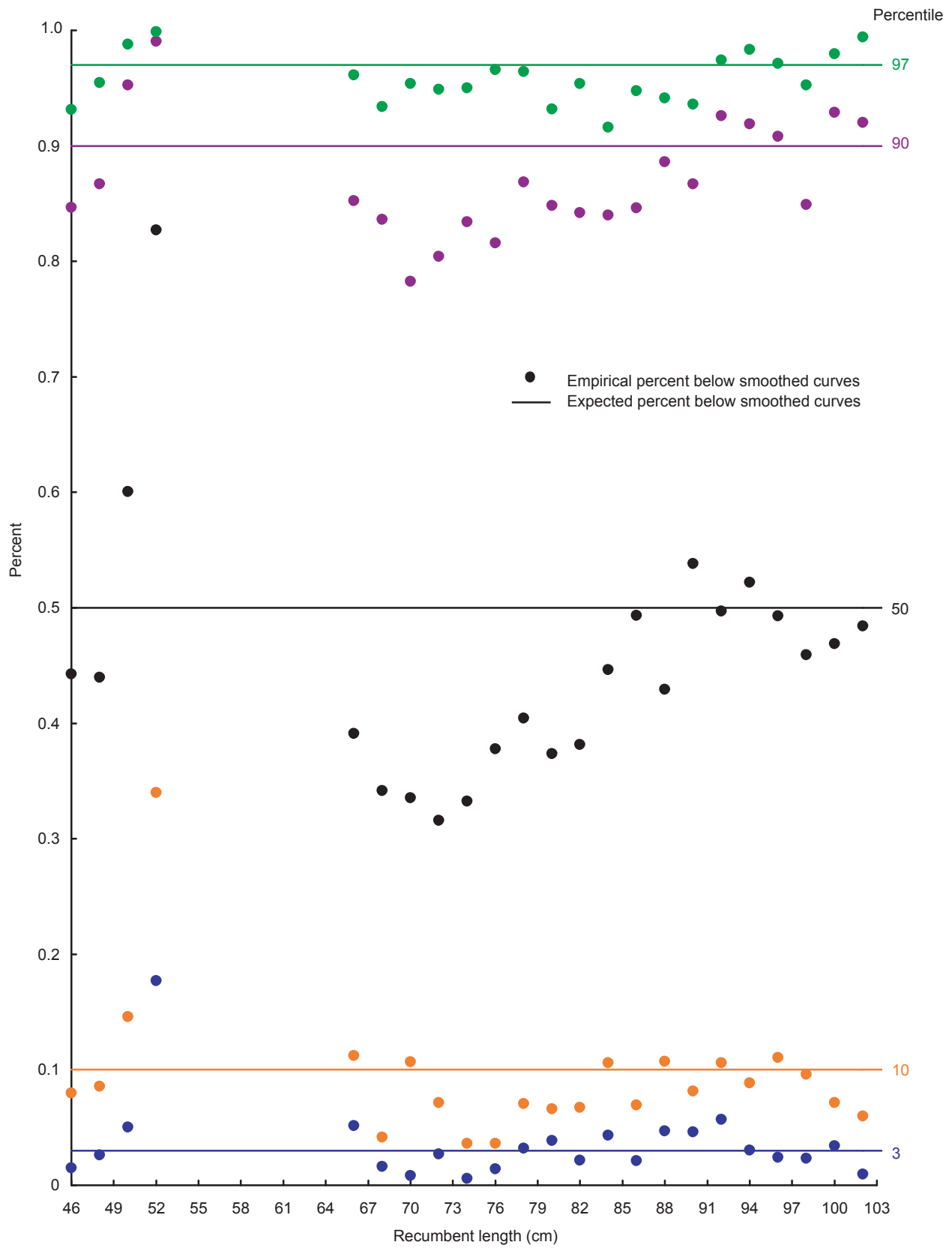


Figure 71. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, 46–103 cm: Boys weight-for-length

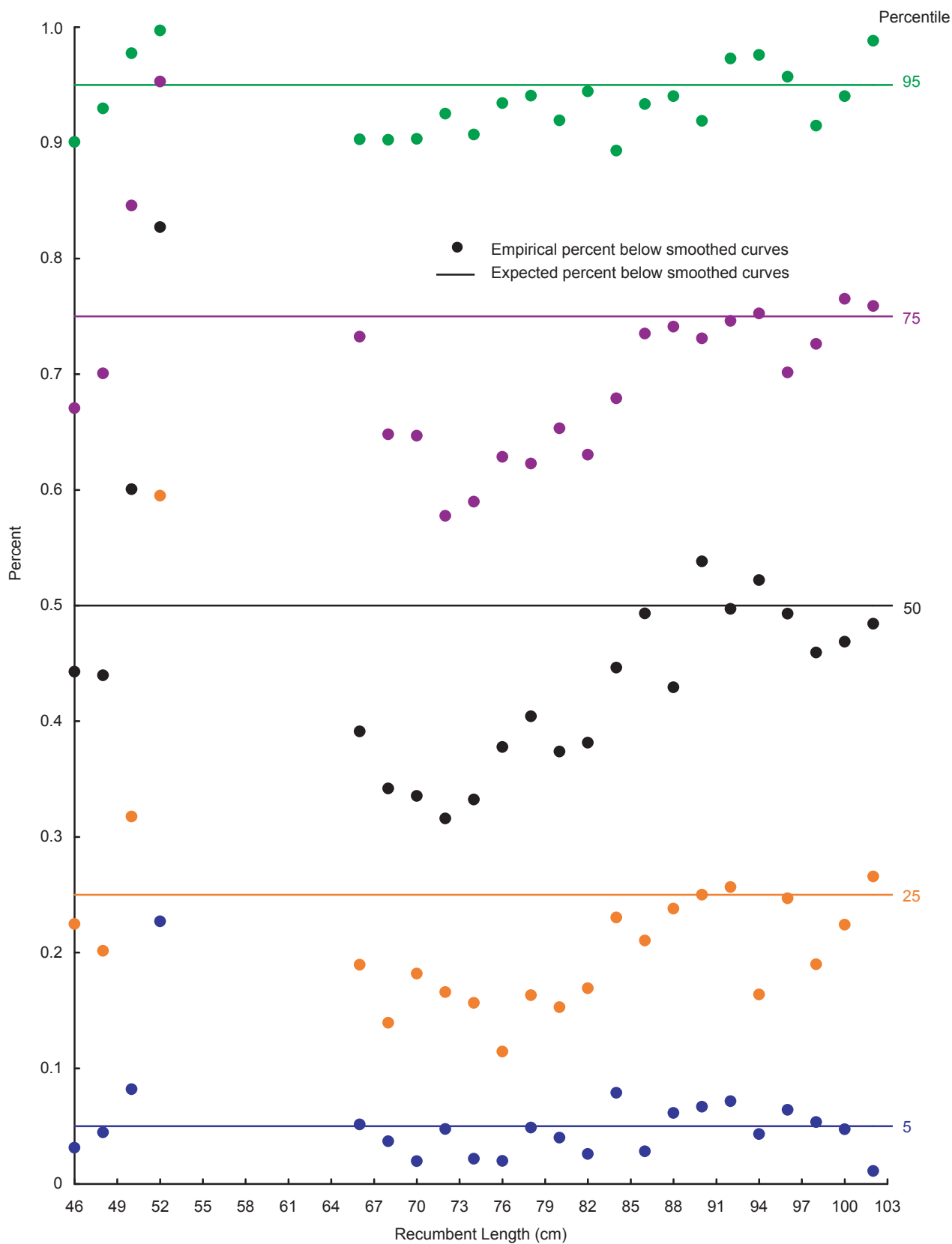


Figure 72. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, 46–103 cm: Boys weight-for-length

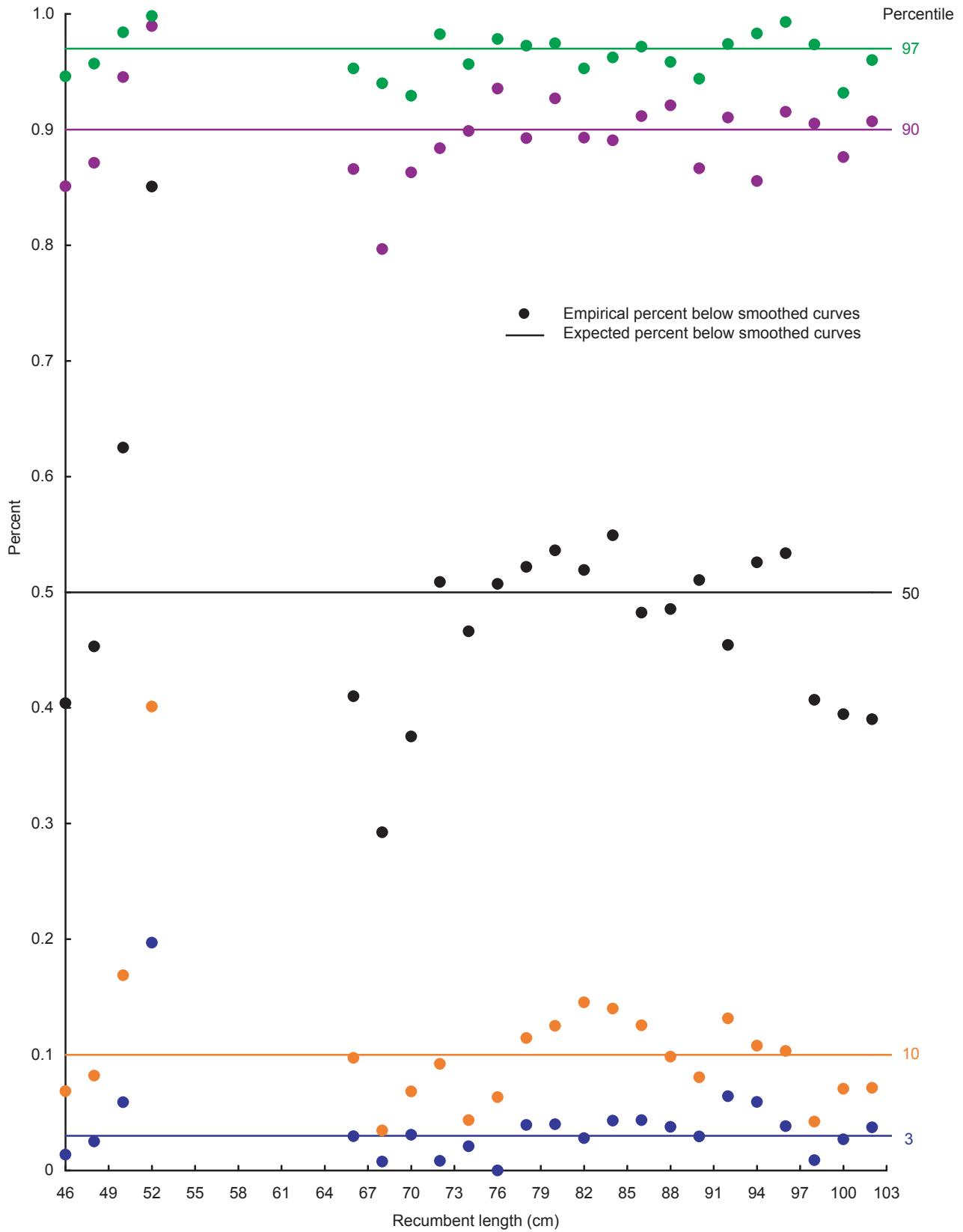


Figure 73. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, 46–103 cm: Girls weight-for-length

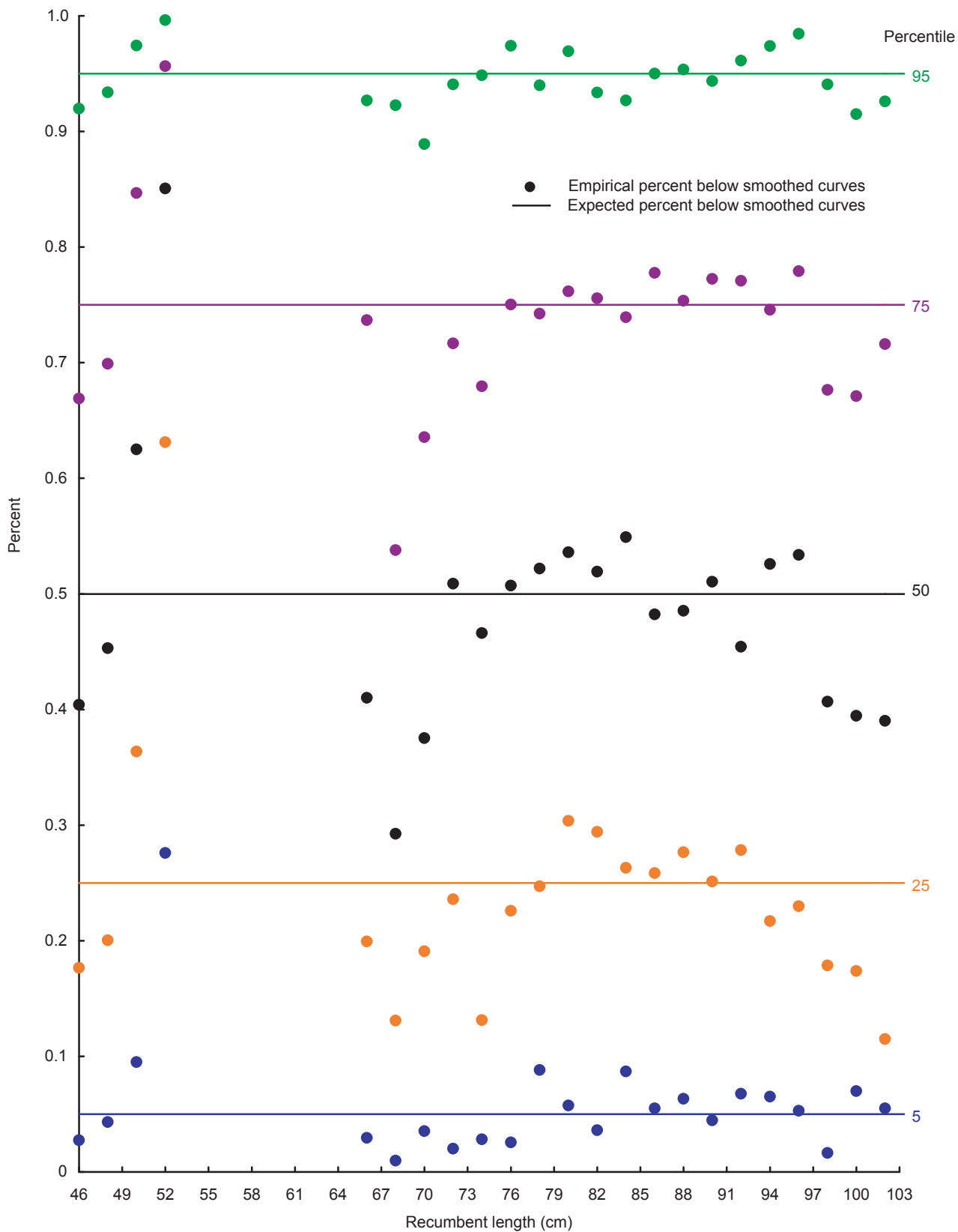


Figure 74. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, 46–103 cm: Girls weight-for-length

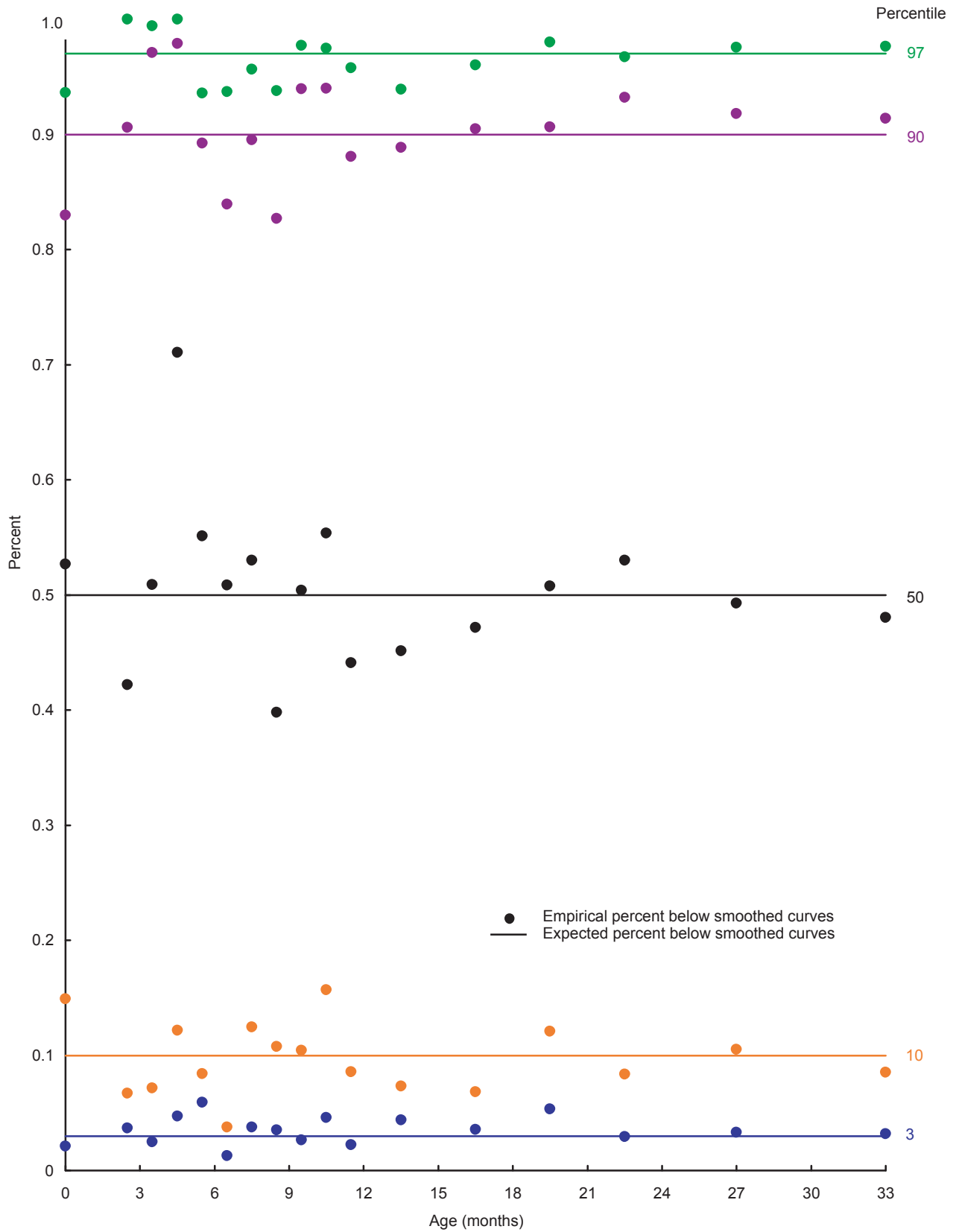


Figure 75. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, birth to 33 months: Boys head circumference-for-age

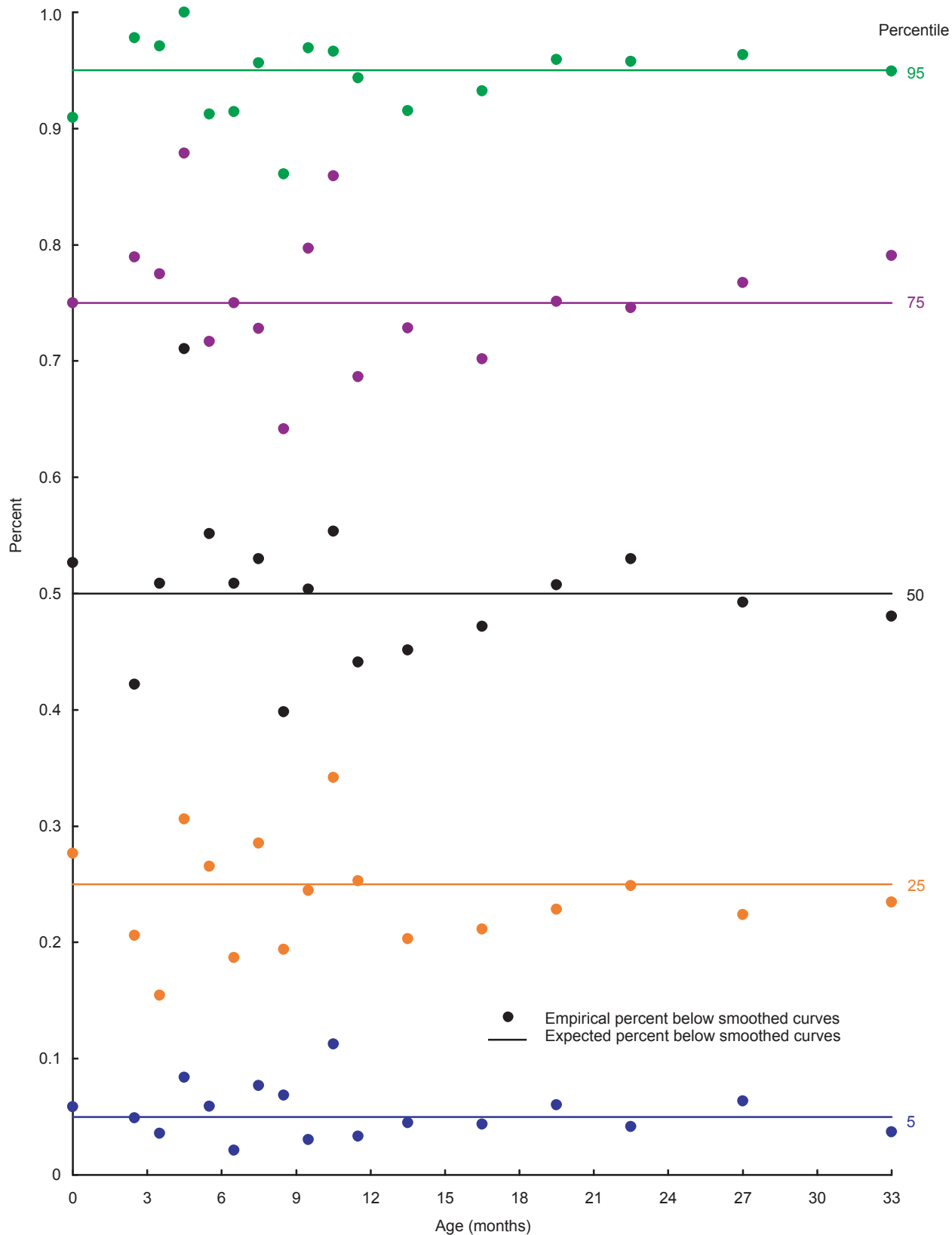


Figure 76. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, birth to 33 months: Boys head circumference-for-age

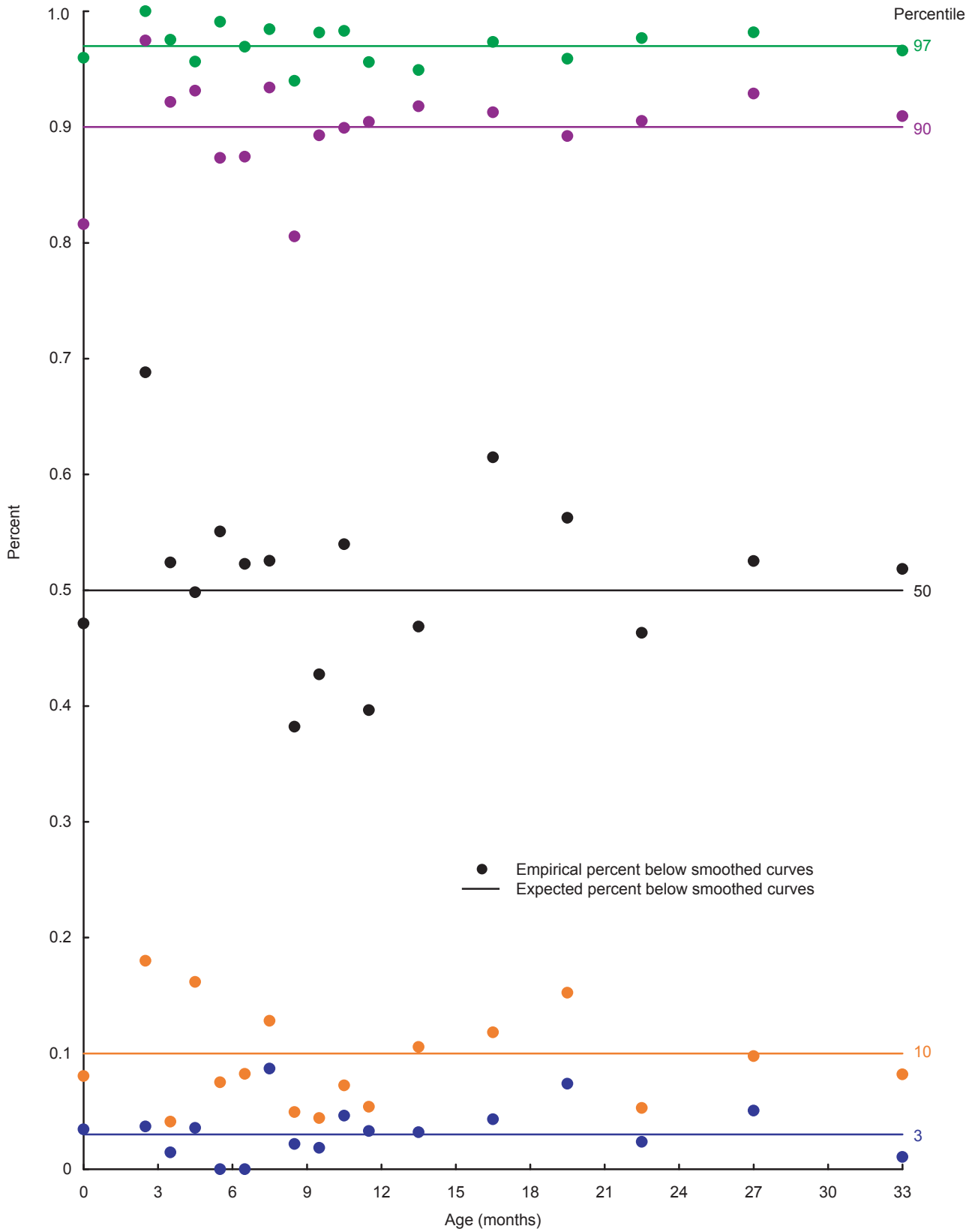


Figure 77. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, birth to 33 months: Girls head circumference-for-age

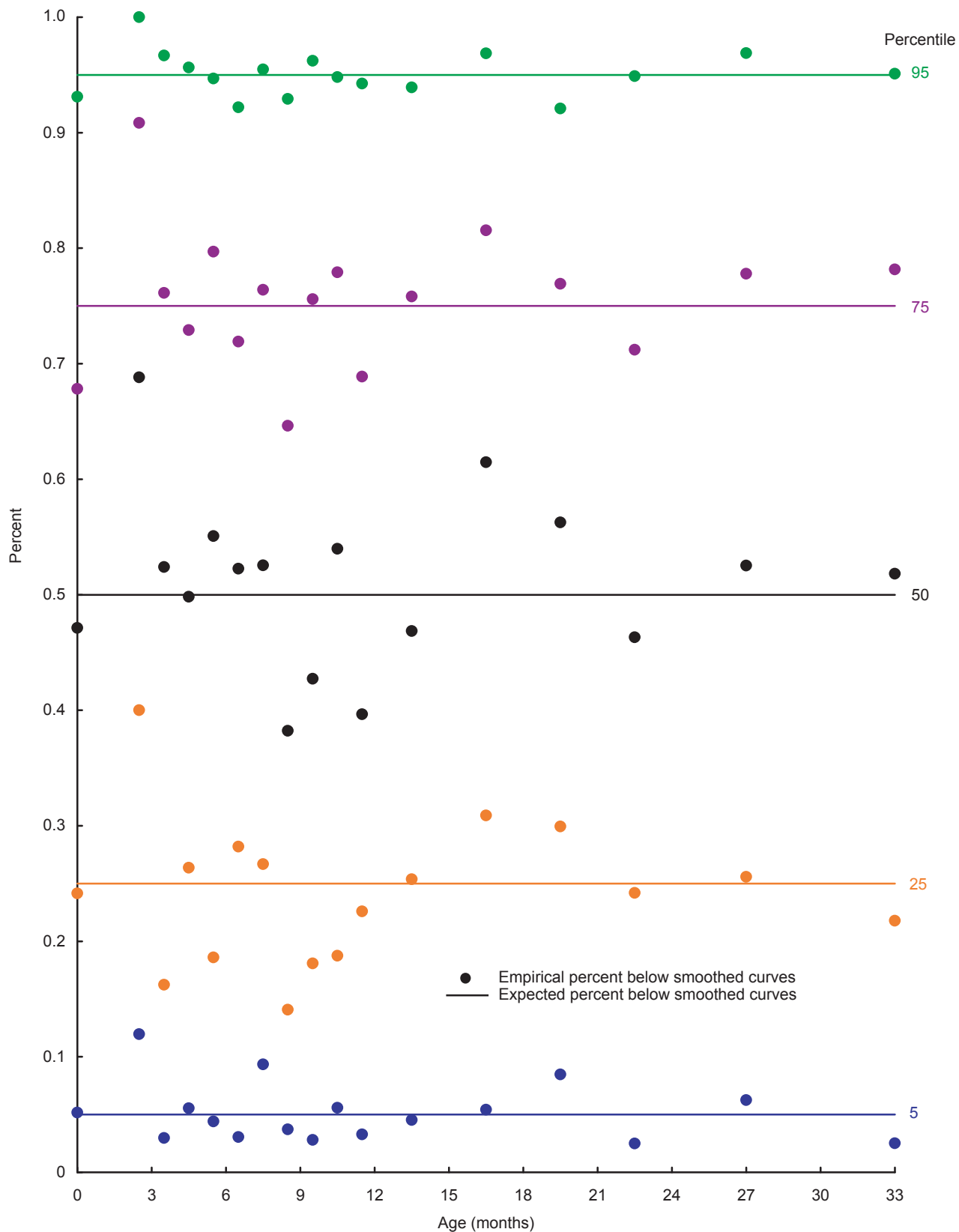


Figure 78. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, birth to 33 months: Girls head circumference-for-age

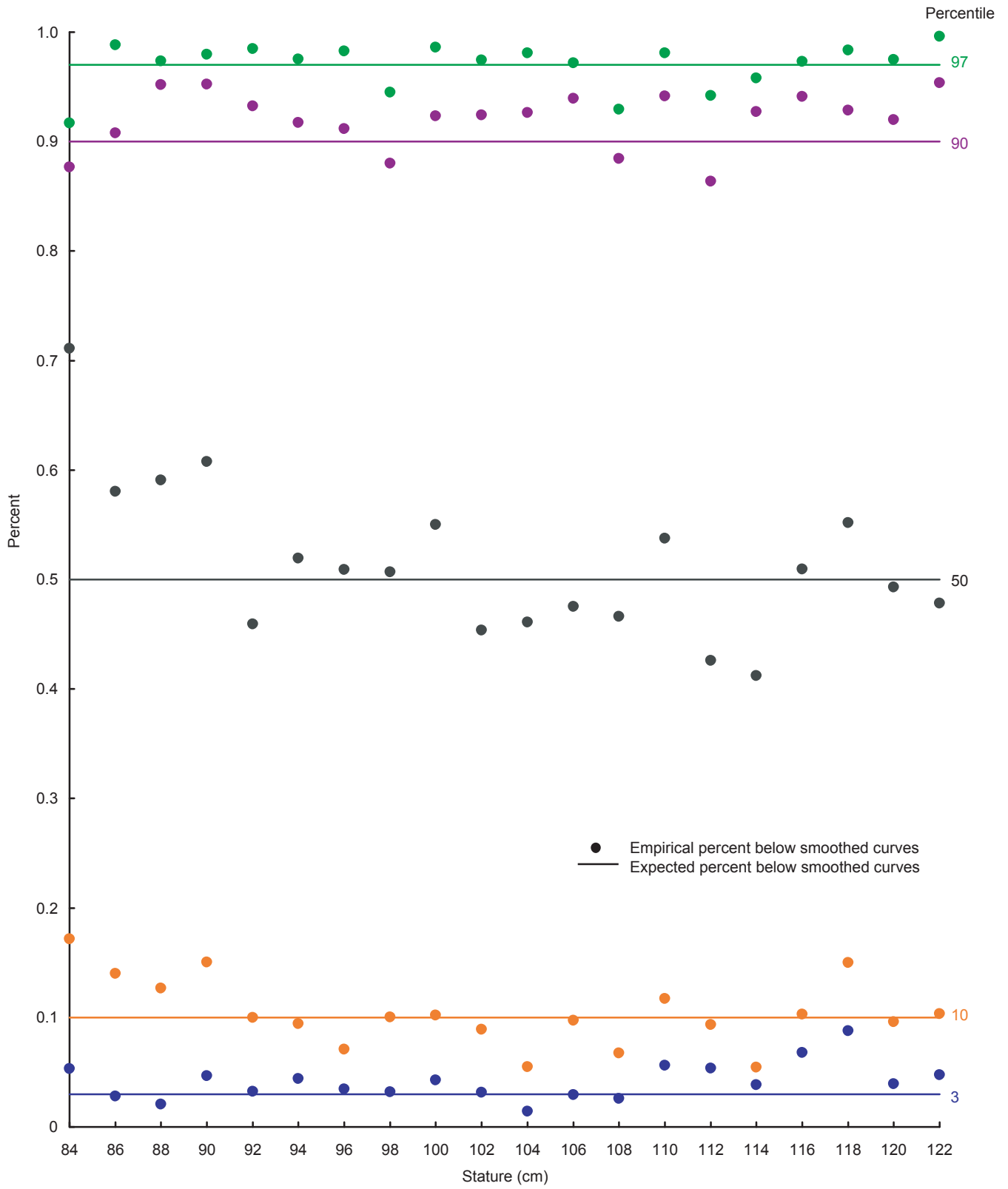


Figure 79. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, 84–122 cm: Boys weight-for-stature

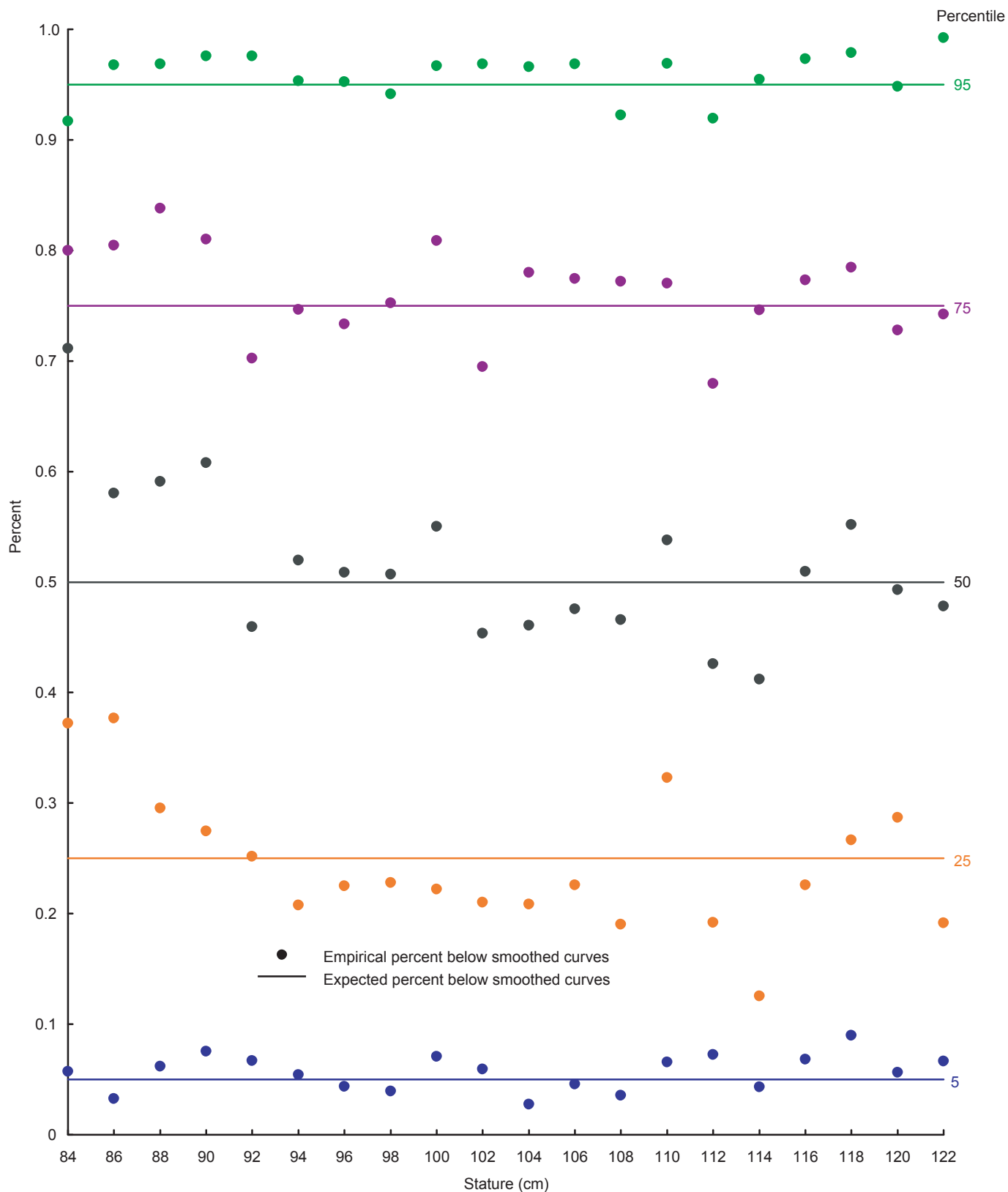


Figure 80. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, 84–122 cm: Boys weight-for-stature

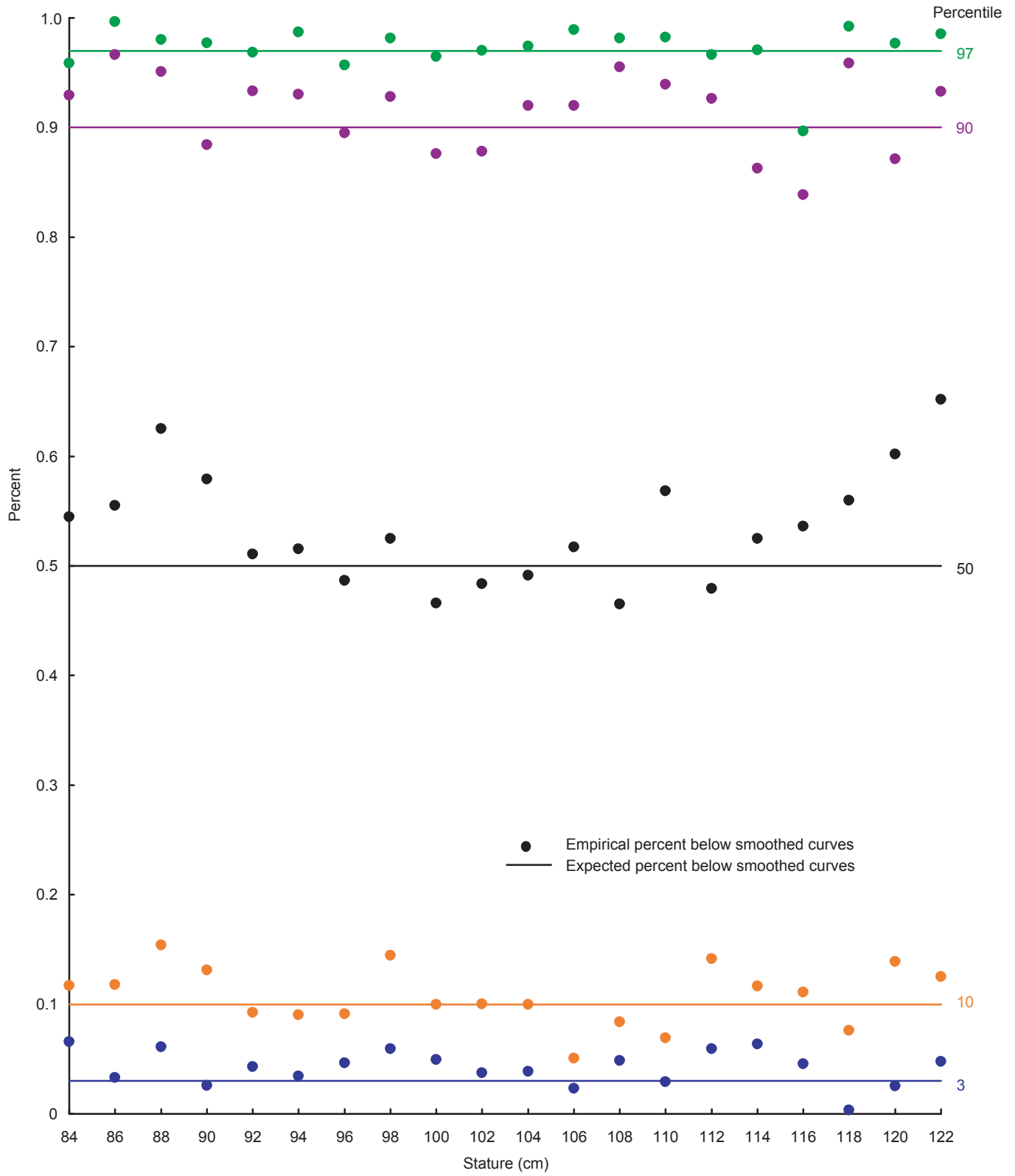


Figure 81. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, 84–122 cm: Girls weight-for-stature

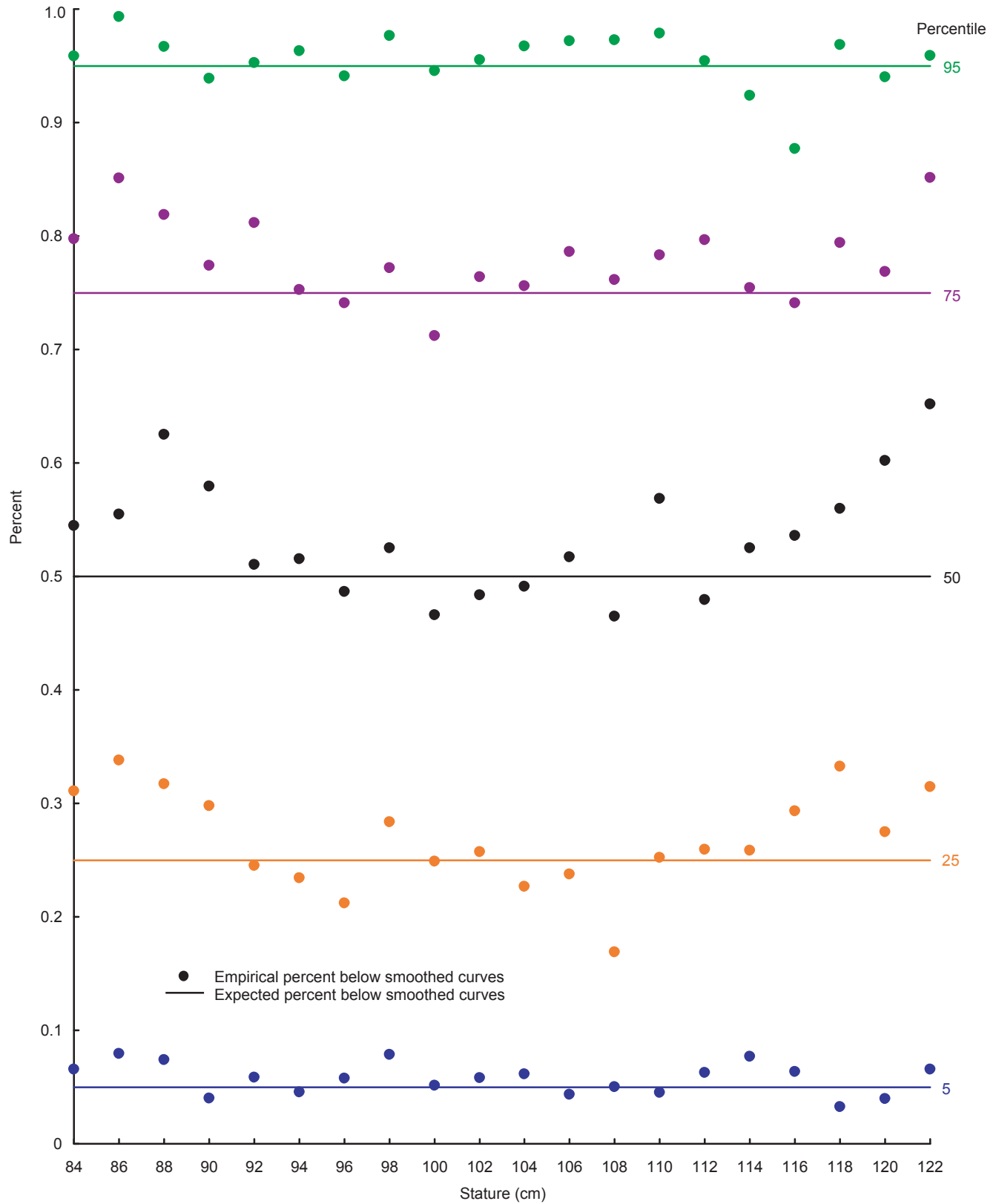


Figure 82. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, 84–122 cm: Girls weight-for-stature

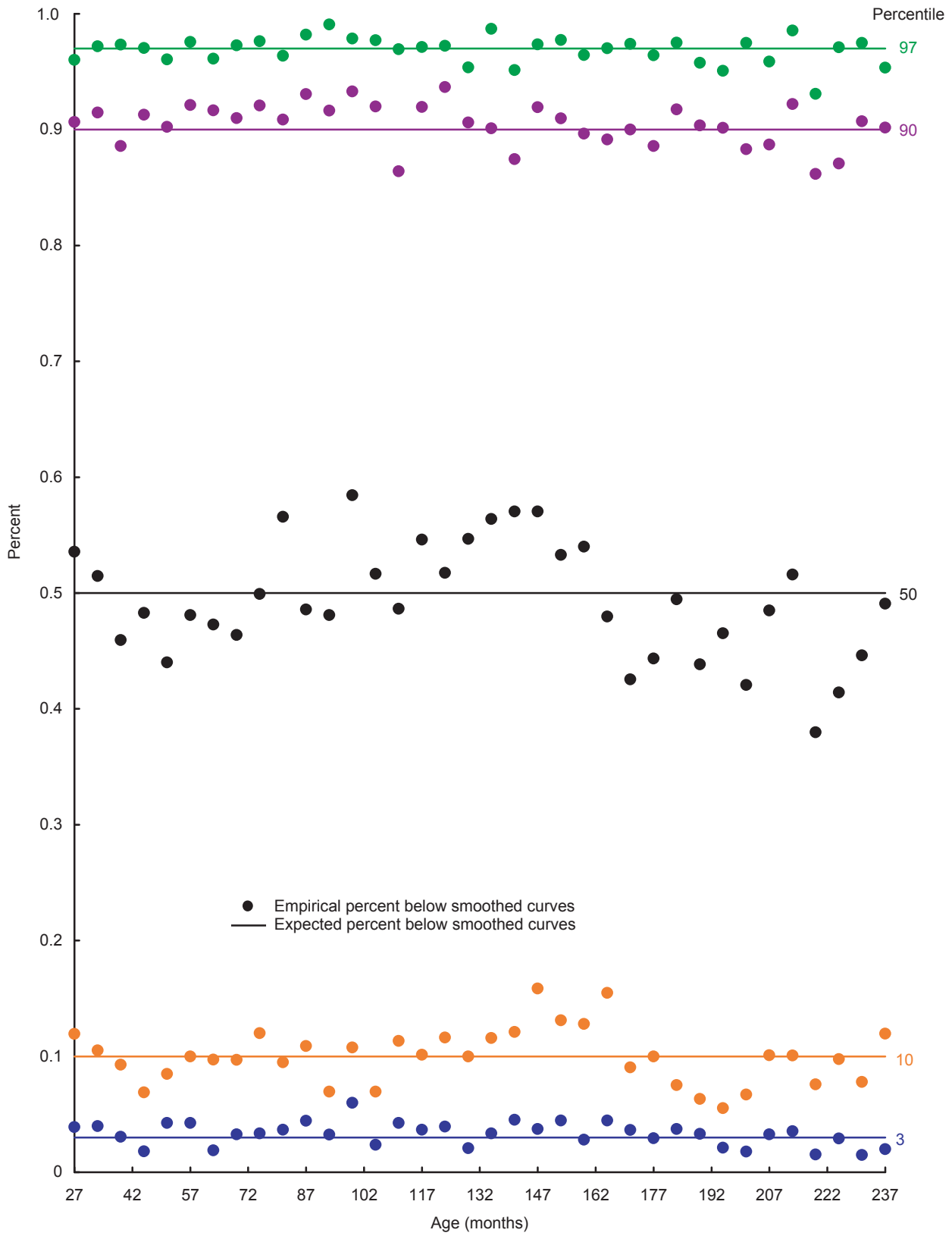


Figure 83. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, 27–237 months: Boys weight-for-age

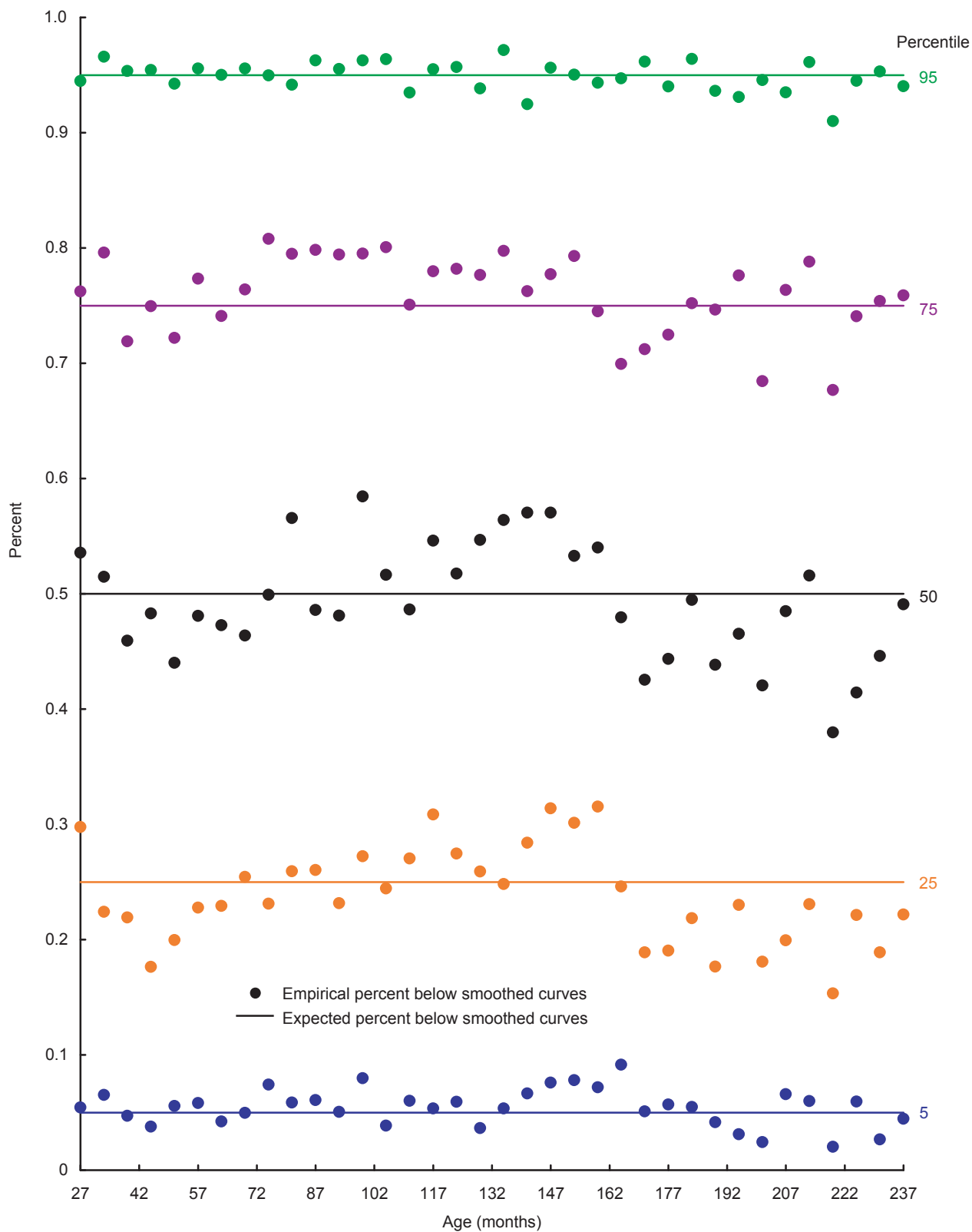


Figure 84. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, 27–237 months: Boys weight-for-age

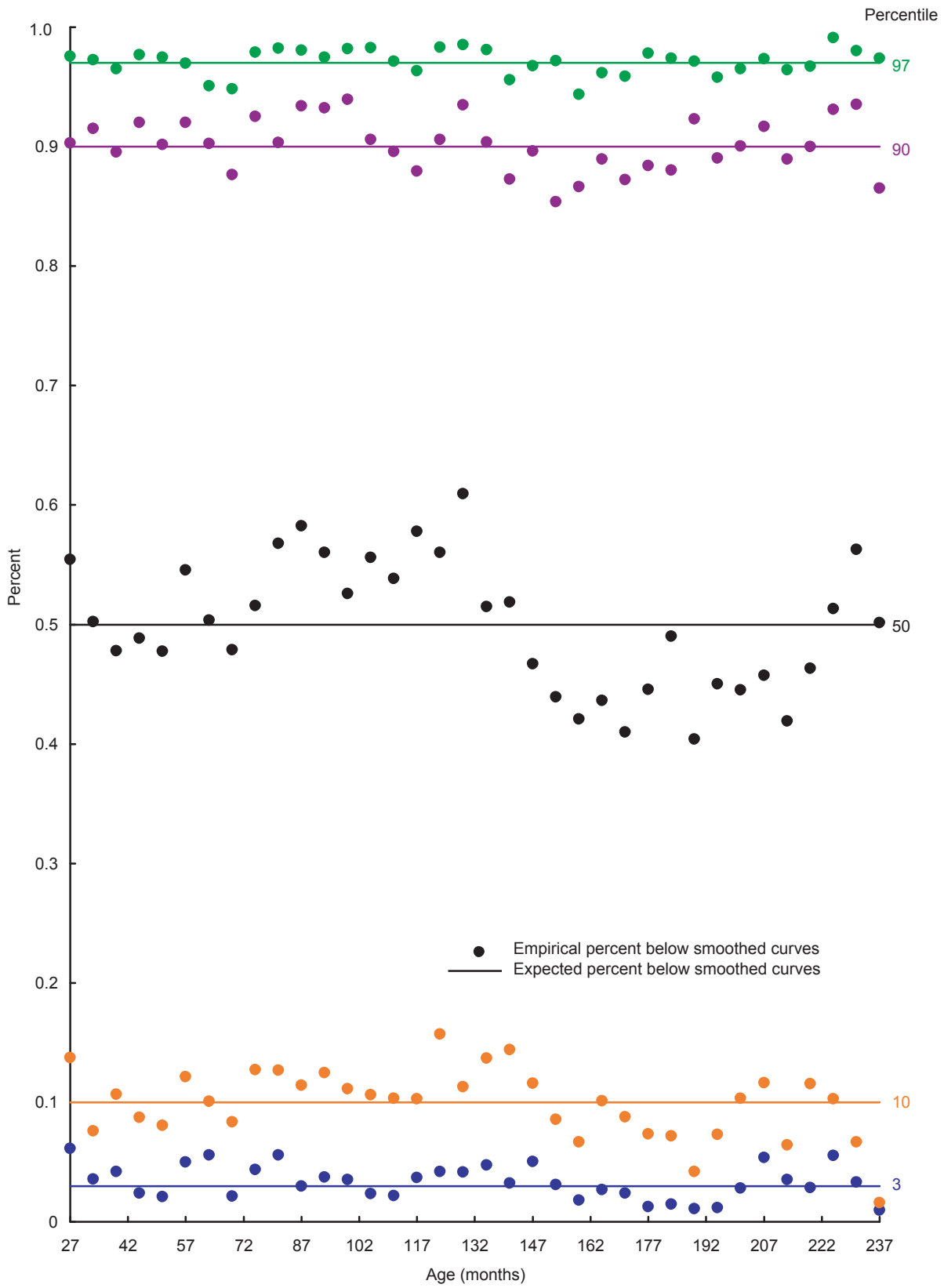


Figure 85. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, 27–237 months: Girls weight-for-age

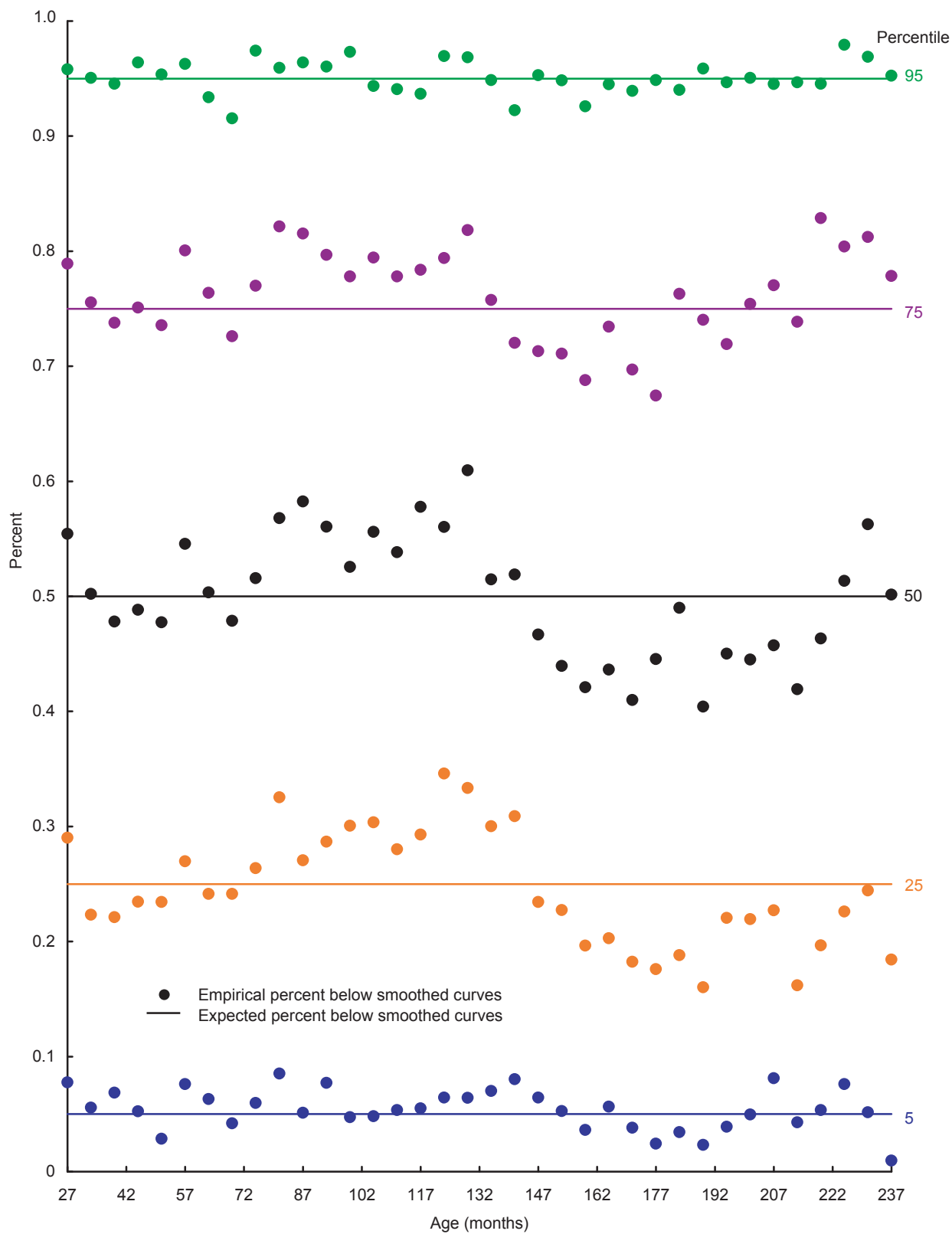


Figure 86. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, 27–237 months: Girls weight-for-age

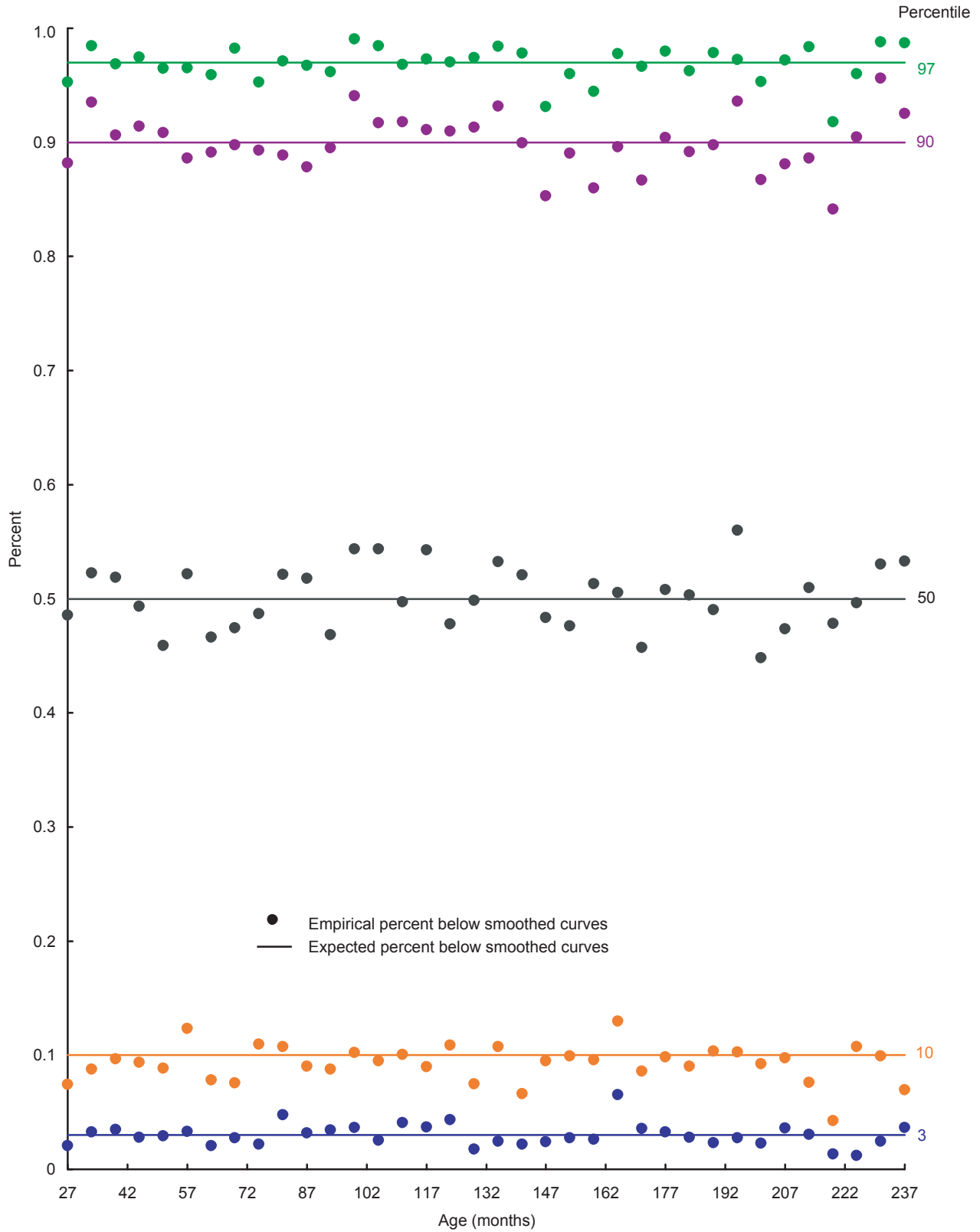


Figure 87. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, 27–237 months: Boys stature-for-age

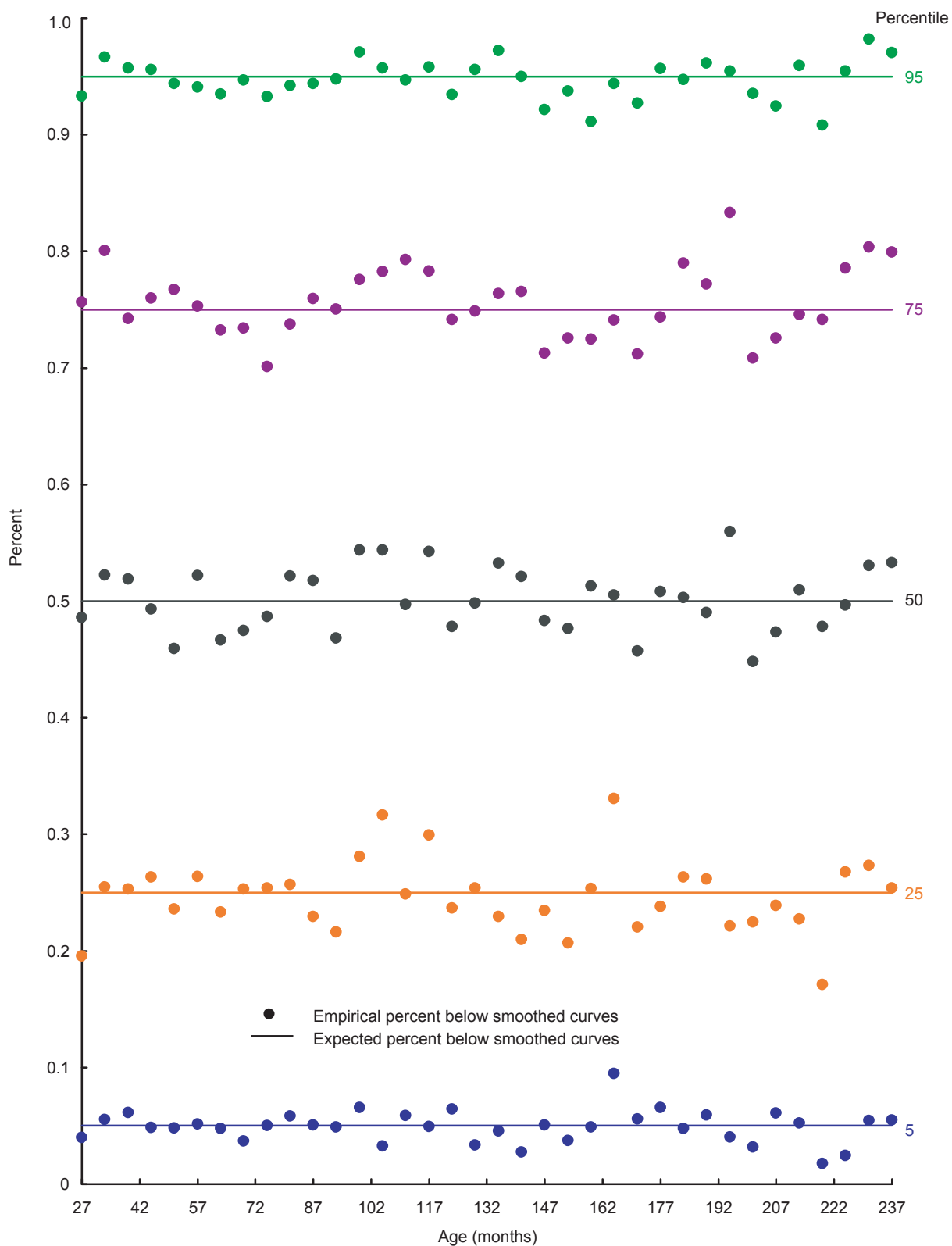


Figure 88. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, 27–237 months: Boys stature-for-age

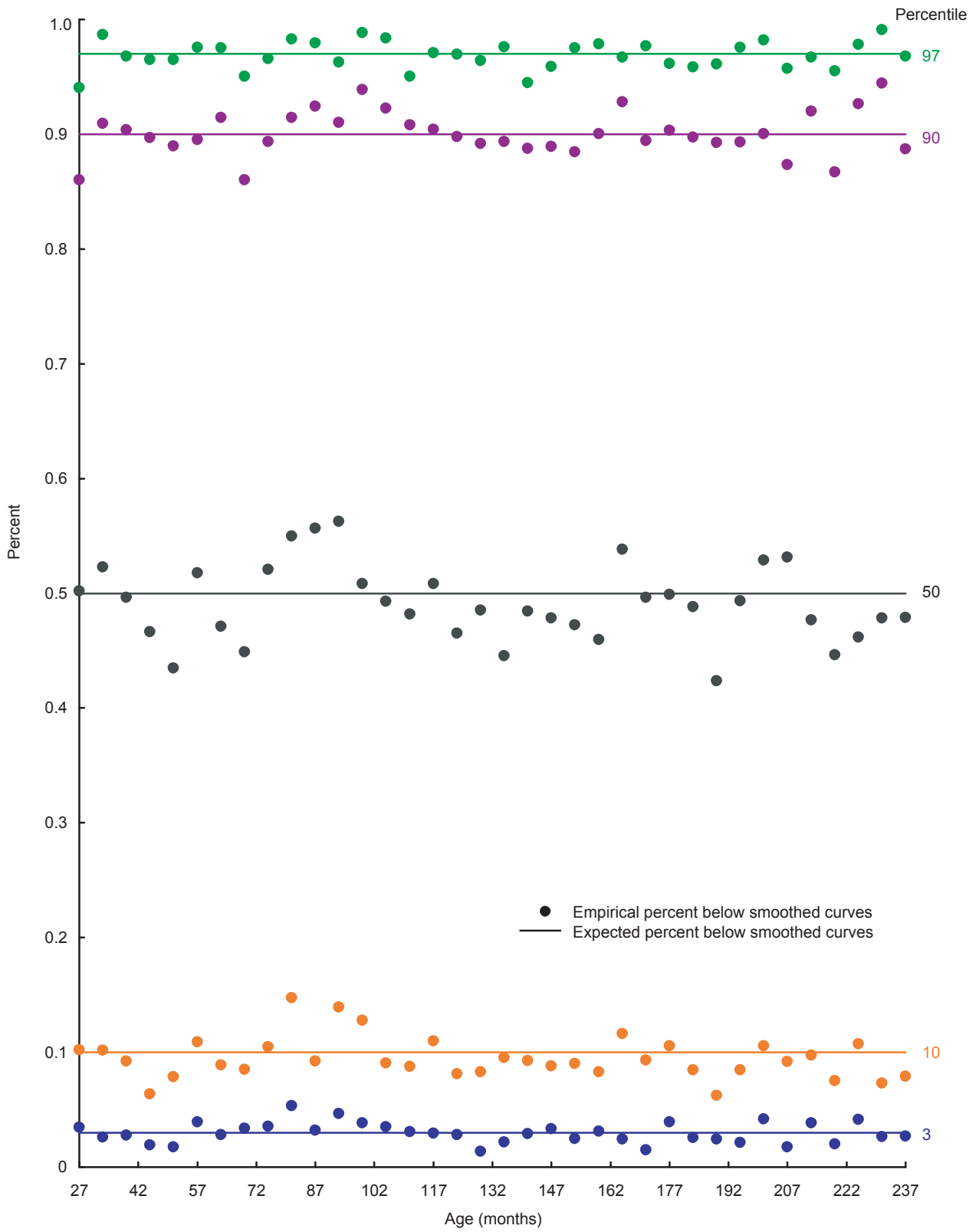


Figure 89. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, 27–237 months: Girls stature-for-age

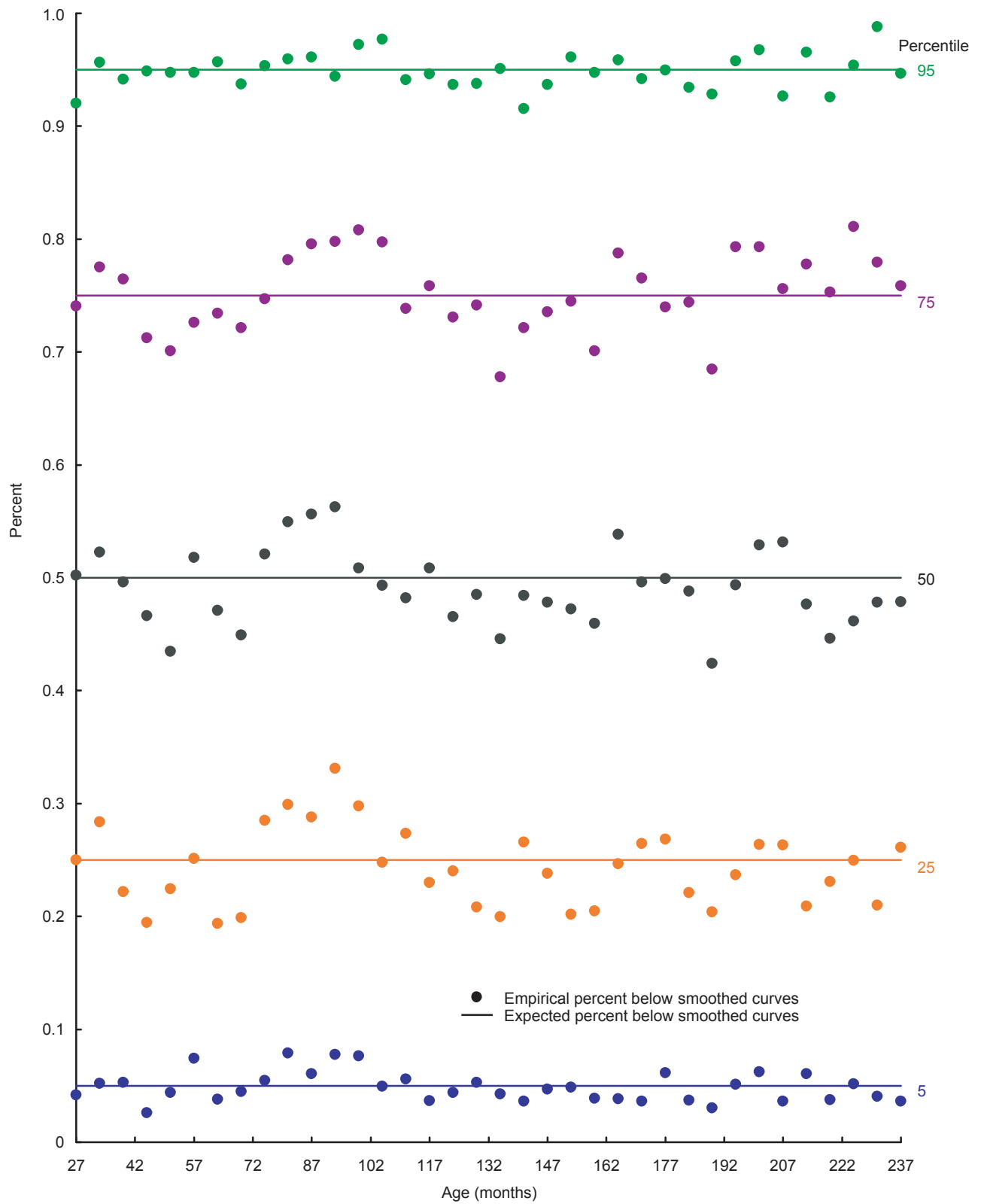


Figure 90. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 95th percentile curves, 27–237 months: Girls stature-for-age

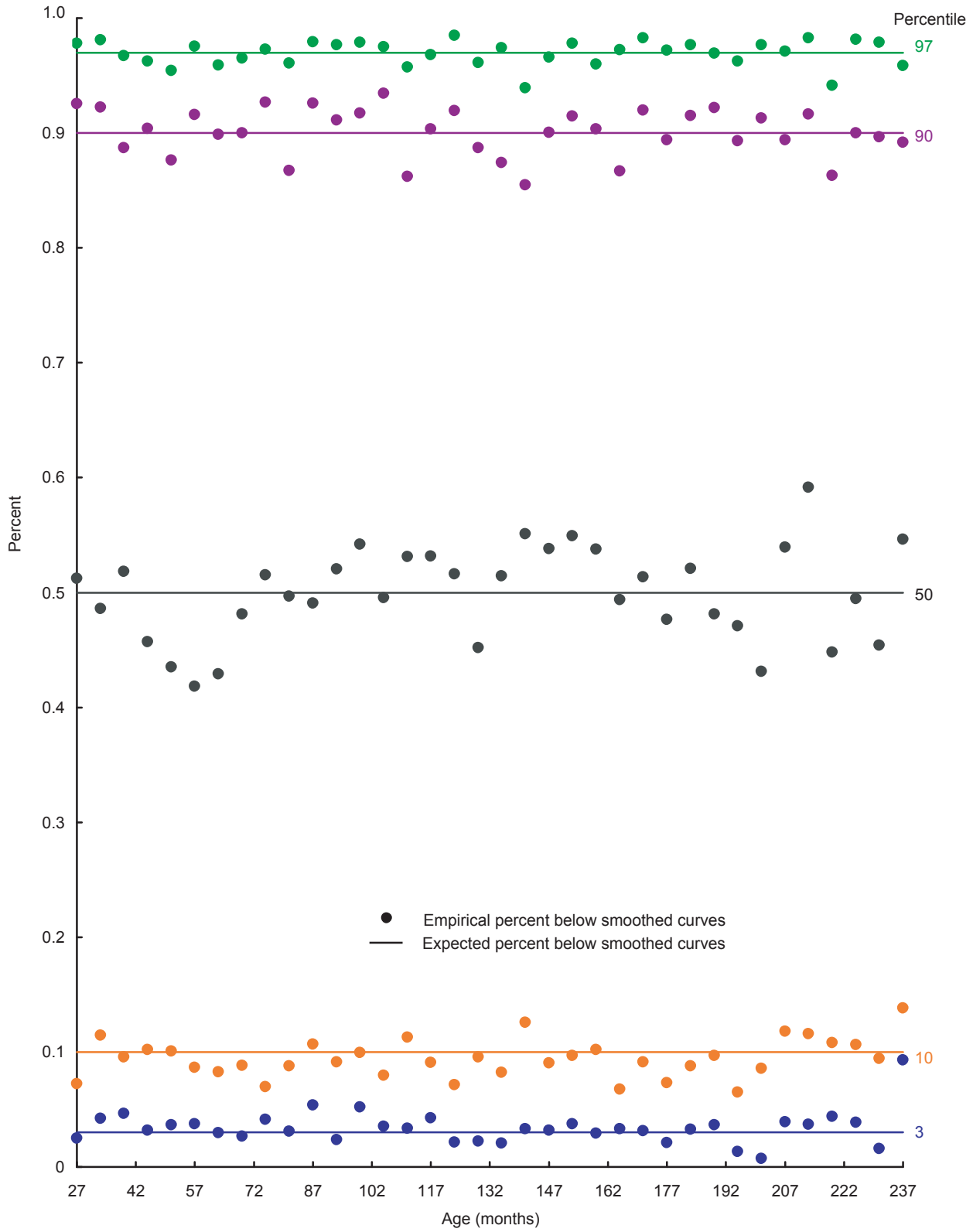


Figure 91. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, 27–237 months: Boys body mass index-for-age

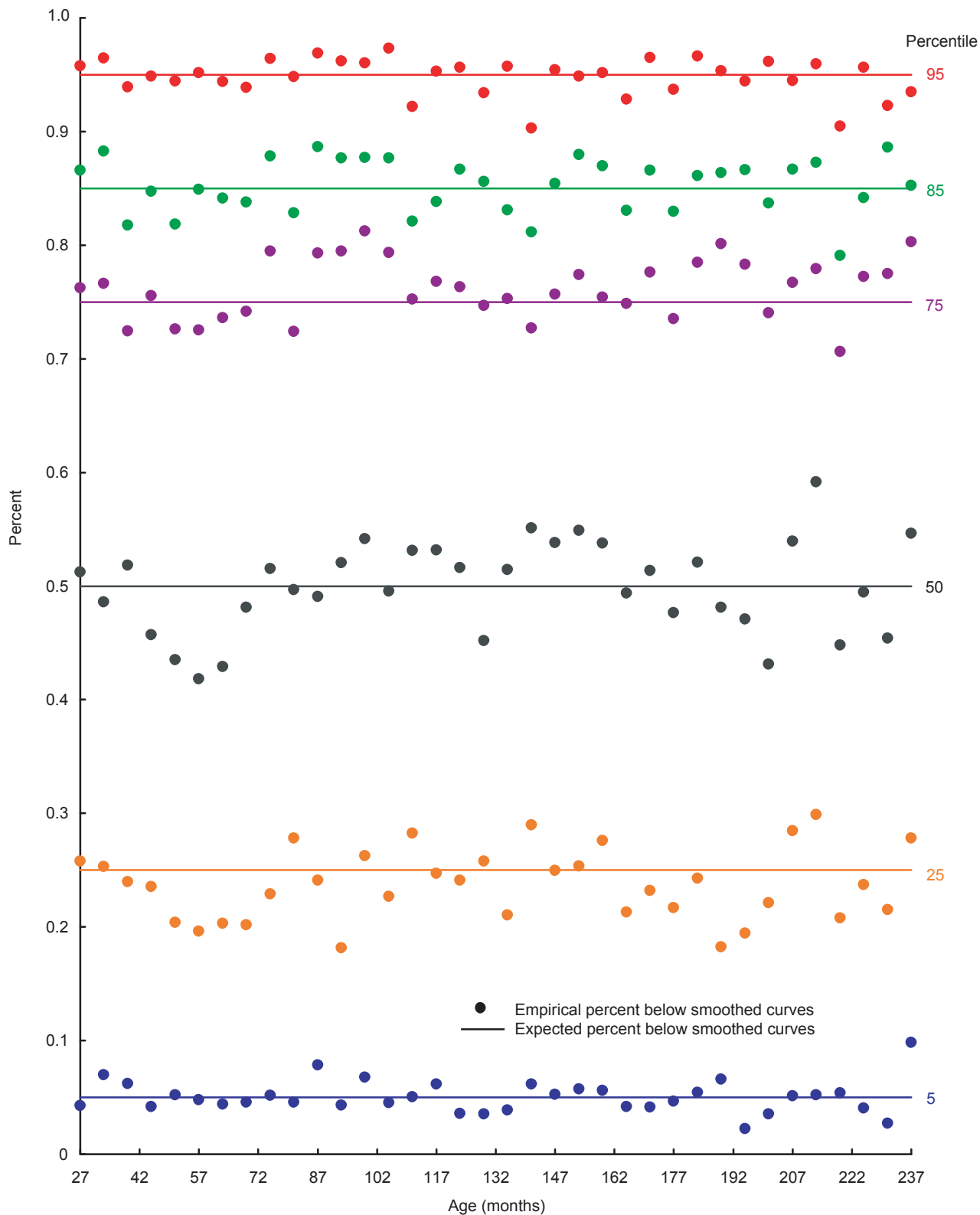


Figure 92. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 85th, 95th percentile curves, 27–237 months: Boys body mass index-for-age

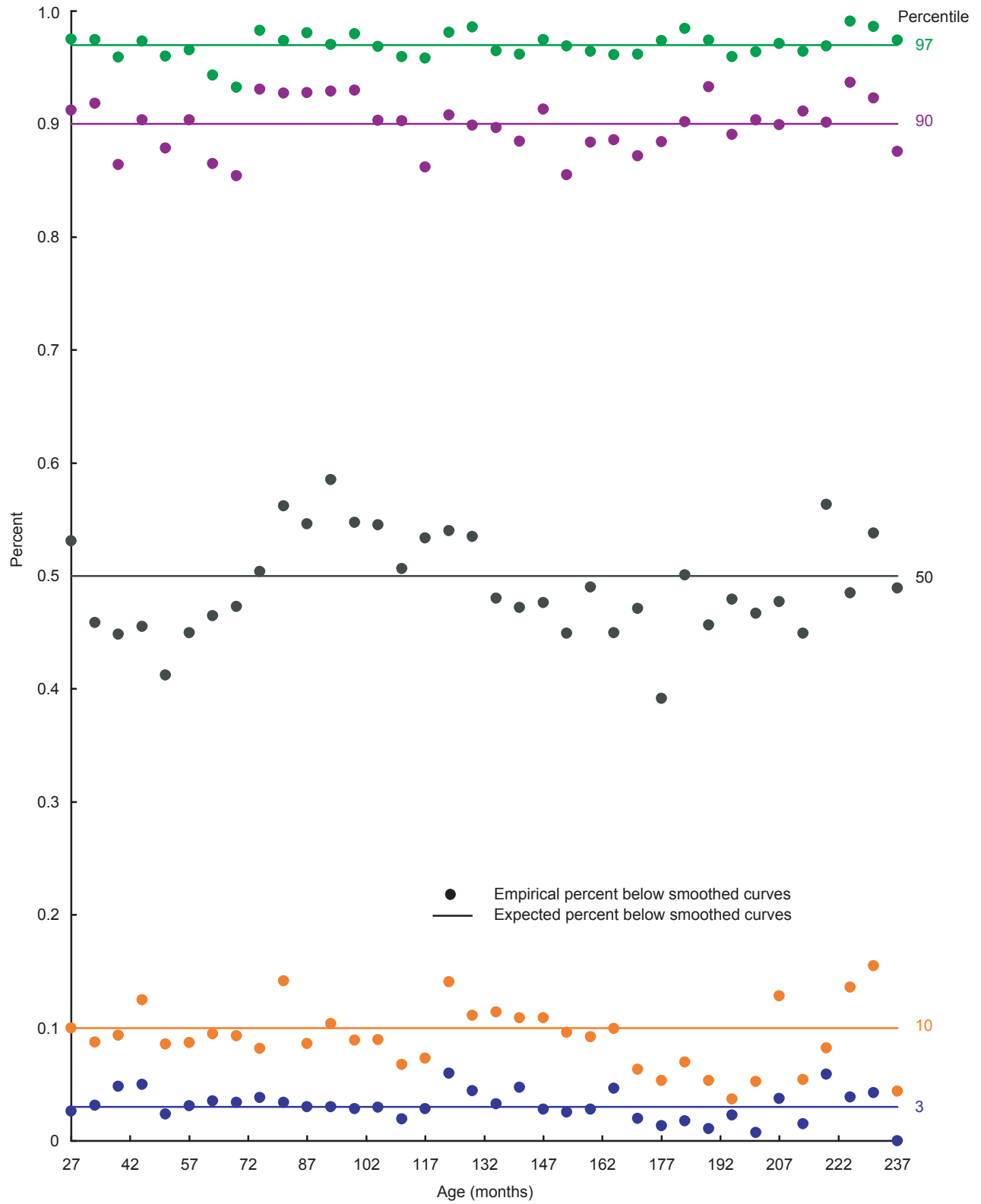


Figure 93. Percent of empirical data below smoothed 3rd, 10th, 50th, 90th, 97th percentile curves, 27–237 months: Girls body mass index-for-age

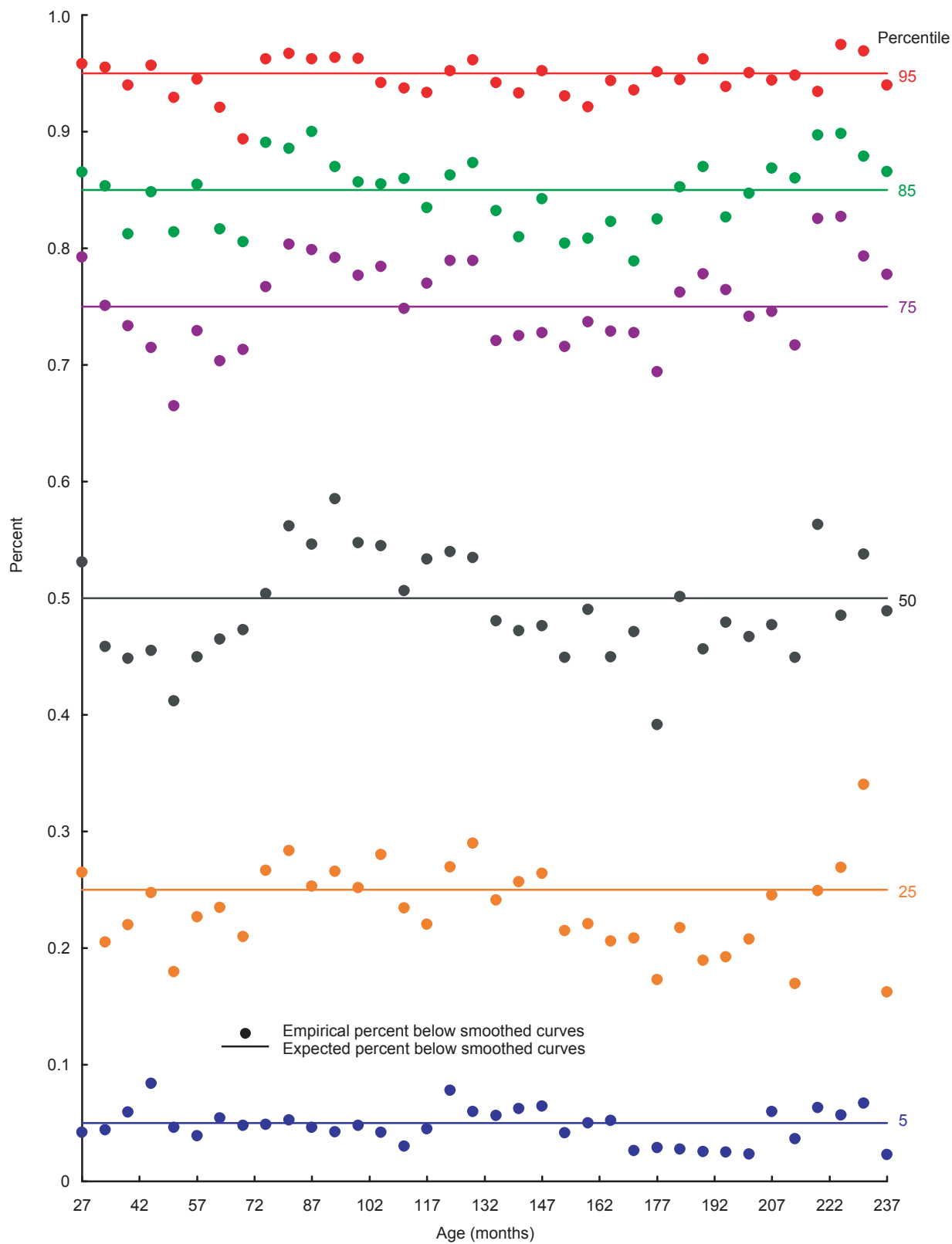


Figure 94. Percent of empirical data below smoothed 5th, 25th, 50th, 75th, 85th, 95th percentile curves, 27–237 months: Girls body mass index-for-age

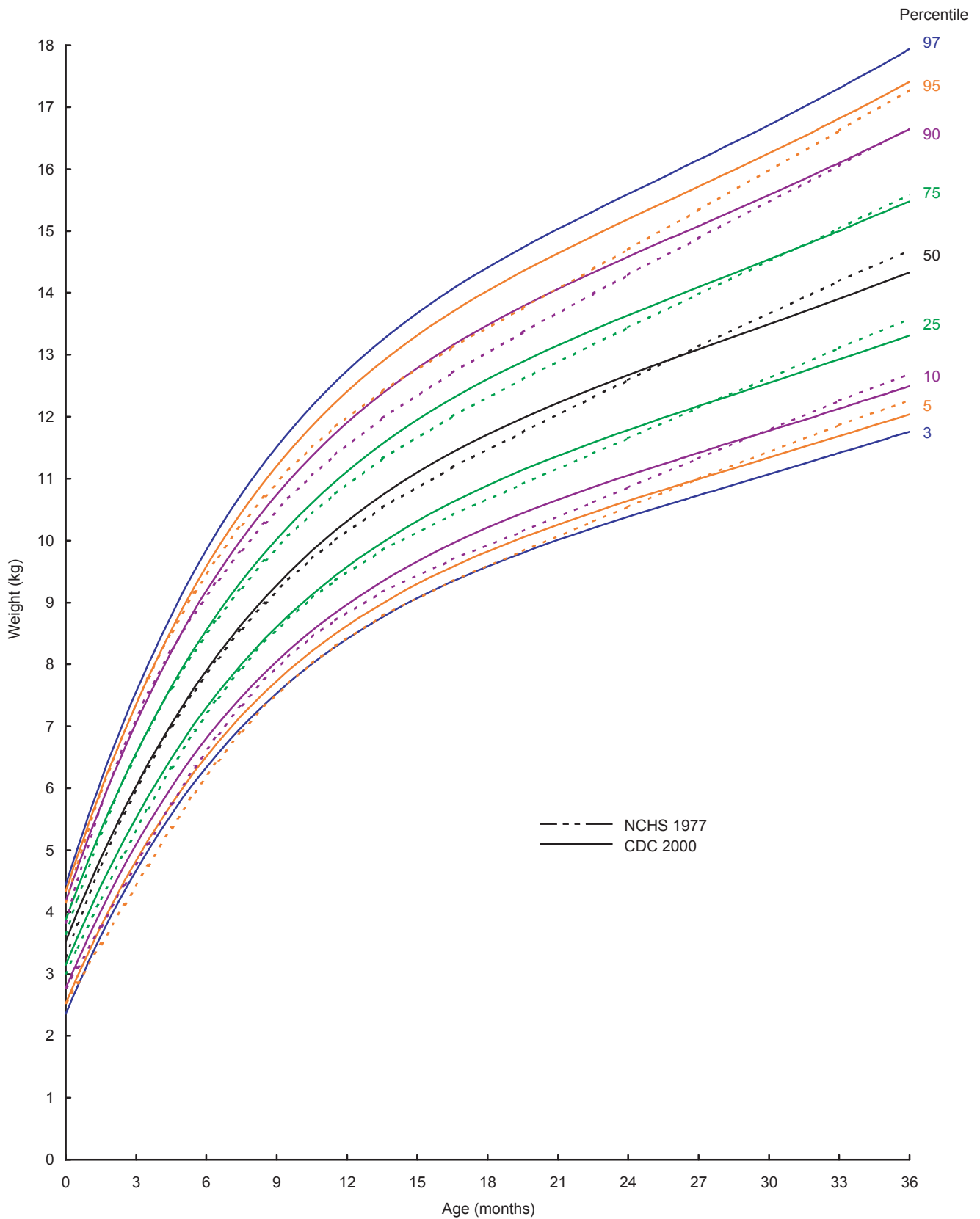


Figure 95. Comparison of CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, birth to 36 months: Boys weight-for-age

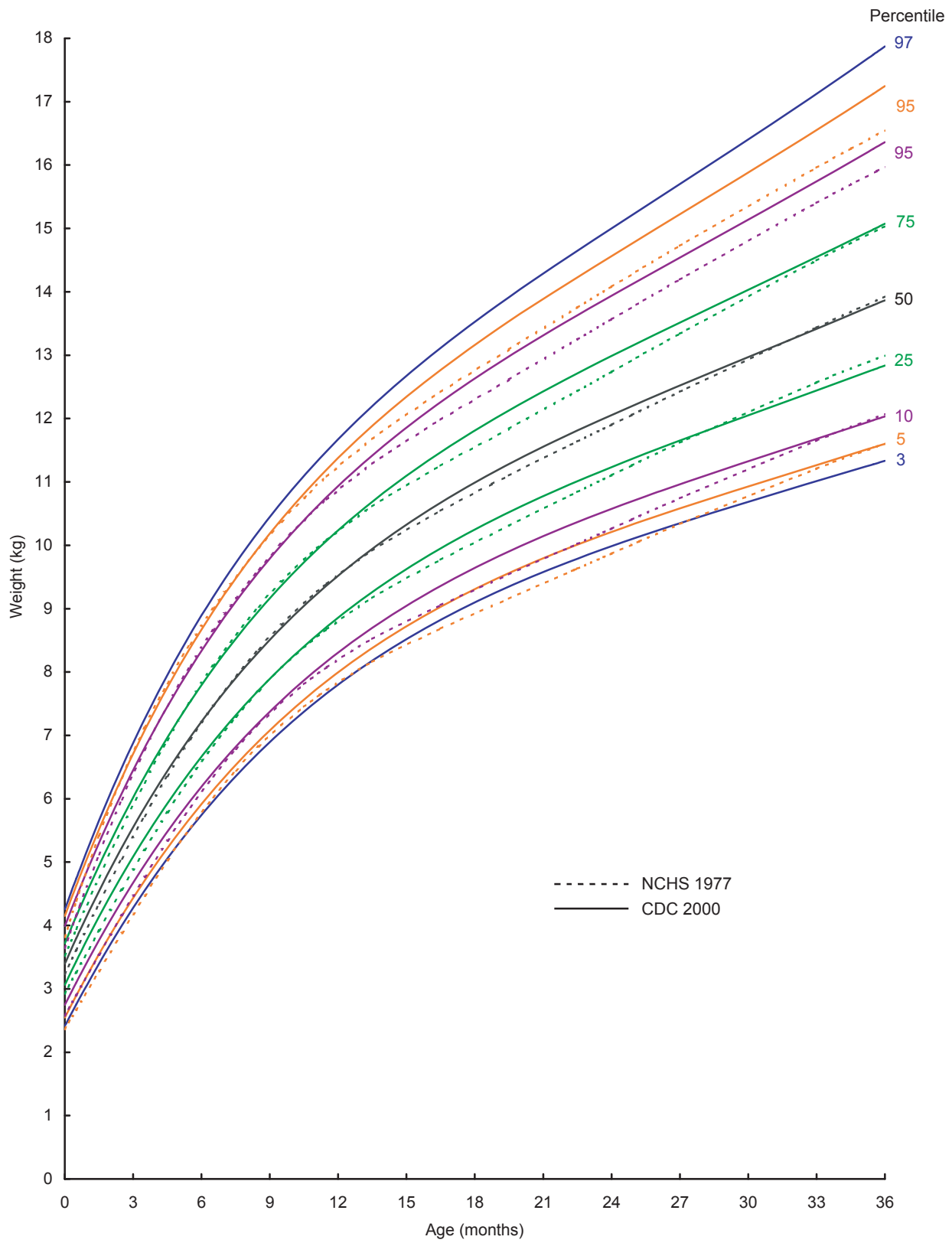


Figure 96. Comparison of CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, birth to 36 months: Girls weight-for-age

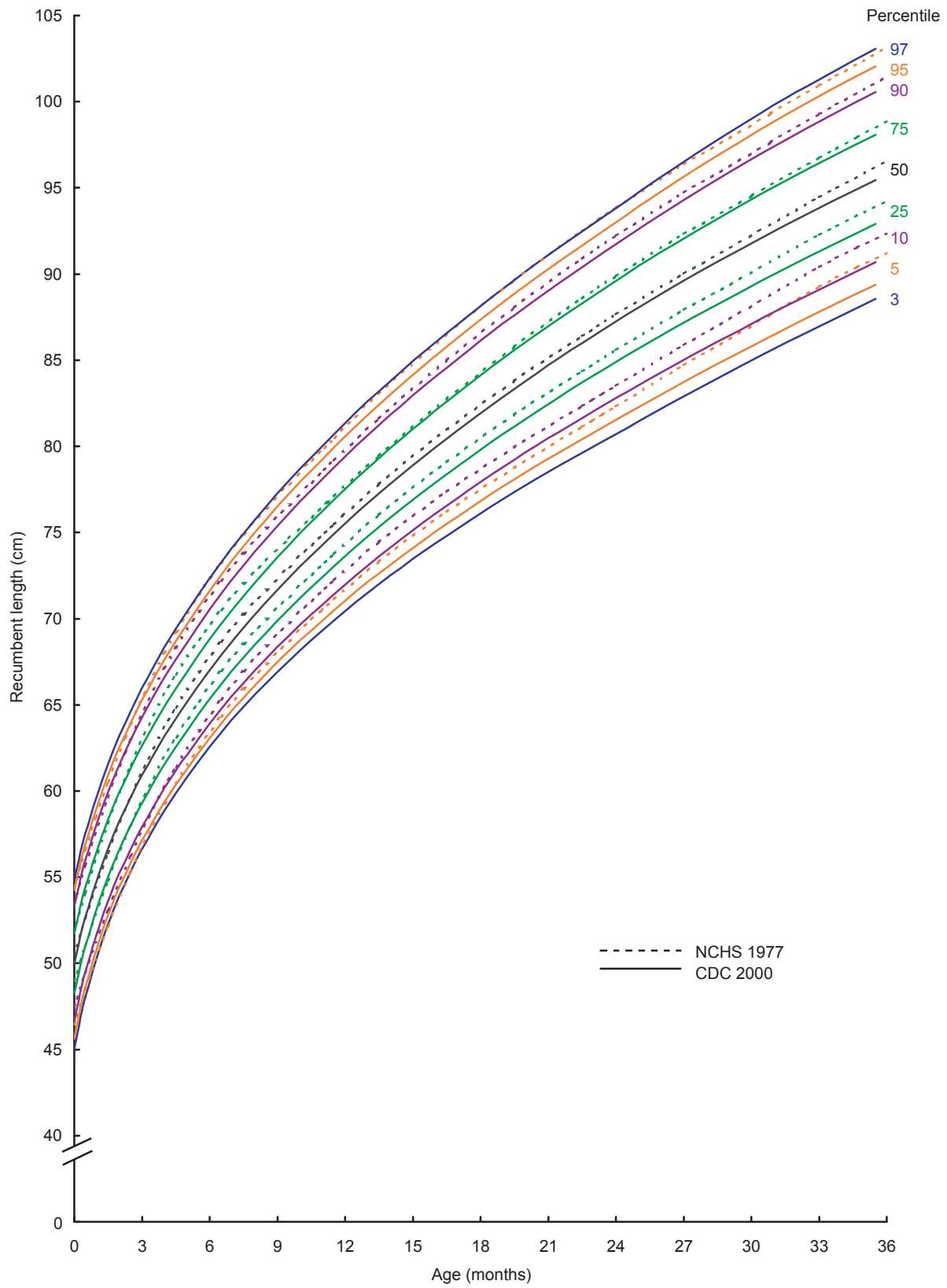


Figure 97. Comparison of CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, birth to 36 months: Boys recumbent length-for-age

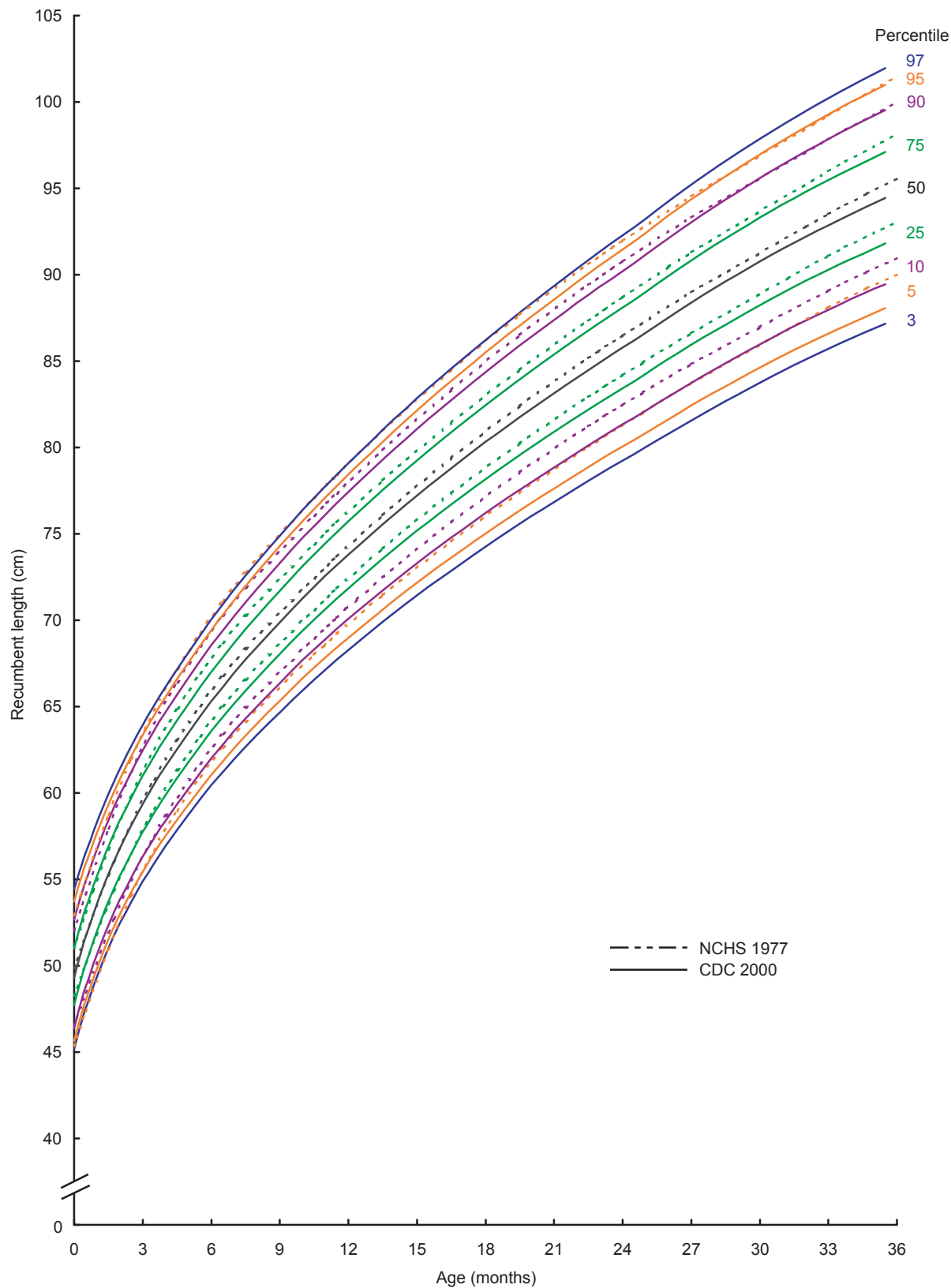


Figure 98. Comparison of CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, birth to 36 months: Girls recumbent length-for-age

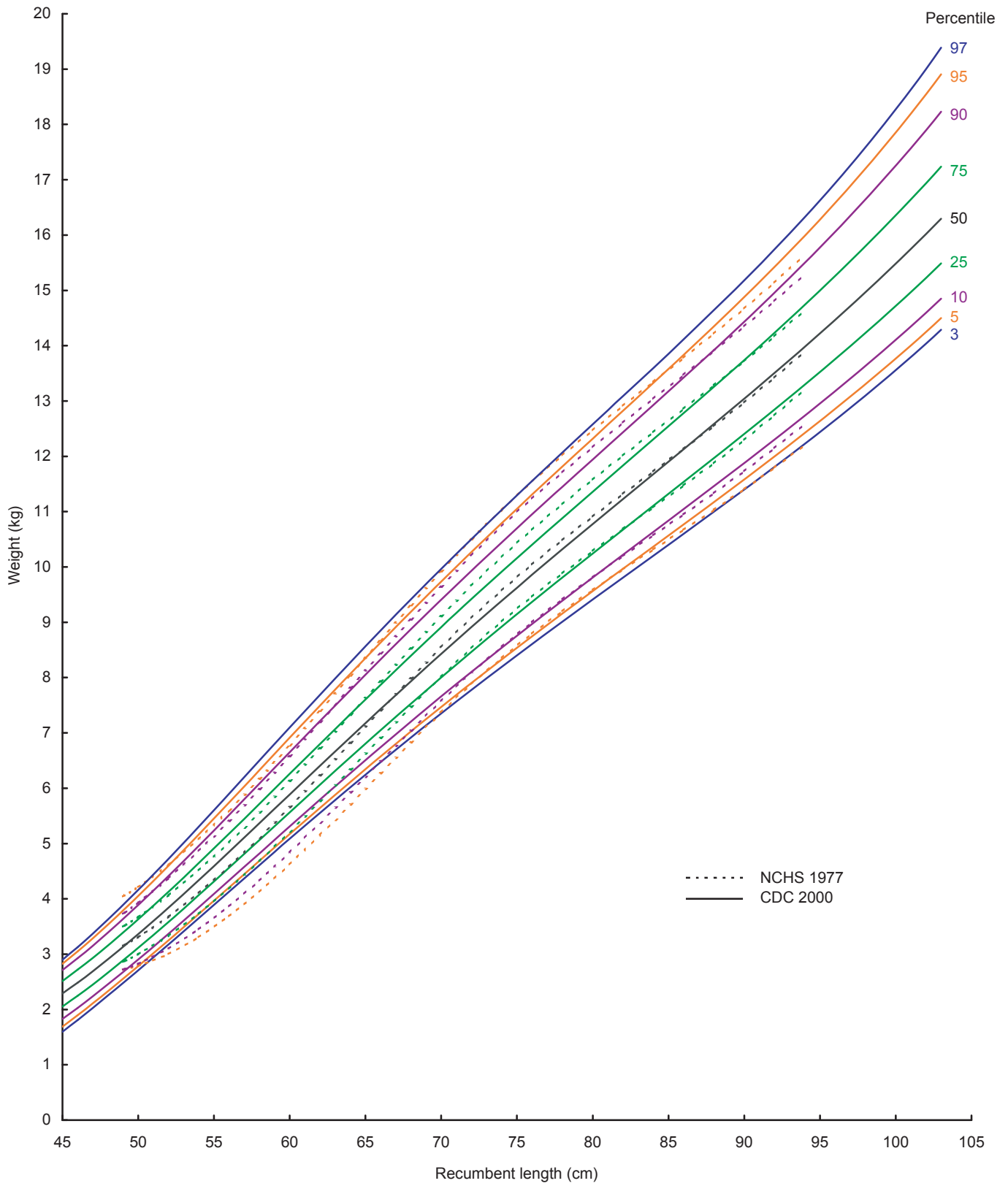


Figure 99. Comparison of CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, 49–94 cm: Boys weight-for-length

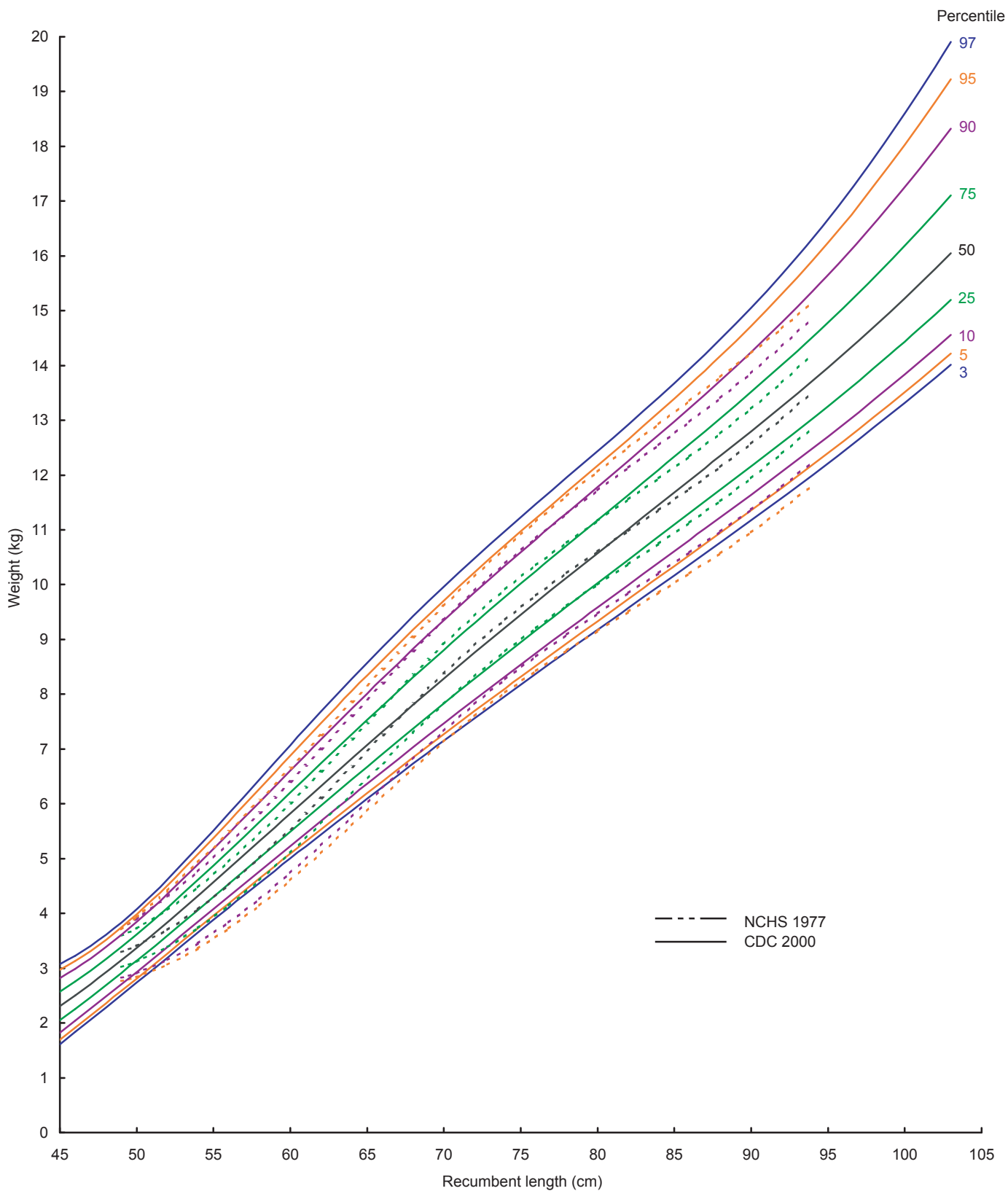


Figure 100. Comparison of CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, 49–94 cm: Girls weight-for-length

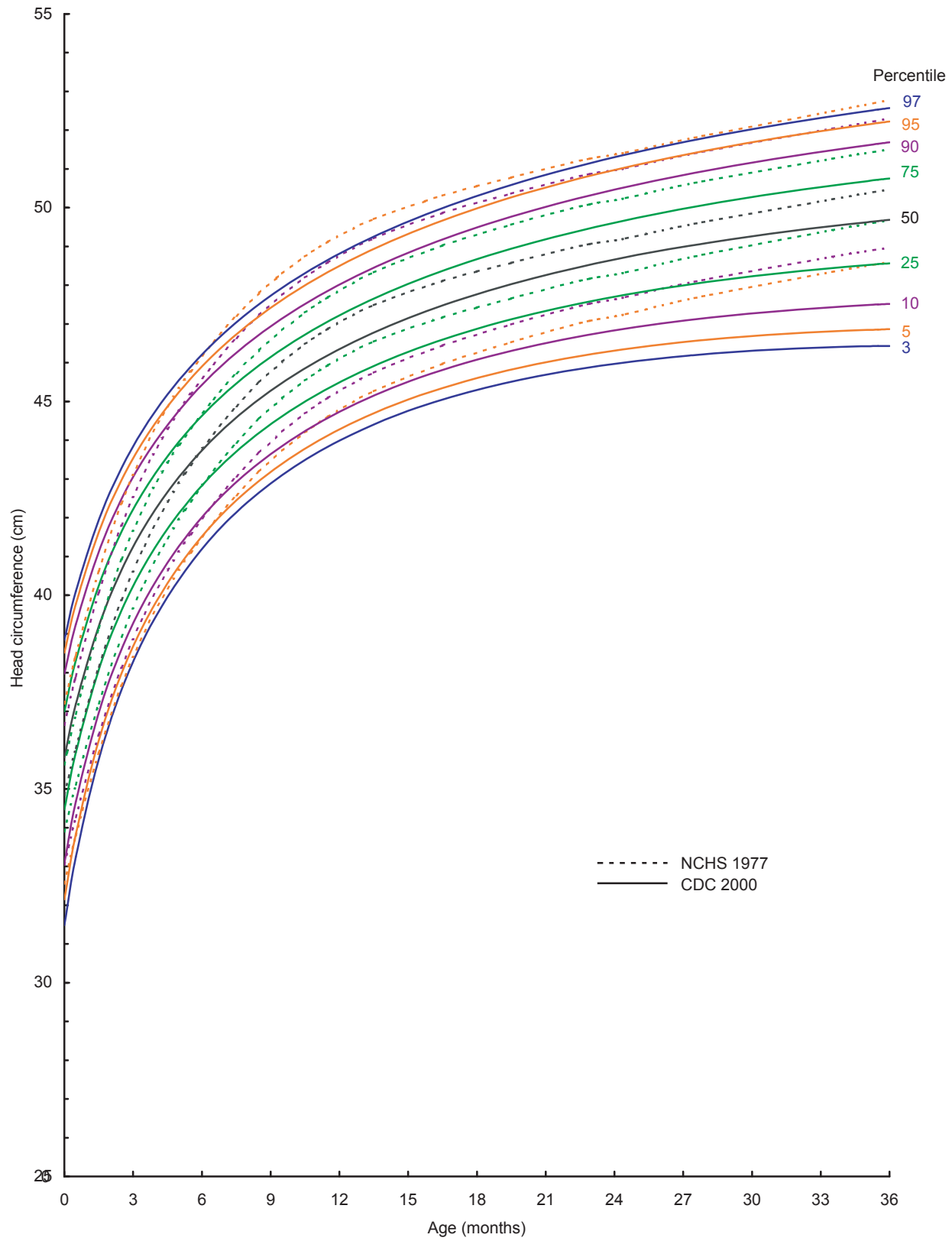


Figure 101. Comparison of CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, birth to 36 months: Boys head circumference-for-age

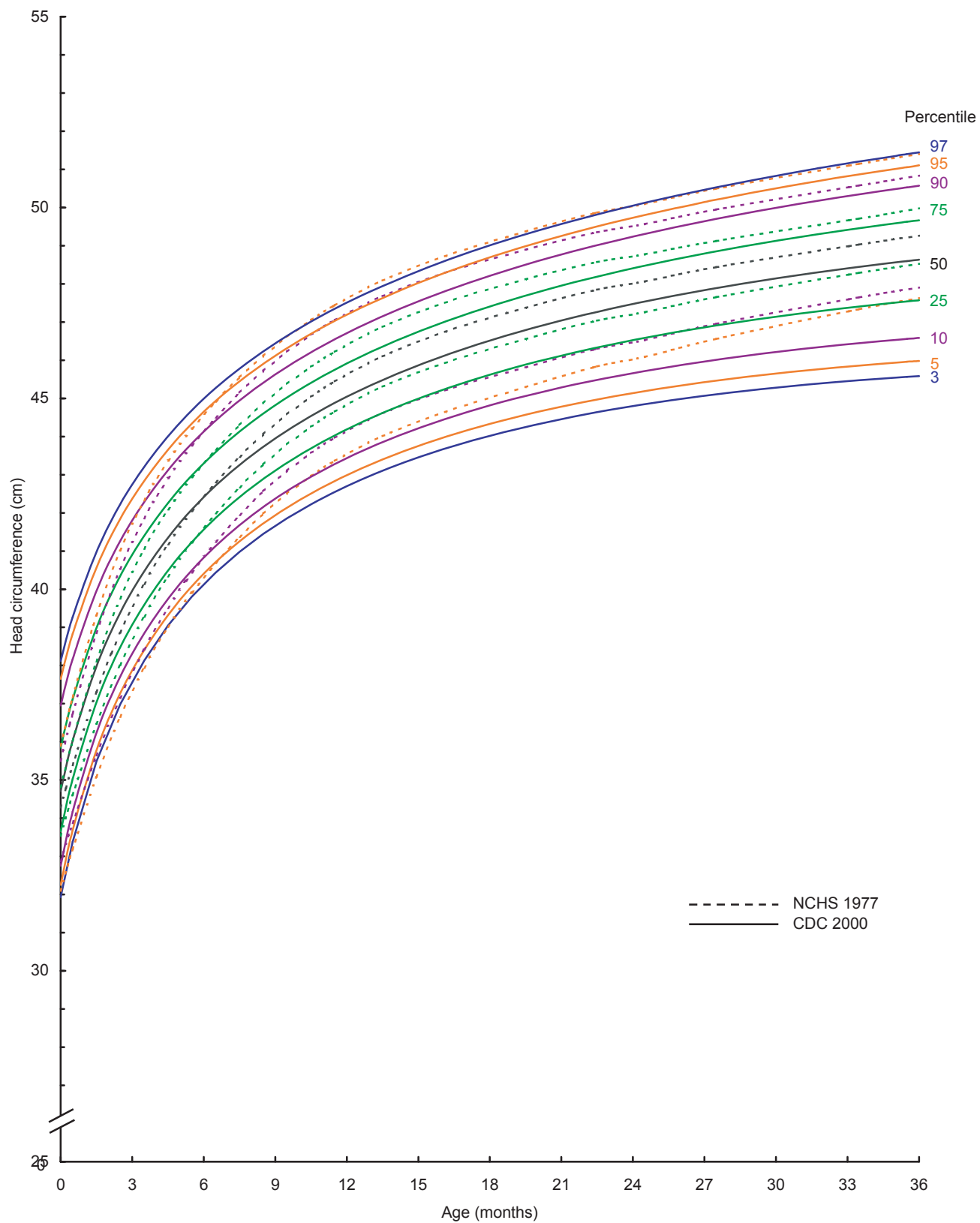


Figure 102. Comparison of CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, birth to 36 months: Girls head circumference-for-age

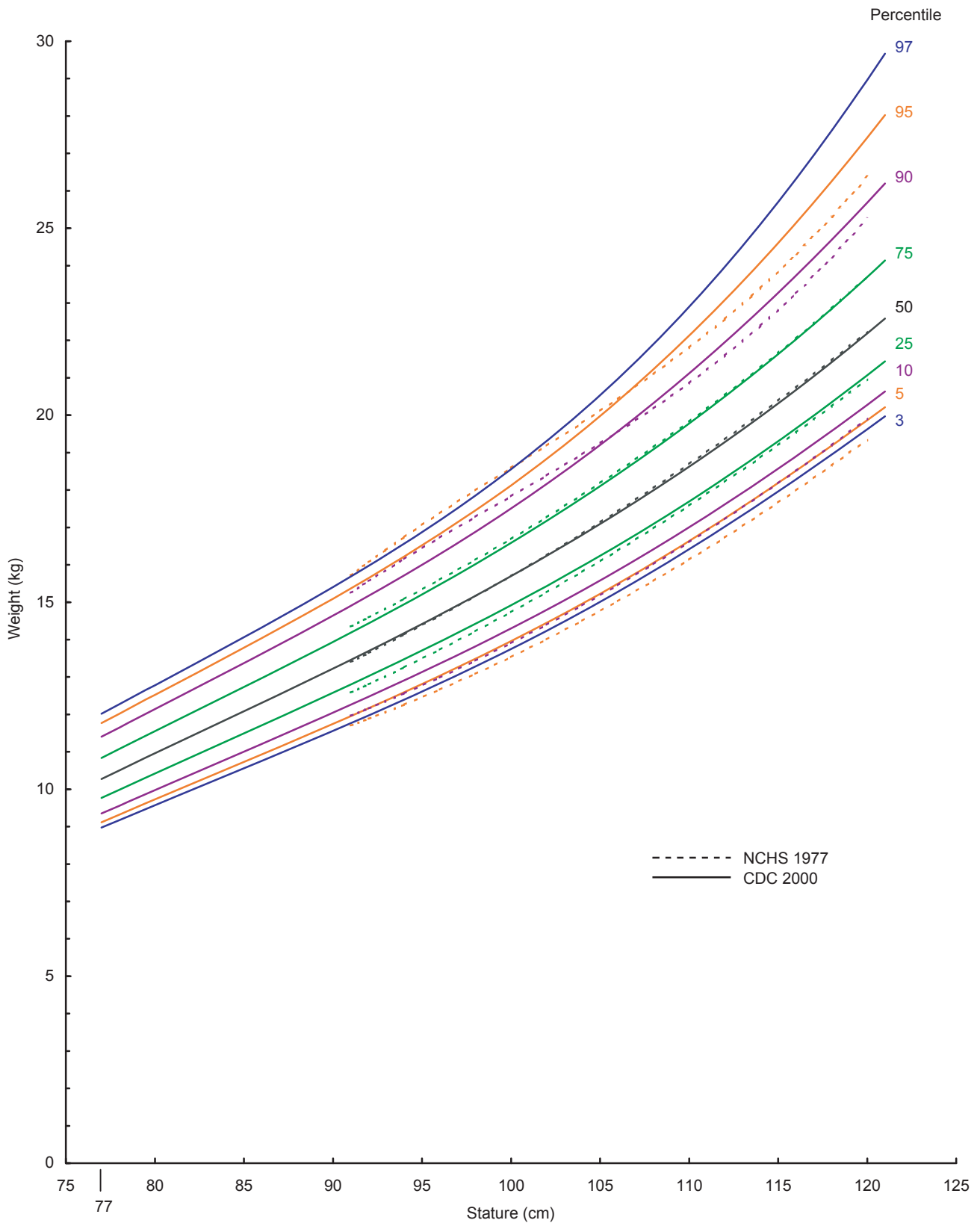


Figure 103. Comparison of CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, 91–120 cm: Boys weight-for-stature

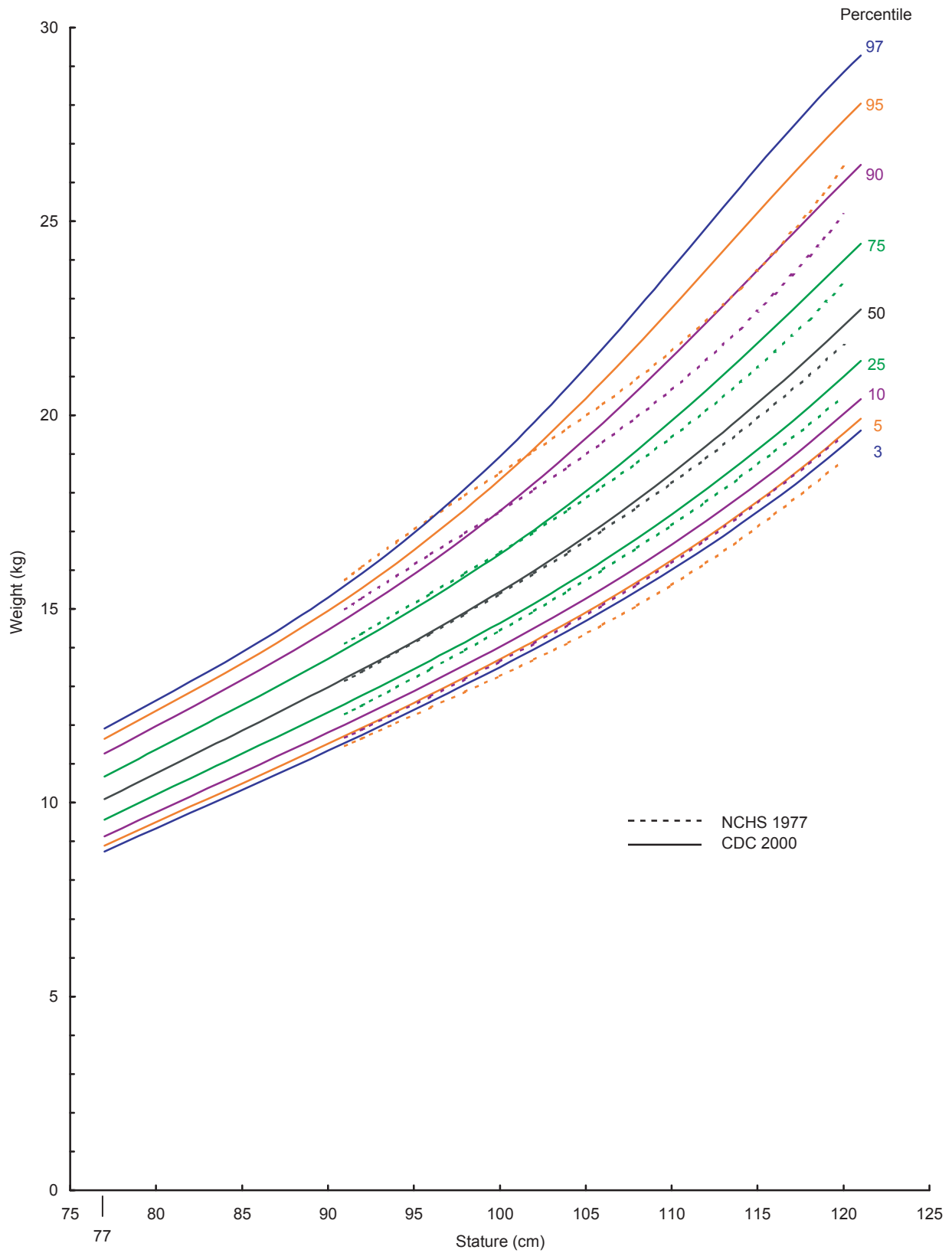


Figure 104. Comparison of CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, 91–120 cm: Girls weight-for-stature

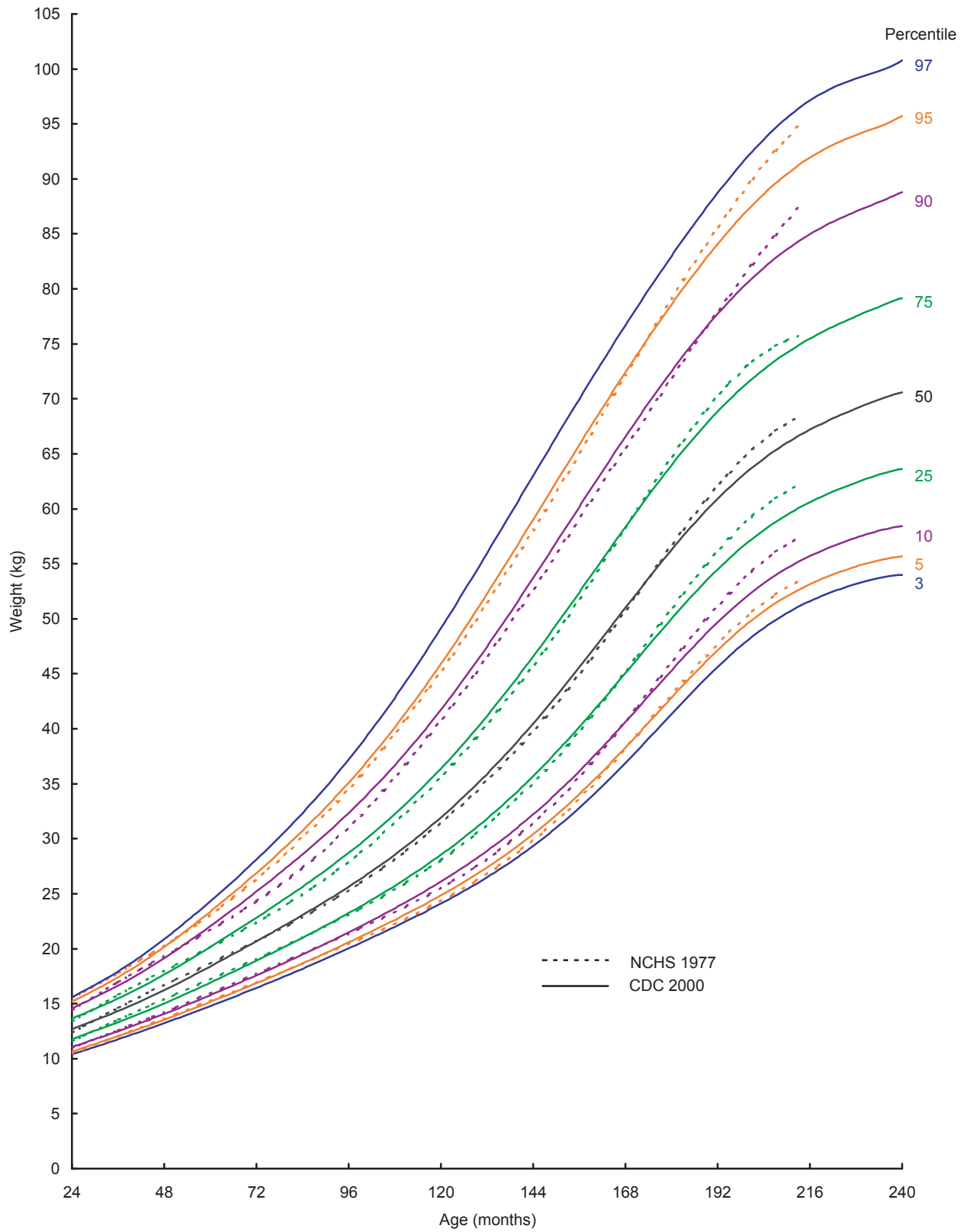


Figure 105. Comparison of revised CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, 24–213 months: Boys weight-for-age

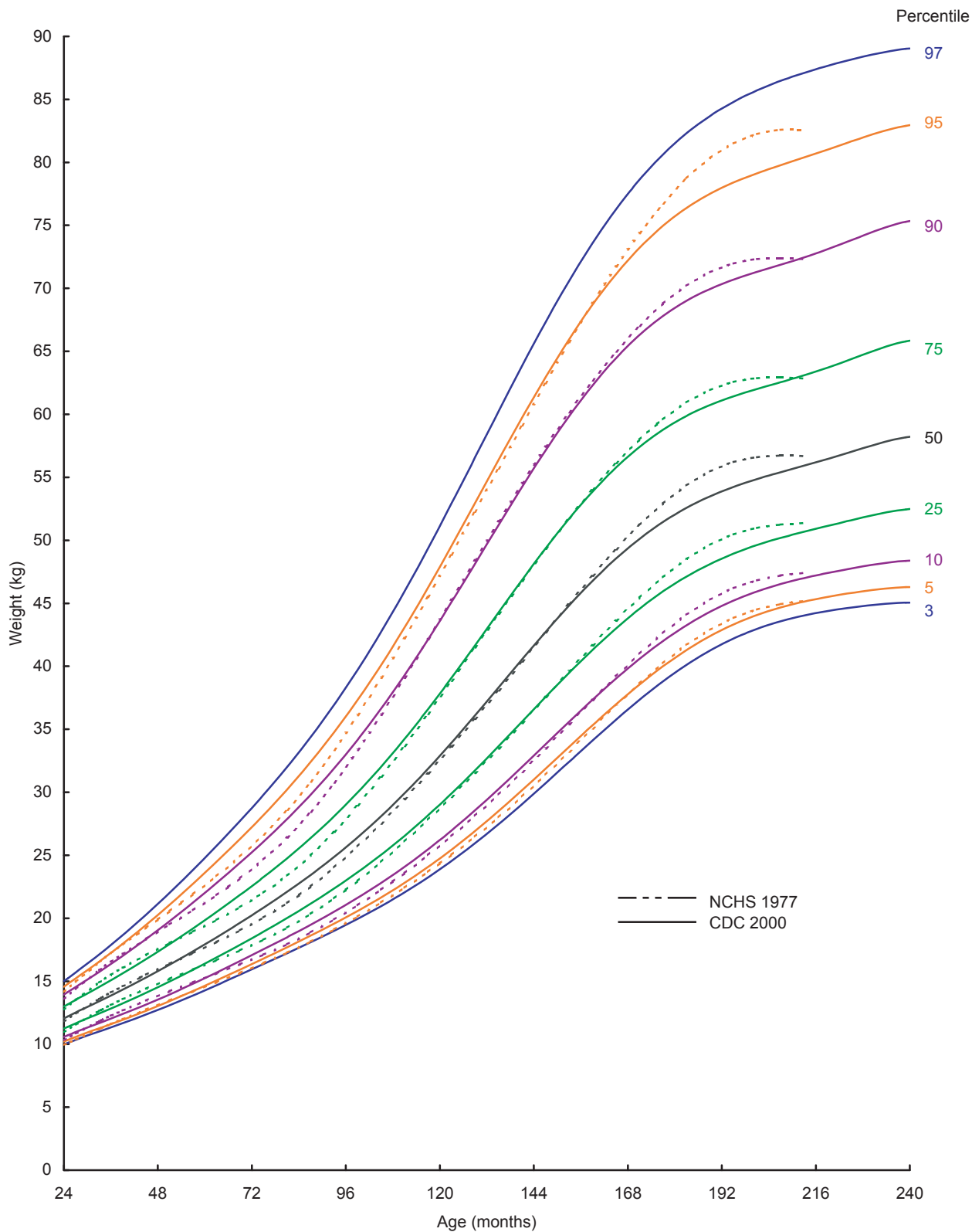


Figure 106. Comparison of CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, 24–213 months: Girls weight-for-age

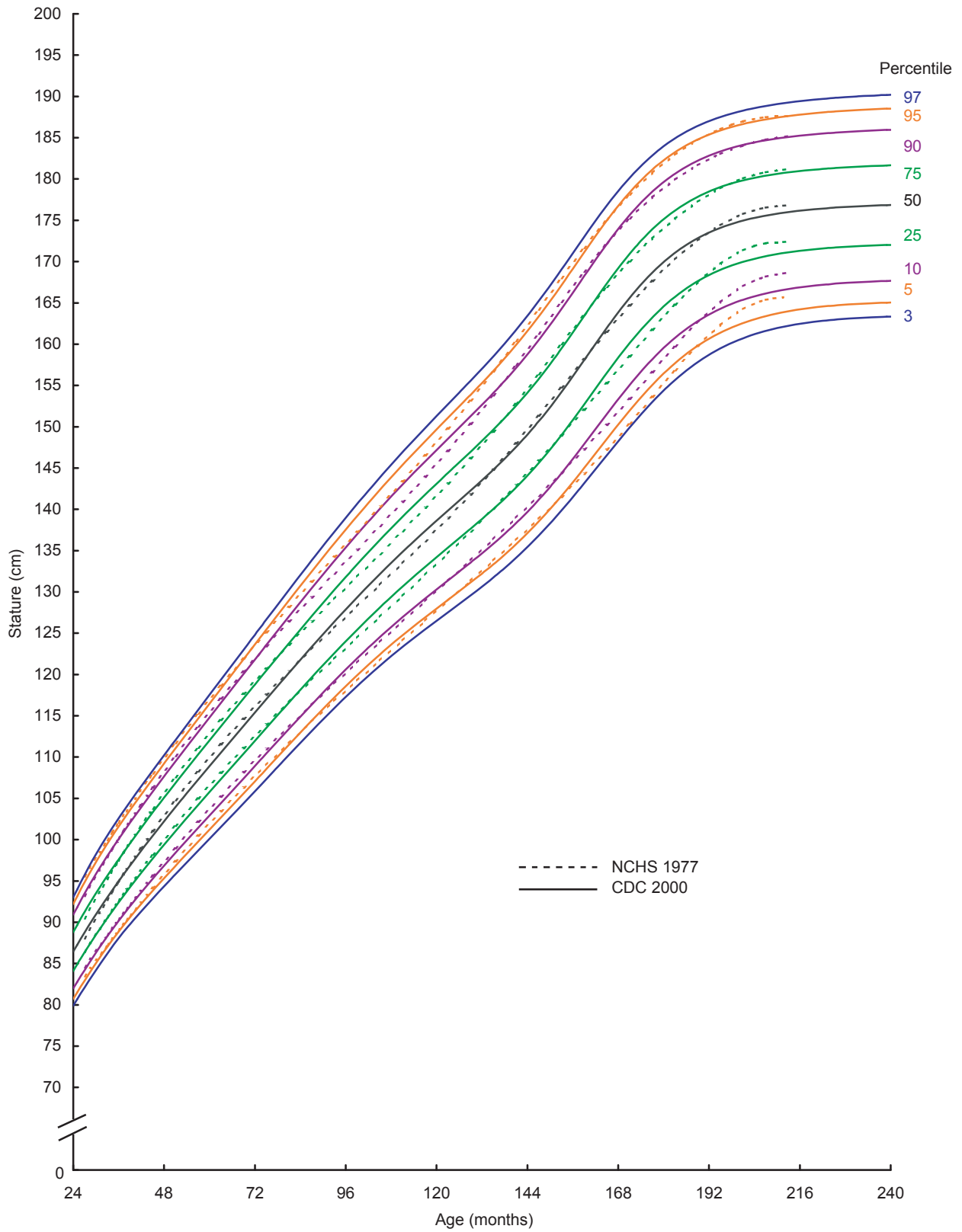


Figure 107. Comparison of CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, 24–213 months: Boys stature-for-age

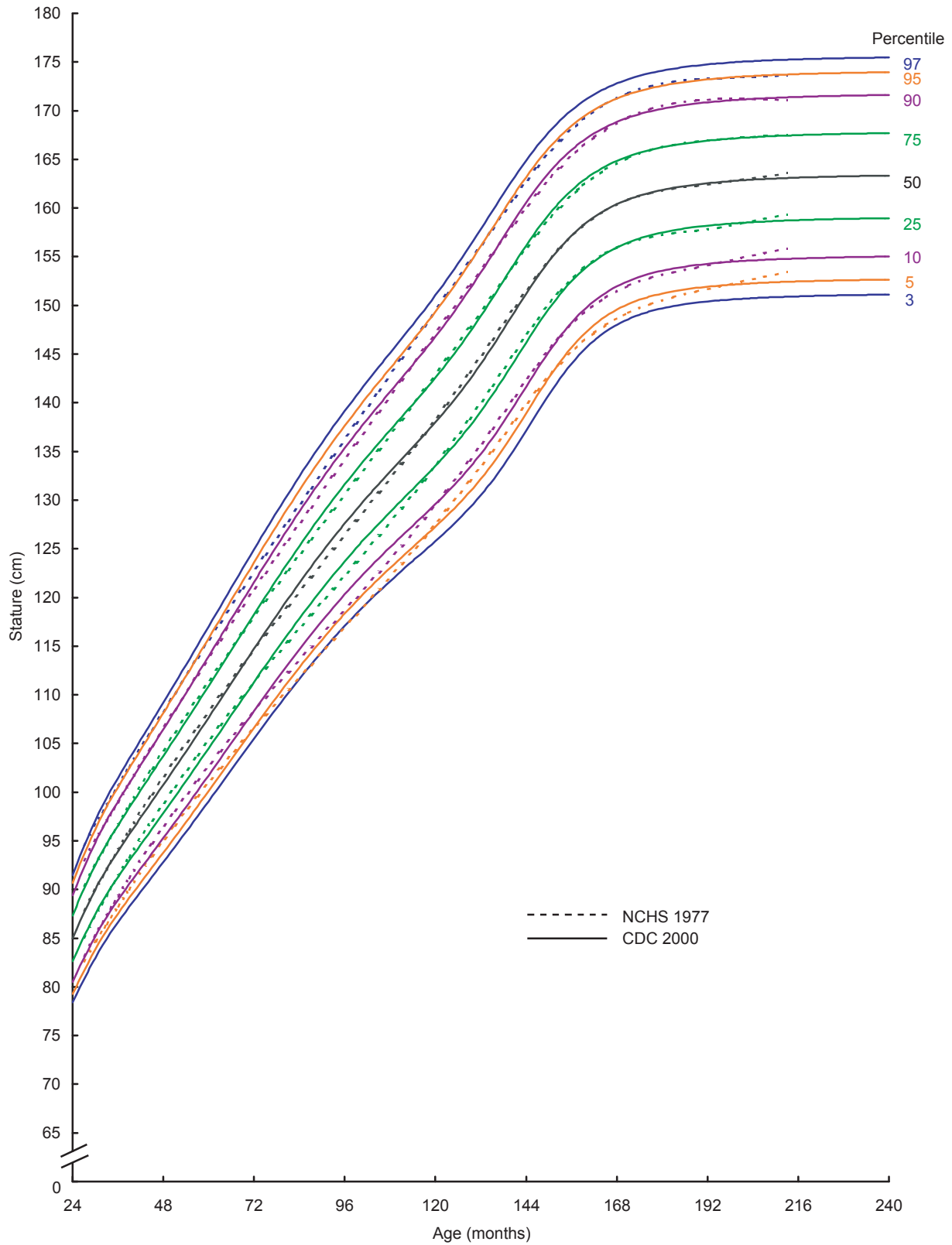


Figure 108. Comparison of CDC 2000 smoothed 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles with NCHS 1977 smoothed 5th, 10th, 25th, 50th, 75th, 90th, 95th percentile curves, 24–213 months: Girls stature-for-age

Table 1. Unweighted sample sizes for weight-for-age chart by sex, age, and data source: Birth to 36 months

| Sex and age | Birth certificates ¹ | NHANES ² I | NHANES ² II | NHANES ² III | Total |
|---------------------------|---------------------------------|-----------------------|------------------------|-------------------------|------------|
| Boys | | | | | |
| Total | 42,212,378 | 579 | 894 | 2,213 | 42,216,064 |
| Birth | 42,212,378 | --- | --- | --- | 42,212,378 |
| 0-0.99 months | --- | --- | --- | --- | --- |
| 1-1.99 months | --- | --- | --- | --- | --- |
| 2-2.99 months | --- | --- | --- | 38 | 38 |
| 3-3.99 months | --- | --- | --- | 89 | 89 |
| 4-4.99 months | --- | --- | --- | 104 | 104 |
| 5-5.99 months | --- | --- | --- | 95 | 95 |
| 6-6.99 months | --- | --- | 5 | 105 | 110 |
| 7-7.99 months | --- | --- | 24 | 109 | 133 |
| 8-8.99 months | --- | --- | 28 | 107 | 135 |
| 9-9.99 months | --- | --- | 30 | 88 | 118 |
| 10-10.99 months | --- | --- | 33 | 94 | 127 |
| 11-11.99 months | --- | --- | 34 | 92 | 126 |
| 12-14.99 months | --- | 44 | 91 | 189 | 324 |
| 15-17.99 months | --- | 73 | 96 | 158 | 327 |
| 18-20.99 months | --- | 98 | 94 | 149 | 341 |
| 21-23.99 months | --- | 67 | 91 | 156 | 314 |
| 24-29.99 months | --- | 164 | 170 | 303 | 637 |
| 30-35.99 months | --- | 133 | 198 | 337 | 668 |
| Girls | | | | | |
| Total | 40,162,934 | 538 | 816 | 2,170 | 40,166,458 |
| Birth | 40,162,934 | --- | --- | --- | 40,162,934 |
| 0-0.99 months | --- | --- | --- | --- | --- |
| 1-1.99 months | --- | --- | --- | --- | --- |
| 2-2.99 months | --- | --- | --- | 34 | 34 |
| 3-3.99 months | --- | --- | --- | 118 | 118 |
| 4-4.99 months | --- | --- | --- | 93 | 93 |
| 5-5.99 months | --- | --- | --- | 98 | 98 |
| 6-6.99 months | --- | --- | 9 | 83 | 92 |
| 7-7.99 months | --- | --- | 29 | 93 | 122 |
| 8-8.99 months | --- | --- | 19 | 85 | 104 |
| 9-9.99 months | --- | --- | 29 | 108 | 137 |
| 10-10.99 months | --- | --- | 31 | 95 | 126 |
| 11-11.99 months | --- | --- | 27 | 108 | 135 |
| 12-14.99 months | --- | 48 | 101 | 155 | 304 |
| 15-17.99 months | --- | 68 | 83 | 161 | 312 |
| 18-20.99 months | --- | 80 | 81 | 170 | 331 |
| 21-23.99 months | --- | 71 | 82 | 157 | 310 |
| 24-29.99 months | --- | 160 | 162 | 314 | 636 |
| 30-35.99 months | --- | 111 | 163 | 298 | 572 |

--- Data not available.

¹United States Vital Statistics (1968-80; 1985-94).²National Health and Nutrition Examination Survey.

NOTE: Excludes infants with birthweight less than 1,500 grams.

Table 2. Unweighted sample sizes for recumbent length-for-age chart by sex, age, and data source: Birth to 36 months

| Sex and age | NHANES ¹ I | NHANES ¹ II | NHANES ¹ III | PedNSS ² | Missouri ³ | Wisconsin ⁴ | Total |
|---------------------------|-----------------------|------------------------|-------------------------|---------------------|-----------------------|------------------------|---------|
| Boys | | | | | | | |
| Total | 282 | 879 | 2,171 | 18,624 | 207,658 | 237,836 | 467,412 |
| Birth | --- | --- | --- | --- | 207,658 | 237,836 | 445,494 |
| 0-0.99 months | --- | --- | --- | 7,559 | --- | --- | 7,559 |
| 1-1.99 months | --- | --- | --- | 4,594 | --- | --- | 4,594 |
| 2-2.99 months | --- | --- | --- | 2,766 | --- | --- | 2,766 |
| 3-3.99 months | --- | --- | 89 | 1,551 | --- | --- | 1,640 |
| 4-4.99 months | --- | --- | 104 | 2,154 | --- | --- | 2,258 |
| 5-5.99 months | --- | --- | 96 | --- | --- | --- | 96 |
| 6-6.99 months | --- | 5 | 105 | --- | --- | --- | 110 |
| 7-7.99 months | --- | 24 | 110 | --- | --- | --- | 134 |
| 8-8.99 months | --- | 28 | 107 | --- | --- | --- | 135 |
| 9-9.99 months | --- | 29 | 88 | --- | --- | --- | 117 |
| 10-10.99 months | --- | 32 | 94 | --- | --- | --- | 126 |
| 11-11.99 months | --- | 33 | 92 | --- | --- | --- | 125 |
| 12-14.99 months | 44 | 90 | 188 | --- | --- | --- | 322 |
| 15-17.99 months | 73 | 95 | 158 | --- | --- | --- | 326 |
| 18-20.99 months | 98 | 94 | 149 | --- | --- | --- | 341 |
| 21-23.99 months | 67 | 89 | 151 | --- | --- | --- | 307 |
| 24-29.99 months | --- | 166 | 285 | --- | --- | --- | 451 |
| 30-35.99 months | --- | 194 | 317 | --- | --- | --- | 511 |
| Girls | | | | | | | |
| Total | 267 | 802 | 2,131 | 17,511 | 196,906 | 226,728 | 444,311 |
| Birth | --- | --- | --- | --- | 196,906 | 226,728 | 423,634 |
| 0-0.99 months | --- | --- | --- | 7,287 | --- | --- | 7,287 |
| 1-1.99 months | --- | --- | --- | 4,231 | --- | --- | 4,231 |
| 2-2.99 months | --- | --- | --- | 2,474 | --- | --- | 2,474 |
| 3-3.99 months | --- | --- | 118 | 1,444 | --- | --- | 1,562 |
| 4-4.99 months | --- | --- | 92 | 2,075 | --- | --- | 2,167 |
| 5-5.99 months | --- | --- | 99 | --- | --- | --- | 99 |
| 6-6.99 months | --- | 9 | 83 | --- | --- | --- | 92 |
| 7-7.99 months | --- | 29 | 93 | --- | --- | --- | 122 |
| 8-8.99 months | --- | 19 | 85 | --- | --- | --- | 104 |
| 9-9.99 months | --- | 28 | 109 | --- | --- | --- | 137 |
| 10-10.99 months | --- | 31 | 95 | --- | --- | --- | 126 |
| 11-11.99 months | --- | 27 | 108 | --- | --- | --- | 135 |
| 12-14.99 months | 48 | 100 | 152 | --- | --- | --- | 300 |
| 15-17.99 months | 68 | 82 | 160 | --- | --- | --- | 310 |
| 18-20.99 months | 80 | 80 | 167 | --- | --- | --- | 327 |
| 21-23.99 months | 71 | 82 | 153 | --- | --- | --- | 306 |
| 24-29.99 months | --- | 159 | 294 | --- | --- | --- | 453 |
| 30-35.99 months | --- | 156 | 289 | --- | --- | --- | 445 |

--- Data not available.

¹National Health and Nutrition Examination Survey.²Pediatric Nutrition Surveillance System (selected clinics, 1975-95).³State of Missouri Vital Statistics (1989-94).⁴State of Wisconsin Vital Statistics (1989-94).

NOTE: Excludes infants with birthweight less than 1,500 grams.

Table 3. Unweighted sample sizes for weight-for-recumbent length chart by sex, length interval, and data source: Birth to 36 months

| Sex and length interval | NHANES ¹ I | NHANES ¹ II | NHANES ¹ III | Missouri ² | Wisconsin ³ | Total |
|----------------------------------|-----------------------|------------------------|-------------------------|-----------------------|------------------------|---------|
| Boys | | | | | | |
| Total | 281 | 1,284 | 2,472 | 136,129 | 153,960 | 294,126 |
| 45–46.99 centimeters | --- | --- | --- | 12,056 | 7,670 | 19,726 |
| 47–48.99 centimeters | --- | --- | --- | 23,159 | 33,143 | 56,302 |
| 49–50.99 centimeters | --- | --- | --- | 64,387 | 66,343 | 130,730 |
| 51–52.99 centimeters | --- | --- | --- | 36,527 | 46,804 | 83,331 |
| 53–64.99 centimeters | --- | --- | --- | --- | --- | --- |
| 65–66.99 centimeters | --- | 6 | 105 | --- | --- | 111 |
| 67–68.99 centimeters | --- | 15 | 120 | --- | --- | 135 |
| 69–70.99 centimeters | --- | 29 | 138 | --- | --- | 167 |
| 71–72.99 centimeters | 2 | 34 | 148 | --- | --- | 184 |
| 73–74.99 centimeters | 8 | 46 | 136 | --- | --- | 190 |
| 75–76.99 centimeters | 17 | 55 | 127 | --- | --- | 199 |
| 77–78.99 centimeters | 30 | 52 | 115 | --- | --- | 197 |
| 79–80.99 centimeters | 45 | 74 | 111 | --- | --- | 230 |
| 81–82.99 centimeters | 52 | 75 | 105 | --- | --- | 232 |
| 83–84.99 centimeters | 43 | 61 | 112 | --- | --- | 216 |
| 85–86.99 centimeters | 31 | 79 | 117 | --- | --- | 227 |
| 87–88.99 centimeters | 30 | 85 | 129 | --- | --- | 244 |
| 89–90.99 centimeters | 15 | 92 | 149 | --- | --- | 256 |
| 91–92.99 centimeters | 4 | 71 | 124 | --- | --- | 199 |
| 93–94.99 centimeters | 1 | 91 | 154 | --- | --- | 246 |
| 95–96.99 centimeters | 2 | 113 | 131 | --- | --- | 246 |
| 97–98.99 centimeters | 1 | 101 | 113 | --- | --- | 215 |
| 99–100.99 centimeters | --- | 70 | 115 | --- | --- | 185 |
| 101–102.99 centimeters | --- | 59 | 96 | --- | --- | 155 |
| 103–104.99 centimeters | --- | 40 | 65 | --- | --- | 105 |
| 105–106.99 centimeters | --- | 25 | 45 | --- | --- | 70 |
| 107–108.99 centimeters | --- | 11 | 17 | --- | --- | 28 |
| Girls | | | | | | |
| Total | 267 | 1,161 | 2,404 | 141,287 | 170,024 | 315,143 |
| 45–46.99 centimeters | --- | --- | --- | 17,214 | 10,504 | 27,718 |
| 47–48.99 centimeters | --- | --- | --- | 23,159 | 44,491 | 67,650 |
| 49–50.99 centimeters | --- | --- | --- | 64,387 | 73,502 | 137,889 |
| 51–52.99 centimeters | --- | --- | --- | 36,527 | 41,527 | 78,054 |
| 53–64.99 centimeters | --- | --- | --- | --- | --- | --- |
| 65–66.99 centimeters | 1 | 15 | 115 | --- | --- | 131 |
| 67–68.99 centimeters | 1 | 30 | 138 | --- | --- | 169 |
| 69–70.99 centimeters | 6 | 27 | 114 | --- | --- | 147 |
| 71–72.99 centimeters | 6 | 45 | 142 | --- | --- | 193 |
| 73–74.99 centimeters | 12 | 52 | 133 | --- | --- | 197 |
| 75–76.99 centimeters | 20 | 60 | 95 | --- | --- | 175 |
| 77–78.99 centimeters | 36 | 56 | 101 | --- | --- | 193 |
| 79–80.99 centimeters | 50 | 64 | 108 | --- | --- | 222 |
| 81–82.99 centimeters | 51 | 51 | 93 | --- | --- | 195 |
| 83–84.99 centimeters | 33 | 57 | 113 | --- | --- | 203 |
| 85–86.99 centimeters | 28 | 73 | 135 | --- | --- | 236 |
| 87–88.99 centimeters | 17 | 70 | 151 | --- | --- | 238 |
| 89–90.99 centimeters | 4 | 90 | 131 | --- | --- | 225 |
| 91–92.99 centimeters | 2 | 97 | 116 | --- | --- | 215 |
| 93–94.99 centimeters | --- | 79 | 119 | --- | --- | 198 |
| 95–96.99 centimeters | --- | 73 | 152 | --- | --- | 225 |
| 97–98.99 centimeters | --- | 79 | 125 | --- | --- | 204 |
| 99–100.99 centimeters | --- | 55 | 103 | --- | --- | 158 |
| 101–102.99 centimeters | --- | 41 | 92 | --- | --- | 133 |
| 103–104.99 centimeters | --- | 31 | 63 | --- | --- | 94 |
| 105–106.99 centimeters | --- | 11 | 40 | --- | --- | 51 |
| 107–108.99 centimeters | --- | 5 | 25 | --- | --- | 30 |

--- Data not available.

¹National Health and Nutrition Examination Survey.²State of Missouri Vital Statistics (birth data, 1989–94).³State of Wisconsin Vital Statistics (birth data, 1989–94).

NOTE: Excludes infants with birthweight less than 1,500 grams.

Table 4. Unweighted sample sizes for head circumference-for-age chart by sex, age, and data source: Birth to 36 months

| Sex and age | NHANES ¹ I | NHANES ¹ II | NHANES ¹ III | Fels ² | Total |
|---------------------------|-----------------------|------------------------|-------------------------|-------------------|-------|
| Boys | | | | | |
| Total | 579 | 880 | 2,156 | 188 | 3,803 |
| Birth | --- | --- | --- | 188 | 188 |
| 0-0.99 months | --- | --- | --- | --- | --- |
| 1-1.99 months | --- | --- | --- | --- | --- |
| 2-2.99 months | --- | --- | 38 | --- | 38 |
| 3-3.99 months | --- | --- | 89 | --- | 89 |
| 4-4.99 months | --- | --- | 104 | --- | 104 |
| 5-5.99 months | --- | --- | 96 | --- | 96 |
| 6-6.99 months | --- | 5 | 104 | --- | 109 |
| 7-7.99 months | --- | 24 | 107 | --- | 131 |
| 8-8.99 months | --- | 27 | 107 | --- | 134 |
| 9-9.99 months | --- | 28 | 88 | --- | 116 |
| 10-10.99 months | --- | 32 | 94 | --- | 126 |
| 11-11.99 months | --- | 33 | 90 | --- | 123 |
| 12-14.99 months | 44 | 88 | 189 | --- | 321 |
| 15-17.99 months | 73 | 95 | 156 | --- | 324 |
| 18-20.99 months | 98 | 93 | 149 | --- | 340 |
| 21-23.99 months | 67 | 89 | 151 | --- | 307 |
| 24-29.99 months | 164 | 169 | 277 | --- | 610 |
| 30-35.99 months | 133 | 197 | 317 | --- | 647 |
| Girls | | | | | |
| Total | 538 | 809 | 2,108 | 174 | 3,629 |
| Birth | --- | --- | --- | 174 | 174 |
| 0-0.99 months | --- | --- | --- | --- | --- |
| 1-1.99 months | --- | --- | --- | --- | --- |
| 2-2.99 months | --- | --- | 33 | --- | 33 |
| 3-3.99 months | --- | --- | 117 | --- | 117 |
| 4-4.99 months | --- | --- | 92 | --- | 92 |
| 5-5.99 months | --- | --- | 98 | --- | 98 |
| 6-6.99 months | --- | 9 | 82 | --- | 91 |
| 7-7.99 months | --- | 29 | 93 | --- | 122 |
| 8-8.99 months | --- | 18 | 85 | --- | 103 |
| 9-9.99 months | --- | 29 | 110 | --- | 139 |
| 10-10.99 months | --- | 31 | 94 | --- | 125 |
| 11-11.99 months | --- | 26 | 107 | --- | 133 |
| 12-14.99 months | 48 | 101 | 150 | --- | 299 |
| 15-17.99 months | 68 | 81 | 157 | --- | 306 |
| 18-20.99 months | 80 | 81 | 166 | --- | 327 |
| 21-23.99 months | 71 | 82 | 154 | --- | 307 |
| 24-29.99 months | 160 | 160 | 292 | --- | 612 |
| 30-35.99 months | 111 | 162 | 278 | --- | 551 |

--- Data not available.

¹National Health and Nutrition Examination Survey.²Fels Longitudinal Growth Study (1960-94).

NOTE: Excludes infants with birthweight less than 1,500 grams.

Table 5. Unweighted sample sizes for weight-for-stature chart by sex, stature interval, and data source: 77 to 121 cm

| Sex and stature interval | NHANES ¹ I | NHANES ¹ II | NHANES ¹ III | Total |
|----------------------------------|-----------------------|------------------------|-------------------------|-------|
| Boys | | | | |
| Total | 1,337 | 1,686 | 2,104 | 5,127 |
| 77–78.99 centimeters | --- | 1 | --- | 1 |
| 79–80.99 centimeters | 2 | 1 | 5 | 8 |
| 81–82.99 centimeters | 7 | 7 | 5 | 19 |
| 83–84.99 centimeters | 8 | 17 | 32 | 57 |
| 85–86.99 centimeters | 27 | 45 | 51 | 123 |
| 87–88.99 centimeters | 56 | 52 | 104 | 212 |
| 89–90.99 centimeters | 67 | 71 | 115 | 253 |
| 91–92.99 centimeters | 63 | 77 | 136 | 276 |
| 93–94.99 centimeters | 80 | 101 | 147 | 328 |
| 95–96.99 centimeters | 84 | 129 | 152 | 365 |
| 97–98.99 centimeters | 91 | 109 | 116 | 316 |
| 99–100.99 centimeters | 74 | 111 | 141 | 326 |
| 101–102.99 centimeters | 88 | 114 | 150 | 352 |
| 103–104.99 centimeters | 91 | 113 | 158 | 362 |
| 105–106.99 centimeters | 87 | 109 | 170 | 366 |
| 107–108.99 centimeters | 88 | 114 | 136 | 338 |
| 109–110.99 centimeters | 72 | 122 | 120 | 314 |
| 111–112.99 centimeters | 77 | 109 | 133 | 319 |
| 113–114.99 centimeters | 85 | 94 | 104 | 283 |
| 115–116.99 centimeters | 66 | 65 | 55 | 186 |
| 117–118.99 centimeters | 66 | 60 | 42 | 168 |
| 119–120.99 centimeters | 58 | 65 | 32 | 155 |
| Girls | | | | |
| Total | 1,327 | 1,589 | 2,187 | 5,103 |
| 77–78.99 centimeters | 1 | --- | 3 | 4 |
| 79–80.99 centimeters | 5 | 4 | 4 | 13 |
| 81–82.99 centimeters | 12 | 9 | 19 | 40 |
| 83–84.99 centimeters | 19 | 24 | 55 | 98 |
| 85–86.99 centimeters | 45 | 57 | 69 | 171 |
| 87–88.99 centimeters | 45 | 57 | 115 | 217 |
| 89–90.99 centimeters | 48 | 87 | 109 | 244 |
| 91–92.99 centimeters | 60 | 94 | 130 | 284 |
| 93–94.99 centimeters | 88 | 87 | 136 | 311 |
| 95–96.99 centimeters | 78 | 88 | 141 | 307 |
| 97–98.99 centimeters | 89 | 103 | 154 | 346 |
| 99–100.99 centimeters | 93 | 93 | 150 | 336 |
| 101–102.99 centimeters | 71 | 98 | 143 | 312 |
| 103–104.99 centimeters | 72 | 124 | 181 | 377 |
| 105–106.99 centimeters | 81 | 99 | 158 | 338 |
| 107–108.99 centimeters | 79 | 95 | 151 | 325 |
| 109–110.99 centimeters | 73 | 118 | 121 | 312 |
| 111–112.99 centimeters | 86 | 91 | 110 | 287 |
| 113–114.99 centimeters | 81 | 77 | 95 | 253 |
| 115–116.99 centimeters | 72 | 60 | 59 | 191 |
| 117–118.99 centimeters | 66 | 63 | 49 | 178 |
| 119–120.99 centimeters | 63 | 61 | 35 | 159 |

--- Data not available.

¹National Health and Nutrition Examination Survey.

Table 6. Unweighted sample sizes for weight-for-age chart by sex, age, and data source: 2 to 20 years

| Sex and age | NHES ¹ II | NHES ¹ III | NHANES ² I | NHANES ² II | NHANES ² III | Total |
|----------------------------|----------------------|-----------------------|-----------------------|------------------------|-------------------------|--------|
| Boys | | | | | | |
| Total | 3,632 | 3,545 | 3,533 | 3,838 | 2,207 | 16,755 |
| 2–2.49 years | --- | --- | 165 | 171 | 305 | 641 |
| 2.5–2.99 years | --- | --- | 133 | 199 | 340 | 672 |
| 3.0–3.49 years | --- | --- | 162 | 209 | 275 | 646 |
| 3.5–3.99 years | --- | --- | 146 | 212 | 241 | 599 |
| 4.0–4.49 years | --- | --- | 148 | 198 | 276 | 622 |
| 4.5–4.99 years | --- | --- | 156 | 207 | 273 | 636 |
| 5.0–5.49 years | --- | --- | 126 | 182 | 277 | 585 |
| 5.5–5.99 years | --- | --- | 147 | 211 | 220 | 578 |
| 6.0–6.49 years | 294 | --- | 102 | 75 | --- | 471 |
| 6.5–6.99 years | 281 | --- | 77 | 71 | --- | 429 |
| 7.0–7.49 years | 319 | --- | 84 | 74 | --- | 477 |
| 7.5–7.99 years | 313 | --- | 80 | 76 | --- | 469 |
| 8.0–8.49 years | 296 | --- | 86 | 76 | --- | 458 |
| 8.5–8.99 years | 322 | --- | 66 | 69 | --- | 457 |
| 9.0–9.49 years | 283 | --- | 91 | 72 | --- | 446 |
| 9.5–9.99 years | 320 | --- | 78 | 69 | --- | 467 |
| 10.0–10.49 years | 281 | --- | 94 | 96 | --- | 471 |
| 10.5–10.99 years | 295 | --- | 90 | 69 | --- | 454 |
| 11.0–11.49 years | 302 | --- | 99 | 77 | --- | 478 |
| 11.5–11.99 years | 293 | --- | 79 | 76 | --- | 448 |
| 12.0–12.49 years | 33 | 287 | 86 | 74 | --- | 480 |
| 12.5–12.99 years | --- | 356 | 114 | 73 | --- | 543 |
| 13.0–13.49 years | --- | 327 | 86 | 83 | --- | 496 |
| 13.5–13.99 years | --- | 299 | 88 | 82 | --- | 469 |
| 14.0–14.49 years | --- | 305 | 89 | 88 | --- | 482 |
| 14.5–14.99 years | --- | 313 | 85 | 100 | --- | 498 |
| 15.0–15.49 years | --- | 321 | 85 | 93 | --- | 499 |
| 15.5–15.99 years | --- | 292 | 86 | 87 | --- | 465 |
| 16.0–16.49 years | --- | 295 | 88 | 89 | --- | 472 |
| 16.5–16.99 years | --- | 261 | 81 | 91 | --- | 433 |
| 17.0–17.49 years | --- | 242 | 85 | 98 | --- | 425 |
| 17.5–17.99 years | --- | 216 | 91 | 85 | --- | 392 |
| 18.0–18.49 years | --- | 31 | 69 | 80 | --- | 180 |
| 18.5–18.99 years | --- | --- | 55 | 76 | --- | 131 |
| 19.0–19.49 years | --- | --- | 68 | 79 | --- | 147 |
| 19.5–19.99 years | --- | --- | 68 | 71 | --- | 139 |
| Girls | | | | | | |
| Total | 3,487 | 3,223 | 3,532 | 3,572 | 2,302 | 16,116 |
| 2–2.49 years | --- | --- | 161 | 164 | 320 | 645 |
| 2.5–2.99 years | --- | --- | 111 | 166 | 304 | 581 |
| 3.0–3.49 years | --- | --- | 145 | 185 | 288 | 618 |
| 3.5–3.99 years | --- | --- | 147 | 182 | 299 | 628 |
| 4.0–4.49 years | --- | --- | 131 | 200 | 291 | 622 |
| 4.5–4.99 years | --- | --- | 150 | 188 | 246 | 584 |
| 5.0–5.49 years | --- | --- | 143 | 196 | 259 | 598 |
| 5.5–5.99 years | --- | --- | 171 | 173 | 295 | 639 |
| 6.0–6.49 years | 251 | --- | 81 | 82 | --- | 414 |
| 6.5–6.99 years | 285 | --- | 95 | 68 | --- | 448 |
| 7.0–7.49 years | 313 | --- | 77 | 74 | --- | 464 |
| 7.5–7.99 years | 296 | --- | 92 | 80 | --- | 468 |
| 8.0–8.49 years | 314 | --- | 86 | 70 | --- | 470 |
| 8.5–8.99 years | 299 | --- | 66 | 55 | --- | 420 |
| 9.0–9.49 years | 303 | --- | 85 | 72 | --- | 460 |
| 9.5–9.99 years | 278 | --- | 86 | 82 | --- | 446 |
| 10.0–10.49 years | 304 | --- | 107 | 68 | --- | 479 |
| 10.5–10.99 years | 280 | --- | 90 | 60 | --- | 430 |
| 11.0–11.49 years | 265 | --- | 81 | 76 | --- | 422 |
| 11.5–11.99 years | 260 | --- | 85 | 67 | --- | 412 |
| 12.0–12.49 years | 39 | 257 | 90 | 71 | --- | 457 |
| 12.5–12.99 years | --- | 290 | 87 | 75 | --- | 452 |
| 13.0–13.49 years | --- | 310 | 94 | 71 | --- | 475 |
| 13.5–13.99 years | --- | 272 | 104 | 84 | --- | 460 |
| 14.0–14.49 years | --- | 306 | 95 | 92 | --- | 493 |
| 14.5–14.99 years | --- | 280 | 89 | 89 | --- | 458 |

Table 6. Unweighted sample sizes for weight-for-age chart by sex, age, and data source: 2 to 20 years—Con.

| Sex and age | NHES ¹ II | NHES ¹ III | NHANES ² I | NHANES ² II | NHANES ² III | Total |
|----------------------------|----------------------|-----------------------|-----------------------|------------------------|-------------------------|-------|
| Girls—Con. | | | | | | |
| 15.0–15.49 years | --- | 241 | 93 | 79 | --- | 413 |
| 15.5–15.99 years | --- | 262 | 78 | 68 | --- | 408 |
| 16.0–16.49 years | --- | 271 | 67 | 90 | --- | 428 |
| 16.5–16.99 years | --- | 265 | 108 | 81 | --- | 454 |
| 17.0–17.49 years | --- | 231 | 80 | 71 | --- | 382 |
| 17.5–17.99 years | --- | 211 | 77 | 65 | --- | 353 |
| 18.0–18.49 years | --- | 27 | 80 | 80 | --- | 187 |
| 18.5–18.99 years | --- | --- | 64 | 84 | --- | 148 |
| 19.0–19.49 years | --- | --- | 75 | 86 | --- | 161 |
| 19.5–19.99 years | --- | --- | 61 | 78 | --- | 139 |

--- Data not available.

¹National Health Examination Survey.

²National Health and Nutrition Examination Survey.

Table 7. Unweighted sample sizes for stature-for-age chart by sex, age, and data source: 2 to 20 years

| Sex and age | NHES ¹ II | NHES ¹ III | NHANES ² I | NHANES ² II | NHANES ² III | Total |
|----------------------------|----------------------|-----------------------|-----------------------|------------------------|-------------------------|--------|
| Boys | | | | | | |
| Total | 3,632 | 3,545 | 3,533 | 3,808 | 5,336 | 19,854 |
| 2–2.49 years | --- | --- | 165 | 148 | 254 | 567 |
| 2.5–2.99 years | --- | --- | 133 | 196 | 326 | 655 |
| 3.0–3.49 years | --- | --- | 162 | 208 | 272 | 642 |
| 3.5–3.99 years | --- | --- | 146 | 209 | 238 | 593 |
| 4.0–4.49 years | --- | --- | 148 | 198 | 279 | 625 |
| 4.5–4.99 years | --- | --- | 156 | 207 | 272 | 635 |
| 5.0–5.49 years | --- | --- | 126 | 182 | 276 | 584 |
| 5.5–5.99 years | --- | --- | 147 | 211 | 221 | 579 |
| 6.0–6.49 years | 294 | --- | 102 | 75 | 159 | 630 |
| 6.5–6.99 years | 281 | --- | 77 | 71 | 124 | 553 |
| 7.0–7.49 years | 319 | --- | 84 | 74 | 139 | 616 |
| 7.5–7.99 years | 313 | --- | 80 | 76 | 131 | 600 |
| 8.0–8.49 years | 296 | --- | 86 | 76 | 136 | 594 |
| 8.5–8.99 years | 322 | --- | 66 | 69 | 133 | 590 |
| 9.0–9.49 years | 283 | --- | 91 | 72 | 131 | 577 |
| 9.5–9.99 years | 320 | --- | 78 | 69 | 149 | 616 |
| 10.0–10.49 years | 281 | --- | 94 | 96 | 152 | 623 |
| 10.5–10.99 years | 295 | --- | 90 | 69 | 145 | 599 |
| 11.0–11.49 years | 302 | --- | 99 | 77 | 134 | 612 |
| 11.5–11.99 years | 293 | --- | 79 | 76 | 151 | 599 |
| 12.0–12.49 years | 33 | 287 | 86 | 74 | 93 | 573 |
| 12.5–12.99 years | --- | 356 | 114 | 73 | 114 | 657 |
| 13.0–13.49 years | --- | 327 | 86 | 83 | 103 | 599 |
| 13.5–13.99 years | --- | 299 | 88 | 82 | 87 | 556 |
| 14.0–14.49 years | --- | 305 | 89 | 88 | 100 | 582 |
| 14.5–14.99 years | --- | 313 | 85 | 100 | 91 | 589 |
| 15.0–15.49 years | --- | 321 | 85 | 93 | 106 | 605 |
| 15.5–15.99 years | --- | 292 | 86 | 87 | 82 | 547 |
| 16.0–16.49 years | --- | 295 | 88 | 89 | 103 | 575 |
| 16.5–16.99 years | --- | 261 | 81 | 91 | 94 | 527 |
| 17.0–17.49 years | --- | 242 | 85 | 98 | 103 | 528 |
| 17.5–17.99 years | --- | 216 | 91 | 85 | 93 | 485 |
| 18.0–18.49 years | --- | 31 | 69 | 80 | 90 | 270 |
| 18.5–18.99 years | --- | --- | 55 | 76 | 86 | 217 |
| 19.0–19.49 years | --- | --- | 68 | 79 | 87 | 234 |
| 19.5–19.99 years | --- | --- | 68 | 71 | 82 | 221 |
| Girls | | | | | | |
| Total | 3,487 | 3,223 | 3,532 | 3,545 | 5,564 | 19,351 |
| 2–2.49 years | --- | --- | 161 | 146 | 264 | 571 |
| 2.5–2.99 years | --- | --- | 111 | 161 | 297 | 569 |
| 3.0–3.49 years | --- | --- | 145 | 183 | 284 | 612 |
| 3.5–3.99 years | --- | --- | 147 | 181 | 296 | 624 |
| 4.0–4.49 years | --- | --- | 131 | 199 | 289 | 619 |
| 4.5–4.99 years | --- | --- | 150 | 188 | 246 | 584 |
| 5.0–5.49 years | --- | --- | 143 | 196 | 260 | 599 |
| 5.5–5.99 years | --- | --- | 171 | 173 | 297 | 641 |
| 6.0–6.49 years | 251 | --- | 81 | 82 | 132 | 546 |
| 6.5–6.99 years | 285 | --- | 95 | 68 | 142 | 590 |
| 7.0–7.49 years | 313 | --- | 77 | 74 | 150 | 614 |
| 7.5–7.99 years | 296 | --- | 92 | 80 | 125 | 593 |
| 8.0–8.49 years | 314 | --- | 86 | 70 | 117 | 587 |
| 8.5–8.99 years | 299 | --- | 66 | 55 | 130 | 550 |
| 9.0–9.49 years | 303 | --- | 85 | 72 | 154 | 614 |
| 9.5–9.99 years | 278 | --- | 86 | 82 | 128 | 574 |
| 10.0–10.49 years | 304 | --- | 107 | 68 | 134 | 613 |
| 10.5–10.99 years | 280 | --- | 90 | 60 | 128 | 558 |
| 11.0–11.49 years | 265 | --- | 81 | 76 | 143 | 565 |
| 11.5–11.99 years | 260 | --- | 85 | 67 | 132 | 544 |
| 12.0–12.49 years | 39 | 257 | 90 | 71 | 119 | 576 |
| 12.5–12.99 years | --- | 290 | 87 | 75 | 120 | 572 |
| 13.0–13.49 years | --- | 310 | 94 | 71 | 104 | 579 |
| 13.5–13.99 years | --- | 272 | 104 | 84 | 121 | 581 |
| 14.0–14.49 years | --- | 306 | 95 | 92 | 111 | 604 |
| 14.5–14.99 years | --- | 280 | 89 | 89 | 115 | 573 |

Table 7. Unweighted sample sizes for stature-for-age chart by sex, age, and data source: 2 to 20 years—Con.

| Sex and age | NHES ¹ II | NHES ¹ III | NHANES ² I | NHANES ² II | NHANES ² III | Total |
|----------------------------|----------------------|-----------------------|-----------------------|------------------------|-------------------------|-------|
| Girls—Con. | | | | | | |
| 15.0–15.49 years | --- | 241 | 93 | 79 | 83 | 496 |
| 15.5–15.99 years | --- | 262 | 78 | 68 | 118 | 526 |
| 16.0–16.49 years | --- | 271 | 67 | 90 | 104 | 532 |
| 16.5–16.99 years | --- | 265 | 108 | 81 | 117 | 571 |
| 17.0–17.49 years | --- | 231 | 80 | 71 | 104 | 486 |
| 17.5–17.99 years | --- | 211 | 77 | 65 | 113 | 466 |
| 18.0–18.49 years | --- | 27 | 80 | 80 | 108 | 295 |
| 18.5–18.99 years | --- | --- | 64 | 84 | 85 | 233 |
| 19.0–19.49 years | --- | --- | 75 | 86 | 86 | 247 |
| 19.5–19.99 years | --- | --- | 61 | 78 | 108 | 247 |

--- Data not available.

¹National Health Examination Survey.

²National Health and Nutrition Examination Survey.

Table 8. Unweighted sample sizes for body mass index (BMI)-for-age chart by sex, age, and data source: 2 to 20 years

| Sex and age | NHES ¹ II | NHES ¹ III | NHANES ² I | NHANES ² II | NHANES ² III | Total |
|----------------------------|----------------------|-----------------------|-----------------------|------------------------|-------------------------|--------|
| Boys | | | | | | |
| Total | 3,632 | 3,545 | 3,533 | 3,808 | 2,130 | 16,648 |
| 2–2.49 years | --- | --- | 165 | 148 | 254 | 567 |
| 2.5–2.99 years | --- | --- | 133 | 196 | 325 | 654 |
| 3.0–3.49 years | --- | --- | 162 | 208 | 271 | 641 |
| 3.5–3.99 years | --- | --- | 146 | 209 | 238 | 593 |
| 4.0–4.49 years | --- | --- | 148 | 198 | 276 | 622 |
| 4.5–4.99 years | --- | --- | 156 | 207 | 271 | 634 |
| 5.0–5.49 years | --- | --- | 126 | 182 | 275 | 583 |
| 5.5–5.99 years | --- | --- | 147 | 211 | 220 | 578 |
| 6.0–6.49 years | 294 | --- | 102 | 75 | --- | 471 |
| 6.5–6.99 years | 281 | --- | 77 | 71 | --- | 429 |
| 7.0–7.49 years | 319 | --- | 84 | 74 | --- | 477 |
| 7.5–7.99 years | 313 | --- | 80 | 76 | --- | 469 |
| 8.0–8.49 years | 296 | --- | 86 | 76 | --- | 458 |
| 8.5–8.99 years | 322 | --- | 66 | 69 | --- | 457 |
| 9.0–9.49 years | 283 | --- | 91 | 72 | --- | 446 |
| 9.5–9.99 years | 320 | --- | 78 | 69 | --- | 467 |
| 10.0–10.49 years | 281 | --- | 94 | 96 | --- | 471 |
| 10.5–10.99 years | 295 | --- | 90 | 69 | --- | 454 |
| 11.0–11.49 years | 302 | --- | 99 | 77 | --- | 478 |
| 11.5–11.99 years | 293 | --- | 79 | 76 | --- | 448 |
| 12.0–12.49 years | 33 | 287 | 86 | 74 | --- | 480 |
| 12.5–12.99 years | --- | 356 | 114 | 73 | --- | 543 |
| 13.0–13.49 years | --- | 327 | 86 | 83 | --- | 496 |
| 13.5–13.99 years | --- | 299 | 88 | 82 | --- | 469 |
| 14.0–14.49 years | --- | 305 | 89 | 88 | --- | 482 |
| 14.5–14.99 years | --- | 313 | 85 | 100 | --- | 498 |
| 15.0–15.49 years | --- | 321 | 85 | 93 | --- | 499 |
| 15.5–15.99 years | --- | 292 | 86 | 87 | --- | 465 |
| 16.0–16.49 years | --- | 295 | 88 | 89 | --- | 472 |
| 16.5–16.99 years | --- | 261 | 81 | 91 | --- | 433 |
| 17.0–17.49 years | --- | 242 | 85 | 98 | --- | 425 |
| 17.5–17.99 years | --- | 216 | 91 | 85 | --- | 392 |
| 18.0–18.49 years | --- | 31 | 69 | 80 | --- | 180 |
| 18.5–18.99 years | --- | --- | 55 | 76 | --- | 131 |
| 19.0–19.49 years | --- | --- | 68 | 79 | --- | 147 |
| 19.5–19.99 years | --- | --- | 68 | 71 | --- | 139 |
| Girls | | | | | | |
| Total | 3,487 | 3,223 | 3,532 | 3,545 | 2,218 | 16,005 |
| 2–2.49 years | --- | --- | 161 | 146 | 263 | 570 |
| 2.5–2.99 years | --- | --- | 111 | 161 | 296 | 568 |
| 3.0–3.49 years | --- | --- | 145 | 183 | 278 | 606 |
| 3.5–3.99 years | --- | --- | 147 | 181 | 294 | 622 |
| 4.0–4.49 years | --- | --- | 131 | 199 | 287 | 617 |
| 4.5–4.99 years | --- | --- | 150 | 188 | 246 | 584 |
| 5.0–5.49 years | --- | --- | 143 | 196 | 259 | 598 |
| 5.5–5.99 years | --- | --- | 171 | 173 | 295 | 639 |
| 6.0–6.49 years | 251 | --- | 81 | 82 | --- | 414 |
| 6.5–6.99 years | 285 | --- | 95 | 68 | --- | 448 |
| 7.0–7.49 years | 313 | --- | 77 | 74 | --- | 464 |
| 7.5–7.99 years | 296 | --- | 92 | 80 | --- | 468 |
| 8.0–8.49 years | 314 | --- | 86 | 70 | --- | 470 |
| 8.5–8.99 years | 299 | --- | 66 | 55 | --- | 420 |
| 9.0–9.49 years | 303 | --- | 85 | 72 | --- | 460 |
| 9.5–9.99 years | 278 | --- | 86 | 82 | --- | 446 |
| 10.0–10.49 years | 304 | --- | 107 | 68 | --- | 479 |
| 10.5–10.99 years | 280 | --- | 90 | 60 | --- | 430 |
| 11.0–11.49 years | 265 | --- | 81 | 76 | --- | 422 |
| 11.5–11.99 years | 260 | --- | 85 | 67 | --- | 412 |
| 12.0–12.49 years | 39 | 257 | 90 | 71 | --- | 457 |
| 12.5–12.99 years | --- | 290 | 87 | 75 | --- | 452 |
| 13.0–13.49 years | --- | 310 | 94 | 71 | --- | 475 |
| 13.5–13.99 years | --- | 272 | 104 | 84 | --- | 460 |
| 14.0–14.49 years | --- | 306 | 95 | 92 | --- | 493 |
| 14.5–14.99 years | --- | 280 | 89 | 89 | --- | 458 |

Table 8. Unweighted sample sizes for body mass index (BMI)-for-age chart by sex, age, and data source: 2 to 20 years—Con.

| Sex and age | NHES ¹ II | NHES ¹ III | NHANES ² I | NHANES ² II | NHANES ² III | Total |
|----------------------------|----------------------|-----------------------|-----------------------|------------------------|-------------------------|-------|
| Girls—Con. | | | | | | |
| 15.0–15.49 years | --- | 241 | 93 | 79 | --- | 413 |
| 15.5–15.99 years | --- | 262 | 78 | 68 | --- | 408 |
| 16.0–16.49 years | --- | 271 | 67 | 90 | --- | 428 |
| 16.5–16.99 years | --- | 265 | 108 | 81 | --- | 454 |
| 17.0–17.49 years | --- | 231 | 80 | 71 | --- | 382 |
| 17.5–17.99 years | --- | 211 | 77 | 65 | --- | 353 |
| 18.0–18.49 years | --- | 27 | 80 | 80 | --- | 187 |
| 18.5–18.99 years | --- | --- | 64 | 84 | --- | 148 |
| 19.0–19.49 years | --- | --- | 75 | 86 | --- | 161 |
| 19.5–19.99 years | --- | --- | 61 | 78 | --- | 139 |

--- Data not available.

¹National Health Examination Survey.

²National Health and Nutrition Examination Survey.

Table 9. Observed mean, standard deviation, and selected percentiles for weight (in kilograms) by sex and age: Birth to 36 months

| Sex and age | Mean | Standard deviation | Percentile | | | | | | | | |
|---------------------------|-------|--------------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys | | | | | | | | | | | |
| Birth | 3.41 | 0.55 | 2.28 | 2.47 | 2.72 | 3.08 | 3.43 | 3.77 | 4.08 | 4.28 | 4.42 |
| 0–0.99 months | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1–1.99 months | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2–2.99 months | 6.47 | 0.79 | 4.85 | 4.95 | 5.55 | 5.80 | 6.70 | 6.85 | 7.40 | 7.45 | 7.80 |
| 3–3.99 months | 6.96 | 0.85 | 5.30 | 5.35 | 5.90 | 6.51 | 6.95 | 7.45 | 8.15 | 8.45 | 8.65 |
| 4–4.99 months | 7.15 | 0.78 | 5.50 | 5.95 | 6.30 | 6.65 | 7.15 | 7.70 | 8.00 | 8.40 | 8.45 |
| 5–5.99 months | 7.93 | 0.92 | 6.45 | 6.45 | 6.70 | 7.45 | 7.80 | 8.55 | 9.35 | 9.55 | 9.75 |
| 6–6.99 months | 8.41 | 1.07 | 6.45 | 7.00 | 7.25 | 7.60 | 8.39 | 9.00 | 10.20 | 10.70 | 10.70 |
| 7–7.99 months | 8.64 | 1.13 | 6.90 | 6.92 | 7.10 | 7.83 | 8.62 | 9.50 | 10.09 | 10.40 | 10.75 |
| 8–8.99 months | 9.26 | 1.13 | 7.48 | 7.48 | 7.85 | 8.55 | 9.19 | 10.05 | 10.50 | 11.00 | 11.25 |
| 9–9.99 months | 9.33 | 0.94 | 7.82 | 8.05 | 8.15 | 8.62 | 9.30 | 9.98 | 10.75 | 10.89 | 11.34 |
| 10–10.99 months | 9.46 | 1.10 | 7.75 | 7.94 | 8.28 | 8.73 | 9.30 | 10.05 | 11.25 | 11.45 | 11.55 |
| 11–11.99 months | 9.98 | 0.99 | 8.05 | 8.25 | 8.65 | 9.45 | 9.98 | 10.60 | 11.10 | 11.60 | 12.00 |
| 12–14.99 months | 10.59 | 1.17 | 8.65 | 8.90 | 9.20 | 9.75 | 10.55 | 11.34 | 12.13 | 12.35 | 12.81 |
| 15–17.99 months | 11.39 | 1.86 | 9.30 | 9.45 | 9.87 | 10.45 | 11.25 | 12.02 | 12.81 | 13.49 | 13.95 |
| 18–20.99 months | 12.07 | 1.54 | 9.75 | 9.98 | 10.43 | 11.00 | 11.91 | 12.70 | 13.90 | 15.45 | 15.65 |
| 21–23.99 months | 12.43 | 1.33 | 10.15 | 10.40 | 10.89 | 11.57 | 12.36 | 13.10 | 14.40 | 14.74 | 14.97 |
| 24–29.99 months | 13.14 | 1.65 | 10.55 | 10.95 | 11.34 | 12.10 | 12.93 | 14.06 | 15.08 | 15.77 | 16.67 |
| 30–35.99 months | 13.96 | 1.53 | 11.23 | 11.57 | 12.02 | 13.01 | 13.83 | 14.74 | 15.99 | 16.56 | 17.30 |
| Girls | | | | | | | | | | | |
| Birth | 3.29 | 0.52 | 2.24 | 2.41 | 2.64 | 2.98 | 3.29 | 3.63 | 3.92 | 4.11 | 4.25 |
| 0–0.99 months | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1–1.99 months | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2–2.99 months | 5.44 | 0.54 | 4.60 | 4.60 | 4.75 | 5.00 | 5.55 | 5.85 | 6.00 | 6.20 | 6.35 |
| 3–3.99 months | 6.34 | 0.72 | 5.15 | 5.40 | 5.55 | 5.80 | 6.30 | 6.80 | 7.35 | 7.75 | 7.75 |
| 4–4.99 months | 6.74 | 0.89 | 5.25 | 5.30 | 5.80 | 6.05 | 6.60 | 7.40 | 8.00 | 8.30 | 8.45 |
| 5–5.99 months | 7.28 | 0.88 | 5.90 | 6.10 | 6.30 | 6.70 | 7.10 | 7.70 | 8.45 | 8.75 | 9.05 |
| 6–6.99 months | 7.66 | 0.80 | 6.50 | 6.58 | 6.58 | 7.10 | 7.55 | 8.10 | 8.90 | 8.96 | 9.00 |
| 7–7.99 months | 8.04 | 1.42 | 6.24 | 6.35 | 6.70 | 7.37 | 7.82 | 8.62 | 9.35 | 9.80 | 9.95 |
| 8–8.99 months | 8.30 | 0.94 | 6.46 | 6.75 | 7.25 | 7.80 | 8.28 | 8.85 | 9.35 | 9.75 | 10.10 |
| 9–9.99 months | 8.85 | 0.93 | 7.25 | 7.40 | 7.75 | 8.10 | 8.73 | 9.41 | 10.10 | 10.45 | 11.00 |
| 10–10.99 months | 9.03 | 1.06 | 7.30 | 7.37 | 7.75 | 8.39 | 9.00 | 9.50 | 10.43 | 10.89 | 11.50 |
| 11–11.99 months | 9.26 | 1.01 | 7.48 | 7.48 | 7.90 | 8.62 | 9.15 | 10.05 | 10.55 | 10.85 | 11.10 |
| 12–14.99 months | 9.79 | 1.05 | 8.05 | 8.28 | 8.50 | 9.07 | 9.80 | 10.43 | 11.30 | 11.57 | 11.68 |
| 15–17.99 months | 10.42 | 1.11 | 8.65 | 8.80 | 9.10 | 9.65 | 10.32 | 11.23 | 11.80 | 12.02 | 12.60 |
| 18–20.99 months | 11.11 | 1.36 | 8.85 | 9.15 | 9.64 | 10.15 | 10.95 | 11.91 | 12.81 | 13.50 | 13.95 |
| 21–23.99 months | 11.81 | 1.33 | 9.45 | 9.75 | 10.09 | 10.89 | 11.79 | 12.75 | 13.49 | 13.90 | 14.17 |
| 24–29.99 months | 12.48 | 1.51 | 9.95 | 10.25 | 10.77 | 11.45 | 12.36 | 13.30 | 14.51 | 15.08 | 15.42 |
| 30–35.99 months | 13.61 | 1.69 | 11.00 | 11.23 | 11.79 | 12.47 | 13.42 | 14.52 | 15.65 | 16.44 | 17.10 |

--- Data not available.

Table 10. Observed mean, standard deviation, and selected percentiles for recumbent length (in centimeters) by sex and age: Birth to 36 months

| Sex and age | Mean | Standard deviation | Percentile | | | | | | | | |
|----------------------------|-------|--------------------|------------|-------|-------|-------|-------|-------|-------|-------|--------|
| | | | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys | | | | | | | | | | | |
| Birth ¹ | 51.40 | 2.90 | 45.70 | 46.40 | 48.30 | 49.50 | 51.40 | 53.30 | 54.60 | 55.90 | 55.90 |
| Birth ² | 51.40 | 2.80 | 46.00 | 47.00 | 48.00 | 50.00 | 51.00 | 53.00 | 55.00 | 56.00 | 56.00 |
| 0–0.99 months ³ | 52.04 | 2.46 | 48.30 | 48.30 | 48.80 | 50.80 | 52.10 | 53.30 | 55.80 | 55.90 | 56.80 |
| 1–1.99 months ³ | 55.54 | 2.53 | 50.80 | 51.40 | 52.10 | 53.30 | 55.90 | 57.20 | 58.70 | 59.70 | 60.90 |
| 2–2.99 months ³ | 58.73 | 2.50 | 54.60 | 54.60 | 55.90 | 56.80 | 58.40 | 60.60 | 62.20 | 63.40 | 63.50 |
| 3–3.99 months ⁴ | 62.09 | 2.52 | 57.80 | 58.30 | 59.00 | 60.30 | 61.90 | 63.50 | 65.30 | 66.60 | 67.30 |
| 4–4.99 months ⁴ | 64.15 | 2.58 | 59.60 | 60.00 | 61.00 | 62.50 | 64.10 | 66.00 | 67.30 | 68.60 | 68.60 |
| 5–5.99 months | 66.68 | 3.36 | 62.70 | 63.00 | 63.50 | 65.00 | 66.60 | 67.90 | 69.70 | 71.30 | 71.30 |
| 6–6.99 months | 68.49 | 2.45 | 64.60 | 64.80 | 65.80 | 66.80 | 68.20 | 70.20 | 71.70 | 71.90 | 72.80 |
| 7–7.99 months | 70.17 | 3.74 | 64.40 | 65.20 | 65.80 | 67.80 | 69.60 | 72.20 | 74.50 | 75.70 | 76.40 |
| 8–8.99 months | 71.69 | 3.03 | 67.00 | 67.70 | 68.40 | 69.60 | 71.30 | 73.80 | 74.90 | 76.20 | 78.30 |
| 9–9.99 months | 72.52 | 2.93 | 67.70 | 67.90 | 68.90 | 70.80 | 72.60 | 74.00 | 76.00 | 76.60 | 78.80 |
| 10–10.99 months | 73.18 | 2.72 | 68.50 | 69.50 | 70.30 | 71.50 | 73.30 | 75.00 | 76.50 | 77.80 | 78.20 |
| 11–11.99 months | 74.95 | 3.20 | 67.80 | 69.80 | 71.40 | 73.40 | 75.00 | 76.80 | 78.60 | 79.70 | 80.00 |
| 12–14.99 months | 77.81 | 4.33 | 72.40 | 72.90 | 74.10 | 75.70 | 77.30 | 79.50 | 82.00 | 82.90 | 83.80 |
| 15–17.99 months | 80.64 | 2.96 | 75.50 | 76.20 | 77.00 | 78.80 | 80.40 | 82.50 | 84.30 | 85.50 | 85.90 |
| 18–20.99 months | 83.75 | 4.05 | 76.20 | 77.80 | 80.00 | 81.60 | 83.70 | 86.00 | 88.40 | 90.20 | 91.90 |
| 21–23.99 months | 86.33 | 3.22 | 80.40 | 80.70 | 82.30 | 84.40 | 86.40 | 88.20 | 89.90 | 90.90 | 93.00 |
| 24–29.99 months | 89.18 | 3.62 | 82.10 | 83.00 | 84.80 | 87.00 | 89.10 | 91.30 | 93.90 | 95.50 | 96.00 |
| 30–35.99 months | 93.47 | 3.74 | 86.00 | 87.00 | 88.70 | 91.10 | 93.60 | 95.90 | 97.80 | 99.90 | 100.70 |
| Girls | | | | | | | | | | | |
| Birth ¹ | 50.60 | 2.80 | 45.10 | 45.70 | 47.00 | 48.90 | 50.80 | 52.10 | 54.00 | 54.60 | 55.90 |
| Birth ² | 50.60 | 2.70 | 46.00 | 46.00 | 47.00 | 48.00 | 51.00 | 52.00 | 53.00 | 55.00 | 56.00 |
| 0–0.99 months ³ | 51.26 | 2.28 | 47.30 | 48.20 | 48.30 | 49.50 | 50.80 | 53.30 | 54.00 | 55.20 | 55.90 |
| 1–1.99 months ³ | 54.54 | 2.32 | 50.80 | 50.80 | 51.40 | 53.30 | 54.30 | 55.90 | 57.80 | 58.40 | 59.00 |
| 2–2.99 months ³ | 57.40 | 2.29 | 53.30 | 53.70 | 54.60 | 55.90 | 57.20 | 58.70 | 60.30 | 61.00 | 61.60 |
| 3–3.99 months ⁴ | 60.79 | 2.74 | 55.90 | 56.70 | 57.50 | 59.10 | 61.00 | 62.50 | 63.80 | 64.80 | 65.50 |
| 4–4.99 months ⁴ | 62.57 | 2.68 | 57.30 | 58.00 | 58.40 | 61.00 | 62.80 | 64.10 | 66.00 | 67.10 | 67.70 |
| 5–5.99 months | 64.53 | 2.01 | 61.20 | 61.20 | 61.70 | 63.20 | 64.60 | 65.80 | 67.10 | 68.00 | 68.20 |
| 6–6.99 months | 66.91 | 3.34 | 62.80 | 63.30 | 64.00 | 65.00 | 66.70 | 68.40 | 70.00 | 70.90 | 71.60 |
| 7–7.99 months | 67.28 | 2.91 | 61.40 | 62.20 | 63.40 | 66.00 | 67.40 | 68.70 | 70.90 | 72.10 | 72.80 |
| 8–8.99 months | 69.01 | 2.59 | 64.00 | 64.90 | 65.60 | 67.40 | 68.80 | 70.70 | 72.00 | 73.10 | 74.30 |
| 9–9.99 months | 71.01 | 2.61 | 66.50 | 66.80 | 67.80 | 69.50 | 71.00 | 72.70 | 74.00 | 75.50 | 77.40 |
| 10–10.99 months | 72.00 | 2.77 | 66.00 | 67.10 | 68.70 | 70.30 | 72.10 | 73.80 | 75.40 | 76.50 | 77.40 |
| 11–11.99 months | 73.37 | 3.96 | 65.80 | 68.60 | 68.80 | 71.80 | 73.50 | 74.90 | 76.70 | 78.30 | 78.80 |
| 12–14.99 months | 75.83 | 3.24 | 69.90 | 70.00 | 71.40 | 73.80 | 76.20 | 77.60 | 79.40 | 80.50 | 81.00 |
| 15–17.99 months | 78.64 | 3.01 | 72.40 | 73.00 | 75.00 | 76.90 | 78.90 | 80.50 | 82.10 | 83.00 | 84.10 |
| 18–20.99 months | 81.92 | 3.77 | 74.80 | 76.10 | 77.50 | 79.60 | 81.60 | 84.50 | 86.80 | 87.50 | 89.10 |
| 21–23.99 months | 84.70 | 3.37 | 79.10 | 79.20 | 80.70 | 82.40 | 84.50 | 87.00 | 88.80 | 89.90 | 90.40 |
| 24–29.99 months | 87.97 | 3.70 | 80.80 | 82.40 | 83.80 | 85.60 | 88.00 | 90.10 | 92.90 | 94.40 | 95.30 |
| 30–35.99 months | 92.49 | 3.59 | 85.90 | 86.50 | 87.90 | 90.10 | 92.30 | 95.00 | 97.20 | 98.50 | 99.70 |

¹State of Missouri Vital Statistics birth length data (1989–94).²State of Wisconsin Vital Statistics birth length data (1989–94).³Pediatric Nutrition Surveillance System (PedNSS) data (selected clinics, 1975–95).⁴Mix of national survey data and PedNSS data.

Table 11. Observed mean, standard deviation, and selected percentiles for weight (in kilograms) by sex and recumbent length: Birth to 36 months

| Sex and length interval | Mean | Standard deviation | Percentile | | | | | | | | |
|---|-------|--------------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys | | | | | | | | | | | |
| 45–46.99 ¹ centimeters | 2.68 | 0.38 | 1.96 | 2.04 | 2.18 | 2.41 | 2.67 | 2.92 | 3.15 | 3.29 | 3.40 |
| 47–48.99 ¹ centimeters | 3.04 | 0.36 | 2.35 | 2.47 | 2.58 | 2.81 | 3.03 | 3.29 | 3.50 | 3.63 | 3.74 |
| 49–50.99 ¹ centimeters | 3.36 | 0.36 | 2.69 | 2.78 | 2.92 | 3.12 | 3.35 | 3.60 | 3.83 | 3.97 | 4.05 |
| 51–52.99 ¹ centimeters | 3.59 | 0.35 | 2.95 | 3.03 | 3.15 | 3.35 | 3.57 | 3.81 | 4.03 | 4.18 | 4.28 |
| 45–46.99 ² centimeters | 2.53 | 0.39 | 1.87 | 1.94 | 2.04 | 2.26 | 2.50 | 2.78 | 3.03 | 3.20 | 3.32 |
| 47–48.99 ² centimeters | 2.95 | 0.39 | 2.26 | 2.33 | 2.47 | 2.69 | 2.95 | 3.20 | 3.46 | 3.60 | 3.71 |
| 49–50.99 ² centimeters | 3.30 | 0.37 | 2.64 | 2.72 | 2.84 | 3.06 | 3.29 | 3.54 | 3.77 | 3.91 | 4.03 |
| 51–52.99 ² centimeters | 3.53 | 0.36 | 2.89 | 2.97 | 3.09 | 3.29 | 3.52 | 3.76 | 4.00 | 4.14 | 4.22 |
| 65–66.99 centimeters | 7.59 | 0.70 | 6.45 | 6.45 | 6.70 | 7.10 | 7.60 | 7.90 | 8.60 | 8.80 | 9.35 |
| 67–68.99 centimeters | 8.28 | 0.91 | 6.95 | 7.30 | 7.45 | 7.75 | 8.10 | 8.60 | 9.15 | 9.55 | 10.30 |
| 69–70.99 centimeters | 8.73 | 0.77 | 7.48 | 7.48 | 7.65 | 8.16 | 8.70 | 9.30 | 9.70 | 9.87 | 10.40 |
| 71–72.99 centimeters | 9.25 | 0.76 | 7.80 | 8.05 | 8.28 | 8.70 | 9.20 | 9.75 | 10.20 | 10.55 | 10.75 |
| 73–74.99 centimeters | 9.74 | 0.78 | 8.45 | 8.62 | 8.73 | 9.19 | 9.65 | 10.32 | 10.77 | 11.00 | 11.45 |
| 75–76.99 centimeters | 10.17 | 0.76 | 8.85 | 9.07 | 9.30 | 9.64 | 10.09 | 10.66 | 11.11 | 11.45 | 11.60 |
| 77–78.99 centimeters | 10.59 | 0.86 | 8.96 | 9.19 | 9.45 | 9.98 | 10.55 | 11.34 | 11.60 | 11.91 | 12.20 |
| 79–80.99 centimeters | 11.24 | 1.98 | 9.41 | 9.64 | 9.87 | 10.55 | 11.11 | 11.60 | 12.15 | 12.70 | 13.15 |
| 81–82.99 centimeters | 11.53 | 0.94 | 9.98 | 10.21 | 10.43 | 10.89 | 11.55 | 12.13 | 12.59 | 12.85 | 13.27 |
| 83–84.99 centimeters | 11.88 | 1.12 | 9.75 | 10.30 | 10.55 | 11.11 | 11.79 | 12.60 | 13.38 | 13.83 | 14.40 |
| 85–86.99 centimeters | 12.31 | 1.03 | 10.77 | 10.89 | 11.20 | 11.68 | 12.13 | 12.81 | 13.72 | 14.15 | 14.40 |
| 87–88.99 centimeters | 12.67 | 1.04 | 10.66 | 11.00 | 11.45 | 12.02 | 12.65 | 13.27 | 13.95 | 14.74 | 14.86 |
| 89–90.99 centimeters | 13.19 | 1.22 | 11.25 | 11.45 | 11.95 | 12.40 | 12.93 | 13.83 | 14.63 | 15.90 | 16.67 |
| 91–92.99 centimeters | 13.54 | 1.04 | 11.57 | 11.65 | 12.13 | 12.81 | 13.55 | 14.29 | 14.86 | 15.05 | 15.30 |
| 93–94.99 centimeters | 14.04 | 0.94 | 12.20 | 12.48 | 12.80 | 13.50 | 13.95 | 14.70 | 15.40 | 15.65 | 15.90 |
| 95–96.99 centimeters | 14.59 | 1.16 | 12.70 | 12.75 | 13.10 | 13.80 | 14.52 | 15.42 | 15.99 | 16.33 | 16.80 |
| 97–98.99 centimeters | 15.25 | 1.26 | 13.15 | 13.30 | 13.80 | 14.40 | 15.10 | 15.95 | 17.01 | 17.45 | 17.92 |
| 99–100.99 centimeters | 15.64 | 1.14 | 13.55 | 13.80 | 14.40 | 14.74 | 15.54 | 16.33 | 17.15 | 18.03 | 18.05 |
| 101–102.99 centimeters | 16.20 | 1.14 | 14.45 | 14.45 | 14.90 | 15.20 | 16.10 | 16.90 | 17.80 | 17.90 | 18.26 |
| Girls | | | | | | | | | | | |
| 45–46.99 ¹ centimeters | 2.73 | 0.37 | 2.01 | 2.10 | 2.24 | 2.50 | 2.72 | 2.98 | 3.18 | 3.32 | 3.43 |
| 47–48.99 ¹ centimeters | 3.04 | 0.36 | 2.35 | 2.47 | 2.58 | 2.81 | 3.03 | 3.29 | 3.50 | 3.63 | 3.74 |
| 49–50.99 ¹ centimeters | 3.36 | 0.36 | 2.69 | 2.78 | 2.92 | 3.12 | 3.35 | 3.60 | 3.83 | 3.97 | 4.05 |
| 51–52.99 ¹ centimeters | 3.59 | 0.35 | 2.95 | 3.03 | 3.15 | 3.35 | 3.57 | 3.81 | 4.03 | 4.18 | 4.28 |
| 45–46.99 ² centimeters | 2.58 | 0.39 | 1.90 | 1.99 | 2.10 | 2.32 | 2.58 | 2.84 | 3.09 | 3.23 | 3.34 |
| 47–48.99 ² centimeters | 2.97 | 0.37 | 2.29 | 2.36 | 2.50 | 2.72 | 2.95 | 3.20 | 3.43 | 3.60 | 3.69 |
| 49–50.99 ² centimeters | 3.28 | 0.36 | 2.64 | 2.72 | 2.84 | 3.03 | 3.26 | 3.52 | 3.74 | 3.88 | 3.99 |
| 51–52.99 ² centimeters | 3.50 | 0.35 | 2.86 | 2.95 | 3.06 | 3.26 | 3.49 | 3.71 | 3.94 | 4.08 | 4.20 |
| 65–66.99 centimeters | 7.48 | 0.69 | 6.55 | 6.58 | 6.60 | 7.03 | 7.45 | 7.82 | 8.55 | 8.75 | 8.95 |
| 67–68.99 centimeters | 8.34 | 1.18 | 7.03 | 7.14 | 7.26 | 7.75 | 8.25 | 8.65 | 9.10 | 9.53 | 10.65 |
| 69–70.99 centimeters | 8.61 | 0.91 | 7.14 | 7.35 | 7.65 | 8.05 | 8.40 | 9.15 | 9.75 | 10.30 | 10.50 |
| 71–72.99 centimeters | 8.87 | 0.74 | 7.71 | 7.75 | 7.94 | 8.35 | 8.75 | 9.41 | 9.90 | 10.30 | 10.32 |
| 73–74.99 centimeters | 9.50 | 0.79 | 8.16 | 8.35 | 8.62 | 9.07 | 9.40 | 9.95 | 10.43 | 10.75 | 11.00 |
| 75–76.99 centimeters | 9.77 | 0.73 | 8.73 | 8.73 | 8.85 | 9.30 | 9.65 | 10.25 | 10.66 | 10.95 | 11.20 |
| 77–78.99 centimeters | 10.21 | 0.86 | 8.73 | 8.85 | 8.96 | 9.64 | 10.10 | 10.77 | 11.40 | 11.79 | 11.91 |
| 79–80.99 centimeters | 10.54 | 0.85 | 9.07 | 9.30 | 9.53 | 9.90 | 10.55 | 11.11 | 11.68 | 11.90 | 12.20 |
| 81–82.99 centimeters | 11.08 | 1.00 | 9.64 | 9.75 | 9.85 | 10.35 | 11.00 | 11.57 | 12.30 | 12.81 | 13.15 |
| 83–84.99 centimeters | 11.49 | 0.98 | 9.95 | 10.09 | 10.20 | 10.80 | 11.45 | 12.13 | 12.80 | 13.38 | 13.50 |
| 85–86.99 centimeters | 11.92 | 0.96 | 10.21 | 10.43 | 10.77 | 11.25 | 11.91 | 12.47 | 13.20 | 13.72 | 13.83 |
| 87–88.99 centimeters | 12.38 | 1.02 | 10.77 | 10.89 | 11.23 | 11.68 | 12.36 | 12.95 | 13.49 | 14.06 | 15.00 |
| 89–90.99 centimeters | 12.90 | 1.10 | 11.20 | 11.45 | 11.68 | 12.15 | 12.73 | 13.40 | 14.55 | 15.08 | 15.25 |
| 91–92.99 centimeters | 13.31 | 1.12 | 11.30 | 11.57 | 11.95 | 12.59 | 13.40 | 13.95 | 14.74 | 15.10 | 15.65 |
| 93–94.99 centimeters | 13.83 | 1.15 | 11.79 | 11.91 | 12.47 | 13.05 | 13.72 | 14.65 | 15.40 | 15.54 | 15.76 |
| 95–96.99 centimeters | 14.24 | 1.14 | 12.40 | 12.59 | 12.81 | 13.50 | 14.17 | 14.86 | 15.70 | 16.30 | 16.50 |
| 97–98.99 centimeters | 15.13 | 1.30 | 13.25 | 13.45 | 13.72 | 14.17 | 14.95 | 15.88 | 16.56 | 17.35 | 17.55 |
| 99–100.99 centimeters | 15.87 | 2.01 | 13.40 | 13.40 | 14.15 | 14.65 | 15.50 | 16.44 | 17.71 | 19.05 | 22.85 |
| 101–102.99 centimeters | 16.24 | 1.49 | 13.60 | 13.85 | 14.63 | 15.25 | 16.10 | 16.95 | 17.92 | 19.05 | 19.63 |

¹State of Missouri Vital Statistics birth length data.
²State of Wisconsin Vital Statistics birth length data.

Table 12. Observed mean, standard deviation, and selected percentiles for head circumference (in centimeters) by sex and age: Birth to 36 months

| Sex and age | Mean | Standard deviation | Percentile | | | | | | | | | |
|------------------------------|-------|--------------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| | | | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th | |
| Boys | | | | | | | | | | | | |
| Birth ¹ | 35.68 | 2.32 | 31.75 | 32.00 | 33.00 | 34.29 | 35.56 | 37.07 | 38.50 | 39.00 | 39.30 | |
| 0–0.99 months | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |
| 1–1.99 months | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |
| 2–2.99 months | 40.70 | 1.42 | 36.40 | 38.60 | 39.20 | 40.20 | 40.90 | 41.40 | 42.40 | 42.80 | 42.90 | |
| 3–3.99 months | 41.72 | 1.15 | 38.90 | 39.70 | 40.20 | 41.10 | 41.70 | 42.60 | 43.10 | 43.10 | 43.30 | |
| 4–4.99 months | 42.13 | 1.12 | 39.90 | 40.00 | 40.80 | 41.50 | 42.10 | 42.80 | 43.80 | 44.00 | 44.30 | |
| 5–5.99 months | 43.37 | 1.58 | 40.20 | 40.80 | 41.80 | 42.30 | 43.40 | 44.50 | 45.20 | 46.00 | 46.40 | |
| 6–6.99 months | 44.23 | 1.39 | 42.20 | 42.40 | 42.60 | 43.20 | 44.00 | 44.90 | 46.10 | 46.80 | 47.20 | |
| 7–7.99 months | 44.54 | 1.44 | 42.00 | 42.20 | 42.80 | 43.60 | 44.40 | 45.60 | 46.30 | 46.70 | 47.60 | |
| 8–8.99 months | 45.36 | 1.44 | 42.60 | 42.70 | 43.20 | 44.50 | 45.30 | 46.20 | 47.40 | 47.70 | 48.10 | |
| 9–9.99 months | 45.39 | 1.20 | 43.20 | 43.60 | 43.70 | 44.70 | 45.40 | 46.20 | 46.80 | 47.40 | 47.70 | |
| 10–10.99 months | 45.61 | 1.33 | 43.20 | 43.70 | 43.70 | 44.70 | 45.70 | 46.40 | 47.30 | 47.60 | 48.20 | |
| 11–11.99 months | 46.29 | 1.46 | 44.10 | 44.30 | 44.80 | 45.20 | 46.30 | 47.20 | 48.00 | 48.40 | 48.80 | |
| 12–14.99 months | 46.99 | 1.50 | 44.40 | 44.70 | 45.30 | 46.20 | 47.00 | 47.80 | 48.60 | 49.40 | 49.90 | |
| 15–17.99 months | 47.60 | 1.36 | 45.00 | 45.70 | 46.10 | 46.70 | 47.50 | 48.50 | 49.10 | 49.90 | 50.20 | |
| 18–20.99 months | 47.99 | 1.37 | 45.20 | 45.50 | 46.20 | 47.20 | 48.00 | 48.90 | 49.70 | 50.10 | 50.40 | |
| 21–23.99 months | 48.42 | 1.71 | 46.00 | 46.30 | 46.70 | 47.60 | 48.30 | 49.50 | 50.10 | 50.50 | 51.30 | |
| 24–29.99 months | 48.95 | 1.49 | 46.10 | 46.40 | 47.00 | 48.10 | 49.00 | 49.90 | 50.70 | 51.20 | 51.60 | |
| 30–35.99 months | 49.45 | 1.68 | 46.20 | 47.00 | 47.50 | 48.50 | 49.50 | 50.40 | 51.20 | 52.00 | 52.20 | |
| Girls | | | | | | | | | | | | |
| Birth ¹ | 35.01 | 1.76 | 31.80 | 32.00 | 33.00 | 33.80 | 35.00 | 36.40 | 37.20 | 38.00 | 38.50 | |
| 0–0.99 months | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |
| 1–1.99 months | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |
| 2–2.99 months | 38.73 | 1.19 | 36.90 | 37.10 | 37.10 | 37.80 | 38.60 | 39.70 | 40.30 | 41.20 | 41.20 | |
| 3–3.99 months | 40.53 | 1.16 | 38.70 | 39.00 | 39.30 | 39.80 | 40.30 | 41.20 | 42.00 | 42.60 | 43.20 | |
| 4–4.99 months | 41.44 | 1.65 | 38.90 | 39.20 | 39.60 | 40.40 | 41.50 | 42.40 | 43.00 | 43.40 | 44.70 | |
| 5–5.99 months | 42.08 | 1.14 | 39.90 | 40.20 | 40.70 | 41.40 | 42.00 | 42.60 | 44.00 | 44.40 | 44.40 | |
| 6–6.99 months | 42.81 | 1.29 | 40.70 | 40.80 | 41.20 | 41.80 | 42.60 | 43.90 | 44.80 | 45.00 | 45.50 | |
| 7–7.99 months | 43.06 | 1.53 | 39.90 | 40.30 | 41.30 | 42.40 | 43.20 | 44.00 | 44.70 | 45.20 | 45.70 | |
| 8–8.99 months | 44.12 | 1.54 | 41.60 | 42.20 | 42.70 | 43.20 | 44.00 | 45.10 | 45.60 | 46.40 | 47.20 | |
| 9–9.99 months | 44.33 | 1.13 | 42.20 | 42.60 | 42.80 | 43.70 | 44.30 | 45.00 | 46.00 | 46.20 | 46.40 | |
| 10–10.99 months | 44.58 | 1.24 | 42.00 | 42.40 | 43.00 | 44.00 | 44.50 | 45.40 | 46.30 | 46.70 | 47.00 | |
| 11–11.99 months | 45.14 | 1.24 | 42.50 | 43.20 | 43.50 | 44.20 | 45.30 | 46.00 | 46.50 | 47.20 | 47.60 | |
| 12–14.99 months | 45.52 | 1.40 | 43.10 | 43.50 | 43.80 | 44.60 | 45.60 | 46.30 | 47.00 | 48.00 | 48.10 | |
| 15–17.99 months | 45.96 | 1.47 | 43.50 | 43.80 | 44.50 | 45.20 | 46.00 | 46.90 | 47.70 | 48.10 | 48.50 | |
| 18–20.99 months | 46.59 | 1.54 | 43.40 | 44.00 | 44.80 | 45.60 | 46.50 | 47.60 | 48.60 | 49.20 | 49.60 | |
| 21–23.99 months | 47.41 | 1.69 | 45.00 | 45.40 | 45.70 | 46.40 | 47.50 | 48.20 | 49.00 | 49.60 | 49.60 | |
| 24–29.99 months | 47.70 | 1.51 | 44.70 | 45.00 | 46.00 | 46.80 | 47.80 | 48.60 | 49.40 | 49.90 | 50.20 | |
| 30–35.99 months | 48.46 | 1.63 | 45.90 | 46.20 | 46.50 | 47.50 | 48.40 | 49.30 | 50.20 | 50.80 | 51.40 | |

--- Data not available.

¹Fels Research Institute data.

Table 13. Observed mean, standard deviation, and selected percentiles for weight (in kilograms) by sex and stature: 77 to 121 cm

| Sex and stature interval | Mean | Standard deviation | Percentile | | | | | | | | | |
|----------------------------------|-------|--------------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th | |
| Boys | | | | | | | | | | | | |
| 77–78.99 centimeters | 9.87 | 0.00 | 9.87 | 9.87 | 9.87 | 9.87 | 9.87 | 9.87 | 9.87 | 9.87 | 9.87 | 9.87 |
| 79–80.99 centimeters | 10.45 | 0.86 | 9.41 | 9.41 | 9.41 | 9.45 | 10.55 | 11.11 | 11.70 | 11.70 | 11.70 | 11.70 |
| 81–82.99 centimeters | 10.91 | 0.90 | 9.30 | 9.30 | 9.64 | 10.32 | 11.00 | 11.34 | 11.68 | 12.65 | 12.65 | 12.65 |
| 83–84.99 centimeters | 11.77 | 1.25 | 10.05 | 10.32 | 10.66 | 10.89 | 11.57 | 12.40 | 13.20 | 15.08 | 15.08 | 15.08 |
| 85–86.99 centimeters | 12.19 | 0.90 | 10.89 | 11.00 | 11.11 | 11.57 | 12.13 | 12.81 | 13.61 | 13.72 | 14.05 | 14.05 |
| 87–88.99 centimeters | 12.65 | 0.91 | 11.20 | 11.23 | 11.55 | 12.02 | 12.50 | 13.15 | 13.75 | 14.06 | 14.74 | 14.74 |
| 89–90.99 centimeters | 13.11 | 1.00 | 11.34 | 11.57 | 11.91 | 12.45 | 13.04 | 13.72 | 14.51 | 14.63 | 14.97 | 14.97 |
| 91–92.99 centimeters | 13.78 | 1.02 | 11.91 | 12.13 | 12.48 | 13.00 | 13.72 | 14.63 | 15.05 | 15.42 | 15.54 | 15.54 |
| 93–94.99 centimeters | 14.24 | 1.13 | 12.15 | 12.59 | 12.93 | 13.60 | 14.17 | 14.95 | 15.55 | 16.22 | 16.33 | 16.33 |
| 95–96.99 centimeters | 14.78 | 1.14 | 12.81 | 13.15 | 13.49 | 13.95 | 14.63 | 15.54 | 16.10 | 16.78 | 17.10 | 17.10 |
| 97–98.99 centimeters | 15.35 | 1.41 | 13.27 | 13.55 | 13.75 | 14.63 | 15.08 | 16.00 | 17.12 | 17.90 | 18.26 | 18.26 |
| 99–100.99 centimeters | 15.70 | 1.20 | 13.49 | 13.80 | 14.29 | 14.97 | 15.60 | 16.33 | 17.24 | 17.92 | 18.14 | 18.14 |
| 101–102.99 centimeters | 16.47 | 1.33 | 14.17 | 14.40 | 14.95 | 15.54 | 16.44 | 17.25 | 18.00 | 18.65 | 18.95 | 18.95 |
| 103–104.99 centimeters | 17.02 | 1.25 | 15.00 | 15.31 | 15.60 | 16.20 | 17.01 | 17.70 | 18.55 | 19.28 | 19.62 | 19.62 |
| 105–106.99 centimeters | 17.59 | 1.58 | 15.31 | 15.54 | 15.88 | 16.56 | 17.46 | 18.35 | 19.28 | 19.73 | 20.64 | 20.64 |
| 107–108.99 centimeters | 18.45 | 1.80 | 15.88 | 16.15 | 16.67 | 17.24 | 18.14 | 19.05 | 20.64 | 22.11 | 22.85 | 22.85 |
| 109–110.99 centimeters | 18.70 | 1.83 | 16.10 | 16.33 | 16.90 | 17.46 | 18.60 | 19.62 | 20.64 | 21.32 | 22.23 | 22.23 |
| 111–112.99 centimeters | 20.13 | 2.81 | 16.85 | 17.01 | 17.75 | 18.60 | 19.55 | 20.98 | 22.68 | 24.90 | 27.90 | 27.90 |
| 113–114.99 centimeters | 20.53 | 2.12 | 17.46 | 17.95 | 18.71 | 19.39 | 20.30 | 21.32 | 22.34 | 23.70 | 25.95 | 25.95 |
| 115–116.99 centimeters | 21.07 | 2.35 | 18.14 | 18.26 | 18.82 | 19.96 | 20.65 | 21.77 | 22.91 | 24.35 | 24.80 | 24.80 |
| 117–118.99 centimeters | 21.51 | 2.09 | 18.03 | 18.14 | 19.28 | 20.30 | 21.32 | 22.34 | 24.04 | 25.63 | 26.20 | 26.20 |
| 119–120.99 centimeters | 22.62 | 2.67 | 19.16 | 19.84 | 20.29 | 20.87 | 22.23 | 23.81 | 24.95 | 27.67 | 28.46 | 28.46 |
| Girls | | | | | | | | | | | | |
| 77–78.99 centimeters | 11.00 | 0.96 | 8.20 | 8.20 | 10.75 | 10.75 | 10.75 | 11.79 | 11.79 | 11.79 | 11.79 | 11.79 |
| 79–80.99 centimeters | 10.15 | 0.59 | 9.53 | 9.53 | 9.53 | 9.75 | 10.09 | 10.50 | 11.00 | 11.00 | 11.00 | 11.00 |
| 81–82.99 centimeters | 11.32 | 1.50 | 9.95 | 10.09 | 10.10 | 10.55 | 10.90 | 11.75 | 12.70 | 12.81 | 15.35 | 15.35 |
| 83–84.99 centimeters | 11.55 | 1.01 | 9.75 | 9.75 | 10.32 | 10.90 | 11.45 | 12.20 | 12.59 | 13.25 | 13.85 | 13.85 |
| 85–86.99 centimeters | 11.92 | 0.86 | 10.40 | 10.55 | 10.77 | 11.25 | 12.02 | 12.59 | 13.04 | 13.20 | 13.61 | 13.61 |
| 87–88.99 centimeters | 12.37 | 1.02 | 10.60 | 10.80 | 11.23 | 11.68 | 12.36 | 12.93 | 13.61 | 13.85 | 14.63 | 14.63 |
| 89–90.99 centimeters | 13.00 | 1.13 | 11.34 | 11.57 | 11.79 | 12.20 | 12.81 | 13.61 | 14.63 | 15.08 | 15.10 | 15.10 |
| 91–92.99 centimeters | 13.47 | 1.14 | 11.65 | 11.90 | 12.25 | 12.81 | 13.38 | 13.95 | 14.80 | 15.54 | 16.10 | 16.10 |
| 93–94.99 centimeters | 13.99 | 1.12 | 12.02 | 12.40 | 12.70 | 13.27 | 13.83 | 14.66 | 15.40 | 15.76 | 16.40 | 16.40 |
| 95–96.99 centimeters | 14.67 | 1.41 | 12.47 | 12.70 | 13.15 | 13.83 | 14.45 | 15.31 | 16.30 | 17.15 | 17.35 | 17.35 |
| 97–98.99 centimeters | 14.94 | 1.37 | 12.93 | 13.04 | 13.40 | 14.00 | 14.86 | 15.76 | 16.56 | 17.12 | 17.46 | 17.46 |
| 99–100.99 centimeters | 15.78 | 1.68 | 13.38 | 13.55 | 14.06 | 14.70 | 15.55 | 16.55 | 17.58 | 18.48 | 19.30 | 19.30 |
| 101–102.99 centimeters | 16.27 | 1.76 | 13.95 | 14.06 | 14.40 | 15.10 | 16.05 | 17.01 | 18.26 | 19.10 | 19.80 | 19.80 |
| 103–104.99 centimeters | 16.92 | 2.11 | 14.29 | 14.55 | 15.05 | 15.76 | 16.67 | 17.69 | 18.82 | 19.39 | 20.50 | 20.50 |
| 105–106.99 centimeters | 17.41 | 1.74 | 15.10 | 15.50 | 15.76 | 16.33 | 17.12 | 18.25 | 19.39 | 20.65 | 20.87 | 20.87 |
| 107–108.99 centimeters | 18.17 | 1.71 | 15.31 | 15.54 | 16.33 | 17.12 | 18.15 | 19.05 | 20.07 | 20.35 | 21.43 | 21.43 |
| 109–110.99 centimeters | 18.58 | 1.86 | 16.10 | 16.33 | 16.78 | 17.35 | 18.26 | 19.70 | 20.75 | 21.60 | 22.45 | 22.45 |
| 111–112.99 centimeters | 19.60 | 3.02 | 16.33 | 16.44 | 17.12 | 17.80 | 19.30 | 20.30 | 21.89 | 23.10 | 25.05 | 25.05 |
| 113–114.99 centimeters | 20.36 | 2.54 | 17.01 | 17.01 | 17.69 | 18.71 | 19.84 | 21.43 | 24.15 | 25.80 | 25.86 | 25.86 |
| 115–116.99 centimeters | 21.42 | 3.23 | 17.69 | 18.03 | 18.37 | 19.28 | 20.53 | 22.45 | 27.10 | 28.30 | 29.25 | 29.25 |
| 117–118.99 centimeters | 21.50 | 2.04 | 18.60 | 19.05 | 19.28 | 19.84 | 21.32 | 22.68 | 24.15 | 24.83 | 26.76 | 26.76 |
| 119–120.99 centimeters | 22.65 | 2.84 | 19.39 | 19.62 | 19.96 | 20.75 | 21.77 | 23.81 | 26.88 | 28.10 | 28.58 | 28.58 |

Table 14. Observed mean, standard deviation, and selected percentiles for weight (in kilograms) by sex and age: 2 to 20 years

| Sex and age | Mean | Standard deviation | Percentile | | | | | | | | |
|------------------|-------|--------------------|------------|-------|-------|-------|-------|-------|-------|--------|--------|
| | | | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys | | | | | | | | | | | |
| 2–2.49 years | 13.13 | 1.65 | 10.55 | 10.89 | 11.33 | 12.05 | 12.93 | 14.06 | 15.08 | 15.77 | 16.67 |
| 2.5–2.99 years | 13.95 | 1.53 | 11.23 | 11.57 | 12.02 | 13.00 | 13.83 | 14.74 | 15.95 | 16.56 | 17.30 |
| 3.0–3.49 years | 15.08 | 1.76 | 12.05 | 12.47 | 12.93 | 13.83 | 14.95 | 16.15 | 17.35 | 18.00 | 18.45 |
| 3.5–3.99 years | 16.20 | 2.48 | 13.04 | 13.38 | 13.95 | 14.95 | 15.80 | 17.10 | 18.26 | 19.39 | 20.07 |
| 4.0–4.49 years | 17.20 | 2.28 | 13.49 | 13.75 | 14.70 | 15.75 | 17.01 | 18.40 | 19.70 | 21.00 | 22.23 |
| 4.5–4.99 years | 18.11 | 2.41 | 14.06 | 14.52 | 15.35 | 16.56 | 17.92 | 19.39 | 20.98 | 22.20 | 23.02 |
| 5.0–5.49 years | 19.49 | 2.96 | 15.31 | 15.76 | 16.22 | 17.58 | 19.16 | 20.90 | 22.34 | 24.10 | 25.86 |
| 5.5–5.99 years | 20.47 | 3.05 | 15.90 | 16.44 | 17.12 | 18.37 | 20.25 | 22.05 | 24.04 | 25.85 | 27.10 |
| 6.0–6.49 years | 21.56 | 3.24 | 16.67 | 17.24 | 17.69 | 19.61 | 21.32 | 22.91 | 25.51 | 28.12 | 28.92 |
| 6.5–6.99 years | 22.92 | 3.77 | 17.24 | 18.14 | 19.05 | 20.42 | 22.11 | 24.38 | 27.67 | 30.05 | 31.52 |
| 7.0–7.49 years | 24.07 | 3.83 | 18.26 | 18.82 | 19.73 | 21.32 | 23.81 | 26.08 | 28.35 | 30.50 | 32.89 |
| 7.5–7.99 years | 25.58 | 3.94 | 19.05 | 19.96 | 21.21 | 22.91 | 25.29 | 27.44 | 30.73 | 33.91 | 34.47 |
| 8.0–8.49 years | 26.43 | 4.52 | 19.05 | 20.41 | 22.00 | 23.59 | 25.63 | 28.58 | 31.52 | 35.27 | 36.51 |
| 8.5–8.99 years | 28.46 | 5.48 | 21.55 | 22.68 | 23.59 | 25.17 | 27.67 | 30.50 | 34.02 | 37.19 | 39.80 |
| 9.0–9.49 years | 30.55 | 6.50 | 21.89 | 22.91 | 23.81 | 26.08 | 29.37 | 33.11 | 39.01 | 42.18 | 44.45 |
| 9.5–9.99 years | 31.86 | 7.07 | 23.02 | 24.15 | 25.40 | 27.33 | 30.73 | 34.25 | 40.37 | 43.55 | 47.40 |
| 10.0–10.49 years | 33.47 | 6.39 | 24.38 | 25.29 | 26.42 | 29.14 | 32.55 | 36.63 | 41.05 | 45.13 | 50.69 |
| 10.5–10.99 years | 36.06 | 7.71 | 26.54 | 27.56 | 28.24 | 30.73 | 34.47 | 39.24 | 45.59 | 53.41 | 55.34 |
| 11.0–11.49 years | 37.61 | 7.61 | 26.76 | 28.01 | 29.03 | 32.77 | 36.29 | 40.94 | 48.76 | 52.05 | 52.84 |
| 11.5–11.99 years | 40.39 | 10.31 | 28.35 | 28.69 | 31.07 | 34.02 | 37.65 | 44.68 | 54.32 | 61.01 | 64.68 |
| 12.0–12.49 years | 42.07 | 9.33 | 29.03 | 30.50 | 31.75 | 35.83 | 40.14 | 46.83 | 54.21 | 59.65 | 63.16 |
| 12.5–12.99 years | 44.89 | 9.90 | 30.39 | 31.98 | 33.68 | 38.10 | 43.32 | 49.22 | 57.15 | 64.07 | 67.59 |
| 13.0–13.49 years | 47.94 | 10.68 | 33.79 | 34.02 | 36.40 | 39.92 | 46.38 | 54.20 | 62.03 | 68.95 | 73.60 |
| 13.5–13.99 years | 51.69 | 12.13 | 34.93 | 36.06 | 37.54 | 44.11 | 49.89 | 58.51 | 66.34 | 71.10 | 74.84 |
| 14.0–14.49 years | 54.97 | 11.13 | 37.87 | 39.01 | 42.64 | 47.63 | 53.52 | 61.92 | 68.04 | 72.69 | 76.88 |
| 14.5–14.99 years | 57.90 | 11.68 | 40.37 | 41.62 | 44.45 | 50.58 | 56.81 | 63.05 | 72.80 | 78.59 | 86.07 |
| 15.0–15.49 years | 59.48 | 11.55 | 42.18 | 43.54 | 47.85 | 51.94 | 57.72 | 64.98 | 71.89 | 77.34 | 80.17 |
| 15.5–15.99 years | 62.65 | 11.58 | 43.54 | 46.72 | 50.35 | 56.02 | 61.35 | 67.93 | 75.75 | 85.73 | 90.38 |
| 16.0–16.49 years | 64.63 | 11.94 | 47.85 | 50.46 | 53.07 | 55.91 | 62.71 | 69.17 | 78.47 | 89.58 | 94.24 |
| 16.5–16.99 years | 67.83 | 12.06 | 50.35 | 51.03 | 55.00 | 59.42 | 66.11 | 74.96 | 82.21 | 88.68 | 91.06 |
| 17.0–17.49 years | 67.64 | 12.23 | 49.44 | 50.92 | 53.75 | 60.10 | 65.66 | 72.80 | 83.80 | 92.31 | 96.05 |
| 17.5–17.99 years | 67.87 | 11.18 | 50.46 | 52.16 | 55.11 | 60.56 | 66.22 | 73.82 | 81.42 | 90.38 | 93.33 |
| 18.0–18.49 years | 73.09 | 14.72 | 54.09 | 55.34 | 57.83 | 62.71 | 71.21 | 78.25 | 89.13 | 102.85 | 106.37 |
| 18.5–18.99 years | 71.43 | 12.25 | 52.84 | 53.75 | 57.04 | 63.16 | 69.85 | 77.34 | 89.02 | 93.78 | 96.50 |
| 19.0–19.49 years | 72.24 | 11.37 | 55.11 | 55.91 | 59.42 | 64.41 | 70.76 | 77.79 | 86.98 | 92.19 | 95.82 |
| 19.5–19.99 years | 72.21 | 12.26 | 54.88 | 55.68 | 57.38 | 64.07 | 70.31 | 78.02 | 87.66 | 99.22 | 102.85 |
| Girls | | | | | | | | | | | |
| 2–2.49 years | 12.47 | 1.54 | 9.95 | 10.21 | 10.77 | 11.45 | 12.36 | 13.30 | 14.51 | 15.08 | 15.42 |
| 2.5–2.99 years | 13.59 | 1.70 | 11.00 | 11.23 | 11.79 | 12.47 | 13.38 | 14.52 | 15.65 | 16.44 | 17.10 |
| 3.0–3.49 years | 14.65 | 2.02 | 11.45 | 11.75 | 12.35 | 13.38 | 14.40 | 15.73 | 17.12 | 18.03 | 18.94 |
| 3.5–3.99 years | 15.57 | 2.09 | 12.40 | 12.59 | 13.27 | 14.17 | 15.31 | 16.75 | 17.92 | 18.95 | 19.63 |
| 4.0–4.49 years | 16.79 | 2.53 | 13.49 | 13.72 | 14.15 | 15.08 | 16.44 | 18.25 | 19.73 | 20.87 | 21.62 |
| 4.5–4.99 years | 17.63 | 3.21 | 13.49 | 13.95 | 14.63 | 15.76 | 17.24 | 18.80 | 20.65 | 21.89 | 24.45 |
| 5.0–5.49 years | 18.97 | 3.13 | 14.40 | 14.60 | 15.65 | 16.90 | 18.48 | 20.30 | 22.68 | 25.65 | 26.65 |
| 5.5–5.99 years | 20.53 | 3.80 | 15.65 | 16.10 | 16.85 | 17.90 | 19.80 | 22.11 | 25.25 | 28.10 | 28.92 |
| 6.0–6.49 years | 21.11 | 3.39 | 15.99 | 16.56 | 17.35 | 18.82 | 20.64 | 23.02 | 25.40 | 26.99 | 27.67 |
| 6.5–6.99 years | 22.16 | 3.84 | 16.67 | 17.12 | 17.92 | 19.62 | 21.55 | 23.81 | 27.67 | 29.48 | 30.84 |
| 7.0–7.49 years | 23.58 | 3.95 | 18.14 | 18.60 | 19.28 | 20.87 | 22.91 | 25.51 | 27.90 | 30.84 | 33.11 |
| 7.5–7.99 years | 25.04 | 4.67 | 18.94 | 19.28 | 20.18 | 21.89 | 24.27 | 26.99 | 30.39 | 32.66 | 35.15 |
| 8.0–8.49 years | 26.64 | 4.69 | 19.73 | 20.64 | 21.32 | 23.13 | 25.85 | 29.48 | 33.34 | 34.93 | 37.08 |
| 8.5–8.99 years | 28.59 | 6.13 | 21.09 | 21.77 | 22.57 | 24.38 | 27.67 | 30.73 | 36.51 | 41.05 | 42.41 |
| 9.0–9.49 years | 30.59 | 6.21 | 22.57 | 22.79 | 23.93 | 26.31 | 29.26 | 33.23 | 39.58 | 43.21 | 45.13 |
| 9.5–9.99 years | 32.74 | 7.87 | 22.79 | 23.81 | 25.40 | 27.56 | 30.84 | 35.38 | 44.45 | 47.85 | 50.35 |
| 10.0–10.49 years | 34.02 | 7.51 | 24.04 | 25.06 | 25.85 | 28.12 | 32.89 | 37.65 | 44.68 | 47.97 | 49.67 |
| 10.5–10.99 years | 35.72 | 7.57 | 25.40 | 26.31 | 27.90 | 30.62 | 34.25 | 39.01 | 45.81 | 49.33 | 53.30 |
| 11.0–11.49 years | 39.28 | 8.79 | 26.31 | 28.12 | 29.82 | 32.89 | 38.10 | 44.00 | 51.03 | 56.59 | 59.08 |
| 11.5–11.99 years | 42.37 | 10.69 | 29.03 | 29.48 | 30.62 | 34.93 | 39.92 | 47.40 | 57.15 | 63.50 | 66.34 |
| 12.0–12.49 years | 44.89 | 9.85 | 29.71 | 30.62 | 33.34 | 38.10 | 43.54 | 50.12 | 57.61 | 62.60 | 69.29 |
| 12.5–12.99 years | 47.88 | 10.21 | 32.20 | 33.45 | 36.29 | 40.60 | 46.49 | 53.75 | 61.23 | 66.00 | 70.08 |
| 13.0–13.49 years | 50.49 | 11.46 | 34.70 | 35.95 | 38.90 | 42.41 | 48.53 | 56.02 | 65.54 | 75.18 | 79.15 |
| 13.5–13.99 years | 51.64 | 11.17 | 36.17 | 36.97 | 39.01 | 44.57 | 50.12 | 56.36 | 66.22 | 72.12 | 78.70 |
| 14.0–14.49 years | 53.78 | 11.19 | 37.42 | 39.01 | 41.73 | 46.27 | 51.94 | 59.99 | 67.36 | 75.30 | 83.69 |
| 14.5–14.99 years | 55.10 | 10.92 | 40.26 | 40.94 | 43.32 | 47.51 | 52.96 | 59.99 | 69.51 | 75.07 | 78.92 |

Table 14. Observed mean, standard deviation, and selected percentiles for weight (in kilograms) by sex and age: 2 to 20 years—Con.

| Sex and age | Mean | Standard deviation | Percentile | | | | | | | | |
|----------------------------|-------|--------------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | |
| 15.0–15.49 years | 55.22 | 11.20 | 40.82 | 42.52 | 44.11 | 47.74 | 52.84 | 59.65 | 70.65 | 77.11 | 81.99 |
| 15.5–15.99 years | 56.96 | 10.57 | 42.86 | 44.45 | 46.27 | 49.56 | 56.25 | 60.89 | 66.79 | 76.54 | 82.78 |
| 16.0–16.49 years | 57.36 | 10.94 | 43.32 | 43.89 | 45.81 | 50.12 | 54.89 | 62.48 | 72.35 | 79.38 | 86.52 |
| 16.5–16.99 years | 57.70 | 11.44 | 43.20 | 44.11 | 45.59 | 50.69 | 55.45 | 61.80 | 71.21 | 78.70 | 88.22 |
| 17.0–17.49 years | 58.23 | 12.90 | 42.41 | 43.32 | 46.04 | 51.14 | 56.02 | 62.14 | 71.21 | 81.76 | 85.73 |
| 17.5–17.99 years | 59.81 | 11.40 | 43.77 | 45.25 | 49.33 | 52.84 | 57.61 | 63.62 | 72.69 | 84.71 | 91.29 |
| 18.0–18.49 years | 59.04 | 11.76 | 44.68 | 44.91 | 46.72 | 51.94 | 57.04 | 62.26 | 72.58 | 83.69 | 96.39 |
| 18.5–18.99 years | 58.17 | 9.36 | 42.64 | 44.00 | 47.74 | 52.73 | 56.47 | 63.16 | 69.74 | 78.02 | 79.49 |
| 19.0–19.49 years | 58.52 | 11.44 | 42.87 | 46.04 | 48.76 | 52.05 | 56.13 | 62.82 | 70.19 | 78.13 | 84.71 |
| 19.5–19.99 years | 61.20 | 11.98 | 48.99 | 49.21 | 50.80 | 54.20 | 57.95 | 64.86 | 77.00 | 80.85 | 88.68 |

Table 15. Observed mean, standard deviation, and selected percentiles for stature (in centimeters) by sex and age: 2 to 20 years

| Sex and age | Mean | Standard deviation | Percentile | | | | | | | | |
|------------------|--------|--------------------|------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys | | | | | | | | | | | |
| 2–2.49 years | 89.10 | 3.66 | 82.50 | 83.60 | 85.00 | 86.70 | 88.90 | 91.20 | 93.80 | 95.50 | 97.40 |
| 2.5–2.99 years | 92.78 | 3.60 | 85.80 | 86.60 | 88.50 | 90.40 | 92.70 | 95.20 | 97.20 | 98.40 | 100.00 |
| 3.0–3.49 years | 96.82 | 4.03 | 89.20 | 90.50 | 92.00 | 94.20 | 96.70 | 99.60 | 101.80 | 103.30 | 104.80 |
| 3.5–3.99 years | 100.45 | 4.05 | 92.90 | 94.20 | 95.40 | 97.50 | 100.60 | 103.00 | 105.30 | 107.20 | 107.80 |
| 4.0–4.49 years | 104.00 | 4.43 | 96.00 | 96.90 | 98.80 | 101.30 | 104.20 | 106.80 | 109.20 | 111.80 | 112.60 |
| 4.5–4.99 years | 107.14 | 4.63 | 98.20 | 99.50 | 100.80 | 104.00 | 107.00 | 110.30 | 113.30 | 115.00 | 115.80 |
| 5.0–5.49 years | 110.94 | 4.92 | 102.00 | 103.10 | 105.00 | 107.60 | 111.10 | 114.00 | 117.10 | 118.80 | 120.50 |
| 5.5–5.99 years | 113.89 | 4.92 | 104.50 | 106.30 | 108.00 | 110.40 | 114.00 | 117.40 | 120.20 | 122.00 | 122.20 |
| 6.0–6.49 years | 117.21 | 5.45 | 107.80 | 108.50 | 110.00 | 113.30 | 117.20 | 121.00 | 123.70 | 126.10 | 127.30 |
| 6.5–6.99 years | 120.19 | 5.49 | 109.10 | 110.90 | 113.20 | 116.50 | 119.90 | 124.00 | 127.50 | 129.10 | 129.50 |
| 7.0–7.49 years | 123.47 | 5.62 | 113.10 | 114.40 | 116.80 | 119.90 | 123.10 | 126.70 | 131.00 | 132.80 | 134.70 |
| 7.5–7.99 years | 126.61 | 5.90 | 115.60 | 117.30 | 120.20 | 123.20 | 126.80 | 130.20 | 133.90 | 136.30 | 138.00 |
| 8.0–8.49 years | 128.62 | 5.76 | 118.20 | 119.50 | 121.80 | 124.90 | 128.70 | 132.60 | 135.70 | 137.20 | 138.60 |
| 8.5–8.99 years | 131.58 | 5.93 | 122.10 | 123.20 | 124.60 | 127.00 | 131.60 | 135.20 | 139.70 | 142.10 | 142.90 |
| 9.0–9.49 years | 134.71 | 6.22 | 121.80 | 124.10 | 126.90 | 130.70 | 135.00 | 138.40 | 142.00 | 145.80 | 147.00 |
| 9.5–9.99 years | 136.91 | 6.51 | 125.20 | 127.10 | 129.40 | 132.60 | 136.80 | 141.00 | 145.20 | 148.00 | 149.10 |
| 10.0–10.49 years | 139.59 | 7.67 | 126.30 | 127.90 | 130.60 | 135.60 | 140.10 | 144.50 | 147.80 | 151.90 | 152.70 |
| 10.5–10.99 years | 142.32 | 6.61 | 130.50 | 132.30 | 133.80 | 137.50 | 142.30 | 147.00 | 150.30 | 153.30 | 154.40 |
| 11.0–11.49 years | 144.65 | 6.87 | 132.00 | 133.70 | 135.80 | 140.20 | 144.50 | 149.40 | 153.00 | 155.20 | 156.70 |
| 11.5–11.99 years | 147.90 | 7.31 | 135.90 | 137.20 | 139.50 | 143.80 | 147.20 | 152.30 | 157.20 | 160.00 | 161.60 |
| 12.0–12.49 years | 151.43 | 8.05 | 137.80 | 138.50 | 141.40 | 146.30 | 150.90 | 156.80 | 163.10 | 166.20 | 168.30 |
| 12.5–12.99 years | 154.79 | 7.81 | 140.20 | 142.00 | 144.60 | 150.00 | 154.30 | 160.00 | 164.50 | 167.40 | 169.50 |
| 13.0–13.49 years | 158.49 | 8.47 | 143.40 | 145.20 | 148.30 | 152.60 | 157.80 | 163.90 | 170.80 | 173.10 | 174.30 |
| 13.5–13.99 years | 160.98 | 8.88 | 143.30 | 145.10 | 148.90 | 154.10 | 161.90 | 167.70 | 172.40 | 175.60 | 176.00 |
| 14.0–14.49 years | 166.13 | 8.53 | 148.60 | 151.50 | 156.00 | 160.80 | 166.00 | 172.00 | 177.30 | 179.40 | 180.50 |
| 14.5–14.99 years | 168.42 | 7.79 | 152.00 | 154.60 | 158.40 | 163.50 | 168.60 | 174.10 | 178.40 | 179.90 | 181.40 |
| 15.0–15.49 years | 170.61 | 7.67 | 156.00 | 158.10 | 161.00 | 165.30 | 170.80 | 175.60 | 180.90 | 183.80 | 185.70 |
| 15.5–15.99 years | 172.39 | 7.47 | 158.40 | 159.00 | 162.70 | 167.30 | 173.10 | 177.50 | 182.50 | 184.40 | 185.70 |
| 16.0–16.49 years | 173.31 | 6.78 | 160.40 | 161.90 | 164.20 | 169.50 | 173.30 | 177.70 | 181.20 | 184.80 | 186.70 |
| 16.5–16.99 years | 175.63 | 7.46 | 162.50 | 163.60 | 165.50 | 170.30 | 175.70 | 181.10 | 185.80 | 187.70 | 190.20 |
| 17.0–17.49 years | 175.78 | 7.92 | 160.80 | 162.70 | 166.50 | 170.90 | 176.10 | 181.30 | 186.30 | 188.20 | 188.50 |
| 17.5–17.99 years | 176.10 | 6.88 | 162.20 | 163.80 | 167.90 | 171.90 | 175.70 | 180.90 | 185.20 | 187.40 | 188.20 |
| 18.0–18.49 years | 177.53 | 6.87 | 166.30 | 168.00 | 169.30 | 173.20 | 176.40 | 181.90 | 187.80 | 190.40 | 192.60 |
| 18.5–18.99 years | 176.51 | 7.01 | 165.80 | 166.40 | 167.20 | 171.60 | 176.60 | 180.60 | 185.40 | 188.00 | 191.30 |
| 19.0–19.49 years | 175.86 | 6.30 | 163.70 | 164.70 | 167.90 | 171.30 | 176.50 | 180.80 | 183.20 | 185.40 | 187.00 |
| 19.5–19.99 years | 176.25 | 6.36 | 162.00 | 164.30 | 169.50 | 171.80 | 176.70 | 180.00 | 184.20 | 186.30 | 188.40 |
| Girls | | | | | | | | | | | |
| 2–2.49 years | 87.73 | 4.03 | 80.00 | 82.00 | 82.90 | 85.20 | 87.60 | 90.20 | 93.10 | 94.60 | 94.90 |
| 2.5–2.99 years | 81.82 | 3.76 | 85.00 | 85.80 | 87.00 | 89.10 | 91.90 | 94.20 | 96.80 | 97.80 | 98.80 |
| 3.0–3.49 years | 95.75 | 3.97 | 88.30 | 89.10 | 90.80 | 93.40 | 95.70 | 98.30 | 100.80 | 102.90 | 103.50 |
| 3.5–3.99 years | 99.67 | 4.21 | 92.40 | 93.20 | 94.70 | 97.00 | 99.30 | 102.40 | 104.90 | 106.30 | 107.80 |
| 4.0–4.49 years | 103.05 | 4.54 | 94.80 | 95.70 | 97.20 | 99.80 | 103.20 | 106.30 | 108.40 | 110.20 | 111.50 |
| 4.5–4.99 years | 105.98 | 4.88 | 97.40 | 97.70 | 99.70 | 102.70 | 105.60 | 109.30 | 112.20 | 113.90 | 115.00 |
| 5.0–5.49 years | 109.87 | 4.70 | 101.10 | 101.90 | 104.10 | 107.00 | 109.90 | 113.10 | 115.50 | 117.20 | 118.80 |
| 5.5–5.99 years | 113.77 | 5.37 | 103.90 | 105.20 | 107.10 | 110.50 | 113.60 | 117.00 | 120.50 | 122.80 | 125.30 |
| 6.0–6.49 years | 116.46 | 5.39 | 106.80 | 107.90 | 109.80 | 112.60 | 116.00 | 120.10 | 123.80 | 125.10 | 126.90 |
| 6.5–6.99 years | 119.30 | 5.66 | 109.30 | 110.10 | 111.80 | 115.40 | 119.00 | 122.90 | 126.50 | 128.80 | 129.90 |
| 7.0–7.49 years | 122.52 | 5.48 | 112.80 | 113.80 | 116.20 | 118.60 | 122.00 | 126.00 | 128.90 | 131.40 | 133.70 |
| 7.5–7.99 years | 125.27 | 6.36 | 114.40 | 116.20 | 117.90 | 121.20 | 125.20 | 129.40 | 133.10 | 136.50 | 138.20 |
| 8.0–8.49 years | 128.29 | 5.83 | 117.80 | 118.50 | 120.60 | 124.30 | 128.70 | 132.00 | 135.60 | 138.00 | 138.60 |
| 8.5–8.99 years | 131.41 | 5.88 | 120.30 | 122.00 | 124.60 | 127.60 | 131.80 | 135.30 | 138.70 | 140.70 | 141.30 |
| 9.0–9.49 years | 134.30 | 6.96 | 122.30 | 123.60 | 126.40 | 129.60 | 134.50 | 139.00 | 142.50 | 146.30 | 148.60 |
| 9.5–9.99 years | 136.83 | 6.76 | 124.80 | 127.00 | 128.40 | 132.60 | 136.50 | 141.00 | 145.00 | 148.40 | 149.30 |
| 10.0–10.49 years | 139.85 | 6.98 | 127.50 | 129.20 | 131.50 | 135.20 | 139.80 | 144.30 | 148.40 | 152.00 | 152.70 |
| 10.5–10.99 years | 142.88 | 7.04 | 129.40 | 130.50 | 133.80 | 138.40 | 142.50 | 147.40 | 152.20 | 155.00 | 156.80 |
| 11.0–11.49 years | 146.64 | 7.53 | 132.80 | 134.50 | 136.40 | 141.60 | 147.00 | 152.20 | 155.80 | 157.80 | 159.40 |
| 11.5–11.99 years | 149.91 | 7.89 | 135.70 | 138.70 | 140.60 | 144.20 | 149.70 | 155.20 | 159.90 | 164.50 | 165.50 |
| 12.0–12.49 years | 153.19 | 7.48 | 138.20 | 141.00 | 143.90 | 148.10 | 153.40 | 158.40 | 162.80 | 165.70 | 167.00 |
| 12.5–12.99 years | 156.26 | 6.89 | 143.00 | 144.60 | 147.50 | 151.90 | 156.50 | 160.70 | 165.00 | 166.30 | 168.40 |
| 13.0–13.49 years | 158.70 | 6.80 | 145.10 | 147.50 | 150.00 | 154.40 | 158.90 | 163.20 | 166.70 | 169.50 | 170.40 |
| 13.5–13.99 years | 159.36 | 6.33 | 147.60 | 149.50 | 150.90 | 155.50 | 159.30 | 163.20 | 167.00 | 169.90 | 172.30 |
| 14.0–14.49 years | 160.73 | 6.40 | 149.80 | 150.80 | 152.60 | 156.30 | 161.00 | 165.00 | 169.40 | 171.90 | 172.70 |
| 14.5–14.99 years | 161.35 | 6.74 | 148.40 | 150.20 | 152.80 | 156.70 | 161.60 | 166.20 | 169.90 | 172.40 | 174.10 |

Table 15. Observed mean, standard deviation, and selected percentiles for stature (in centimeters) by sex and age: 2 to 20 years—Con.

| Sex and age | Mean | Standard deviation | Percentile | | | | | | | | |
|----------------------------|--------|--------------------|------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | |
| 15.0–15.49 years | 162.34 | 6.37 | 150.90 | 151.90 | 154.20 | 158.30 | 162.20 | 166.50 | 170.60 | 173.50 | 176.00 |
| 15.5–15.99 years | 163.61 | 6.32 | 151.70 | 153.10 | 155.40 | 159.20 | 164.00 | 167.80 | 171.20 | 173.90 | 175.50 |
| 16.0–16.49 years | 162.73 | 6.16 | 151.20 | 151.90 | 155.20 | 158.50 | 162.80 | 166.40 | 171.20 | 172.60 | 174.30 |
| 16.5–16.99 years | 162.37 | 6.45 | 150.10 | 151.60 | 154.40 | 158.30 | 162.50 | 166.40 | 170.90 | 173.00 | 174.20 |
| 17.0–17.49 years | 162.83 | 6.64 | 151.40 | 153.20 | 155.00 | 158.40 | 162.20 | 167.00 | 171.90 | 174.00 | 176.30 |
| 17.5–17.99 years | 163.10 | 6.15 | 150.30 | 151.80 | 154.90 | 159.30 | 163.30 | 167.00 | 171.00 | 172.80 | 175.60 |
| 18.0–18.49 years | 163.82 | 6.77 | 151.50 | 153.70 | 155.30 | 159.40 | 164.30 | 167.50 | 172.60 | 174.90 | 177.00 |
| 18.5–18.99 years | 163.27 | 6.24 | 150.30 | 152.40 | 154.90 | 159.10 | 163.70 | 167.00 | 170.70 | 173.60 | 174.20 |
| 19.0–19.49 years | 163.30 | 5.55 | 151.20 | 153.30 | 156.20 | 160.20 | 163.50 | 167.30 | 169.70 | 171.70 | 172.80 |
| 19.5–19.99 years | 163.33 | 6.29 | 151.90 | 154.20 | 155.30 | 158.60 | 163.50 | 167.40 | 171.70 | 174.00 | 175.90 |

Table 16. Observed mean, standard deviation, and selected percentiles for body mass index (kilograms/meter²) by sex and age: 2 to 20 years

| Sex and age | Mean | Standard deviation | Percentile | | | | | | | | | |
|------------------|-------|--------------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | 3rd | 5th | 10th | 25th | 50th | 75th | 85th | 90th | 95th | 97th |
| Boys | | | | | | | | | | | | |
| 2–2.49 years | 16.54 | 1.29 | 14.48 | 14.73 | 15.08 | 15.56 | 16.38 | 17.26 | 17.79 | 18.15 | 18.85 | 19.37 |
| 2.5–2.99 years | 16.17 | 1.20 | 13.98 | 14.32 | 14.64 | 15.37 | 16.16 | 16.96 | 17.37 | 17.67 | 18.28 | 18.57 |
| 3.0–3.49 years | 16.04 | 1.24 | 13.80 | 14.13 | 14.60 | 15.21 | 15.88 | 16.90 | 17.29 | 17.71 | 18.31 | 18.60 |
| 3.5–3.99 years | 15.92 | 1.39 | 13.90 | 14.18 | 14.42 | 15.05 | 15.82 | 16.50 | 17.06 | 17.36 | 18.12 | 18.70 |
| 4.0–4.49 years | 15.86 | 1.39 | 13.72 | 13.94 | 14.28 | 15.03 | 15.75 | 16.55 | 17.06 | 17.43 | 17.92 | 18.67 |
| 4.5–4.99 years | 15.73 | 1.34 | 13.57 | 13.92 | 14.29 | 14.92 | 15.65 | 16.42 | 16.84 | 17.09 | 17.82 | 18.11 |
| 5.0–5.49 years | 15.79 | 1.60 | 13.66 | 13.85 | 14.29 | 14.81 | 15.62 | 16.36 | 16.87 | 17.36 | 18.08 | 20.27 |
| 5.5–5.99 years | 15.72 | 1.65 | 13.64 | 13.82 | 14.11 | 14.72 | 15.48 | 16.38 | 17.06 | 17.41 | 18.53 | 19.15 |
| 6.0–6.49 years | 15.61 | 1.61 | 13.41 | 13.72 | 14.18 | 14.72 | 15.37 | 16.24 | 16.81 | 17.18 | 18.12 | 18.99 |
| 6.5–6.99 years | 15.90 | 1.95 | 13.43 | 13.73 | 14.05 | 14.59 | 15.49 | 16.72 | 17.49 | 18.07 | 19.09 | 20.40 |
| 7.0–7.49 years | 15.80 | 1.72 | 13.06 | 13.43 | 13.98 | 14.73 | 15.62 | 16.48 | 17.17 | 17.67 | 18.79 | 19.45 |
| 7.5–7.99 years | 16.00 | 1.74 | 13.65 | 13.90 | 14.19 | 14.97 | 15.60 | 16.68 | 17.39 | 18.04 | 19.62 | 20.03 |
| 8.0–8.49 years | 16.06 | 1.98 | 13.25 | 13.57 | 14.19 | 14.81 | 15.68 | 16.74 | 17.71 | 18.28 | 19.71 | 20.85 |
| 8.5–8.99 years | 16.42 | 2.24 | 13.62 | 14.10 | 14.48 | 15.13 | 16.06 | 17.10 | 18.02 | 18.96 | 19.68 | 20.57 |
| 9.0–9.49 years | 16.84 | 2.62 | 13.74 | 14.00 | 14.29 | 14.99 | 16.13 | 17.71 | 19.64 | 20.40 | 22.29 | 23.09 |
| 9.5–9.99 years | 17.03 | 2.77 | 13.63 | 13.98 | 14.59 | 15.37 | 16.35 | 17.87 | 19.29 | 19.94 | 21.78 | 23.84 |
| 10.0–10.49 years | 17.20 | 2.37 | 14.19 | 14.54 | 14.87 | 15.59 | 16.70 | 18.28 | 19.36 | 20.08 | 22.03 | 23.15 |
| 10.5–10.99 years | 17.76 | 2.88 | 14.39 | 14.59 | 14.96 | 15.78 | 17.17 | 18.81 | 19.95 | 21.16 | 24.16 | 25.96 |
| 11.0–11.49 years | 17.98 | 2.91 | 14.40 | 14.77 | 15.27 | 16.10 | 17.31 | 18.97 | 20.87 | 21.69 | 23.05 | 24.99 |
| 11.5–11.99 years | 18.39 | 3.76 | 14.31 | 14.72 | 15.10 | 16.07 | 17.26 | 19.80 | 21.61 | 23.67 | 26.04 | 27.12 |
| 12.0–12.49 years | 18.48 | 2.95 | 14.67 | 15.03 | 15.63 | 16.57 | 17.74 | 19.61 | 21.02 | 22.28 | 24.20 | 26.90 |
| 12.5–12.99 years | 18.70 | 3.05 | 14.83 | 15.22 | 15.88 | 16.80 | 17.96 | 19.95 | 21.19 | 22.41 | 24.96 | 25.80 |
| 13.0–13.49 years | 19.11 | 3.14 | 15.28 | 15.54 | 16.09 | 17.02 | 18.32 | 20.56 | 21.85 | 22.81 | 25.12 | 27.79 |
| 13.5–13.99 years | 19.89 | 3.73 | 15.42 | 16.02 | 16.57 | 17.63 | 18.97 | 21.02 | 23.45 | 24.80 | 26.66 | 27.32 |
| 14.0–14.49 years | 19.87 | 3.09 | 15.69 | 16.14 | 16.79 | 17.85 | 19.27 | 21.04 | 22.68 | 23.69 | 25.29 | 26.36 |
| 14.5–14.99 years | 20.51 | 3.35 | 16.20 | 16.53 | 17.18 | 18.24 | 19.78 | 21.87 | 23.64 | 24.92 | 27.38 | 28.07 |
| 15.0–15.49 years | 20.50 | 3.12 | 16.29 | 16.58 | 17.35 | 18.52 | 19.81 | 21.77 | 23.51 | 24.14 | 25.69 | 27.75 |
| 15.5–15.99 years | 21.01 | 3.24 | 16.48 | 16.80 | 17.73 | 19.11 | 20.47 | 22.29 | 23.54 | 24.81 | 27.08 | 29.21 |
| 16.0–16.49 years | 21.48 | 3.25 | 17.37 | 17.59 | 18.37 | 19.48 | 20.83 | 22.45 | 23.88 | 25.93 | 27.93 | 30.23 |
| 16.5–16.99 years | 21.97 | 3.28 | 17.31 | 17.76 | 18.42 | 19.57 | 21.69 | 23.47 | 24.82 | 25.72 | 27.59 | 29.00 |
| 17.0–17.49 years | 21.84 | 3.46 | 16.96 | 17.80 | 18.37 | 19.54 | 21.02 | 23.44 | 24.86 | 26.29 | 28.83 | 29.63 |
| 17.5–17.99 years | 21.96 | 3.36 | 17.50 | 18.03 | 18.66 | 19.70 | 21.27 | 23.56 | 25.11 | 26.17 | 28.06 | 30.27 |
| 18.0–18.49 years | 23.22 | 4.12 | 17.79 | 18.11 | 18.86 | 20.39 | 22.45 | 24.56 | 26.57 | 28.41 | 31.43 | 33.16 |
| 18.5–18.99 years | 22.89 | 3.53 | 17.52 | 18.69 | 19.06 | 20.64 | 22.36 | 24.38 | 26.20 | 27.69 | 28.70 | 30.40 |
| 19.0–19.49 years | 23.31 | 3.28 | 18.99 | 19.17 | 19.72 | 21.06 | 22.95 | 24.68 | 26.16 | 28.06 | 30.79 | 31.44 |
| 19.5–19.99 years | 23.16 | 3.85 | 18.02 | 18.04 | 19.18 | 20.99 | 22.53 | 24.27 | 26.80 | 28.99 | 30.73 | 32.14 |
| Girls | | | | | | | | | | | | |
| 2–2.49 years | 16.26 | 1.51 | 14.15 | 14.32 | 14.66 | 15.34 | 16.09 | 17.05 | 17.60 | 18.04 | 18.61 | 19.13 |
| 2.5–2.99 years | 16.09 | 1.41 | 13.81 | 14.13 | 14.48 | 15.18 | 15.99 | 16.79 | 17.31 | 17.69 | 18.25 | 18.69 |
| 3.0–3.49 years | 15.92 | 1.55 | 13.62 | 13.80 | 14.27 | 14.99 | 15.76 | 16.57 | 17.33 | 17.64 | 18.42 | 18.83 |
| 3.5–3.99 years | 15.63 | 1.41 | 13.49 | 13.58 | 13.88 | 14.66 | 15.55 | 16.44 | 16.88 | 17.27 | 17.84 | 18.52 |
| 4.0–4.49 years | 15.72 | 1.54 | 13.51 | 13.71 | 14.10 | 14.75 | 15.52 | 16.39 | 16.98 | 17.49 | 18.53 | 18.91 |
| 4.5–4.99 years | 15.63 | 2.05 | 13.34 | 13.67 | 13.92 | 14.48 | 15.35 | 16.20 | 16.75 | 17.23 | 18.27 | 19.08 |
| 5.0–5.49 years | 15.64 | 1.81 | 13.24 | 13.47 | 13.80 | 14.45 | 15.33 | 16.46 | 17.08 | 17.72 | 19.36 | 19.73 |
| 5.5–5.99 years | 15.78 | 2.02 | 13.18 | 13.46 | 13.77 | 14.52 | 15.27 | 16.56 | 17.54 | 18.77 | 19.98 | 20.31 |
| 6.0–6.49 years | 15.48 | 1.70 | 13.07 | 13.46 | 13.90 | 14.34 | 15.22 | 16.23 | 16.88 | 17.28 | 18.34 | 19.32 |
| 6.5–6.99 years | 15.49 | 1.78 | 13.17 | 13.36 | 13.63 | 14.29 | 15.13 | 16.24 | 17.16 | 17.71 | 18.74 | 19.66 |
| 7.0–7.49 years | 15.70 | 1.80 | 13.00 | 13.56 | 13.87 | 14.51 | 15.37 | 16.52 | 17.18 | 17.81 | 19.22 | 19.95 |
| 7.5–7.99 years | 15.89 | 2.06 | 13.28 | 13.64 | 13.84 | 14.60 | 15.39 | 16.72 | 17.80 | 18.51 | 19.66 | 21.44 |
| 8.0–8.49 years | 16.19 | 2.07 | 13.40 | 13.61 | 14.06 | 14.78 | 15.71 | 17.31 | 18.30 | 18.90 | 19.90 | 21.61 |
| 8.5–8.99 years | 16.56 | 2.68 | 13.47 | 13.76 | 14.22 | 14.91 | 15.83 | 17.48 | 18.63 | 19.71 | 21.54 | 23.10 |
| 9.0–9.49 years | 17.02 | 2.66 | 13.79 | 14.09 | 14.46 | 15.19 | 16.33 | 18.13 | 19.04 | 20.10 | 22.88 | 24.25 |
| 9.5–9.99 years | 17.41 | 3.05 | 13.71 | 13.96 | 14.70 | 15.58 | 16.53 | 18.31 | 20.18 | 21.26 | 23.29 | 25.54 |
| 10.0–10.49 years | 17.31 | 2.87 | 13.50 | 13.80 | 14.27 | 15.41 | 16.66 | 18.51 | 19.93 | 20.99 | 23.18 | 23.78 |
| 10.5–10.99 years | 17.56 | 2.81 | 13.89 | 14.09 | 14.74 | 15.72 | 17.03 | 18.61 | 20.04 | 21.78 | 23.35 | 24.03 |
| 11.0–11.49 years | 18.35 | 3.24 | 13.94 | 14.45 | 14.91 | 16.16 | 17.87 | 20.00 | 21.38 | 22.43 | 24.71 | 26.99 |
| 11.5–11.99 years | 18.80 | 3.59 | 13.86 | 14.39 | 15.20 | 16.23 | 18.36 | 20.34 | 22.01 | 23.08 | 25.76 | 27.53 |
| 12.0–12.49 years | 18.99 | 3.28 | 14.62 | 14.77 | 15.49 | 16.60 | 18.41 | 20.75 | 22.00 | 22.74 | 25.10 | 27.12 |
| 12.5–12.99 years | 19.63 | 3.59 | 14.95 | 15.19 | 15.81 | 17.24 | 18.77 | 21.28 | 23.58 | 24.70 | 26.59 | 28.01 |
| 13.0–13.49 years | 19.96 | 3.80 | 15.07 | 15.42 | 16.13 | 17.47 | 18.96 | 21.55 | 23.37 | 24.39 | 28.47 | 30.26 |
| 13.5–13.99 years | 20.37 | 3.95 | 14.80 | 15.60 | 16.32 | 17.77 | 19.62 | 21.96 | 23.71 | 24.76 | 27.83 | 30.03 |
| 14.0–14.49 years | 20.75 | 3.95 | 16.05 | 16.39 | 16.75 | 18.04 | 19.77 | 22.37 | 24.62 | 25.76 | 29.13 | 32.17 |
| 14.5–14.99 years | 21.17 | 3.68 | 16.27 | 16.68 | 17.48 | 18.51 | 20.47 | 22.83 | 24.52 | 25.89 | 27.69 | 29.43 |

Table 16. Observed mean, standard deviation, and selected percentiles for body mass index (kilograms/meter²) by sex and age: 2 to 20 years—Con.

| Sex and age | Mean | Standard deviation | Percentile | | | | | | | | | |
|----------------------------|-------|--------------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | 3rd | 5th | 10th | 25th | 50th | 75th | 85th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | | |
| 15.0–15.49 years | 20.90 | 3.63 | 16.53 | 16.77 | 17.37 | 18.51 | 20.03 | 22.29 | 24.01 | 25.57 | 28.54 | 29.85 |
| 15.5–15.99 years | 21.19 | 3.55 | 16.75 | 17.19 | 17.59 | 19.06 | 20.43 | 22.47 | 23.86 | 25.02 | 27.14 | 30.18 |
| 16.0–16.49 years | 21.66 | 3.87 | 16.97 | 17.71 | 18.22 | 19.10 | 20.62 | 22.83 | 25.70 | 26.46 | 29.68 | 31.77 |
| 16.5–16.99 years | 21.91 | 3.97 | 17.17 | 17.65 | 18.17 | 19.31 | 21.05 | 23.39 | 25.22 | 26.50 | 29.33 | 32.19 |
| 17.0–17.49 years | 21.98 | 4.51 | 16.77 | 17.11 | 17.61 | 19.20 | 21.08 | 23.59 | 25.15 | 26.88 | 30.27 | 32.29 |
| 17.5–17.99 years | 22.53 | 4.31 | 17.41 | 17.92 | 18.71 | 19.89 | 21.71 | 23.90 | 25.41 | 26.80 | 30.27 | 33.63 |
| 18.0–18.49 years | 21.94 | 4.16 | 16.44 | 16.59 | 18.36 | 19.55 | 20.99 | 23.28 | 24.45 | 26.22 | 32.55 | 34.02 |
| 18.5–18.99 years | 21.80 | 3.28 | 16.70 | 17.58 | 18.21 | 19.28 | 21.60 | 23.66 | 24.32 | 26.00 | 28.88 | 28.88 |
| 19.0–19.49 years | 22.03 | 4.14 | 16.79 | 17.71 | 18.08 | 19.03 | 21.46 | 23.66 | 25.65 | 27.22 | 28.98 | 31.46 |
| 19.5–19.99 years | 23.03 | 4.72 | 18.29 | 18.67 | 19.19 | 20.31 | 21.69 | 24.13 | 25.99 | 29.34 | 32.51 | 33.89 |

Table 17. L, M, and S, parameters and selected smoothed percentiles for weight (in kilograms) by sex and age: Birth to 36 months

| Sex and age | Percentile | | | | | | | | | | | |
|-----------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | L | M | S | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys | | | | | | | | | | | | |
| Birth | 1.815151075 | 3.530203168 | 0.152385273 | 2.355450986 | 2.52690402 | 2.773801848 | 3.150611082 | 3.530203168 | 3.879076559 | 4.17249339 | 4.34029274 | 4.46488308 |
| 0-0.99 months | 1.547523128 | 4.003106424 | 0.146025021 | 2.799548641 | 2.964655655 | 3.209510017 | 3.597395573 | 4.003106424 | 4.387422565 | 4.718161283 | 4.910130108 | 5.032624982 |
| 1-1.99 months | 1.068795548 | 4.879525083 | 0.136478767 | 3.614688072 | 3.774848862 | 4.020561446 | 4.428872952 | 4.879525083 | 5.327327567 | 5.728152752 | 5.967101615 | 6.121929103 |
| 2-2.99 months | 0.695973505 | 5.672888765 | 0.129677511 | 4.34234145 | 4.503255345 | 4.754479354 | 5.183377547 | 5.672888765 | 6.175598158 | 6.638979132 | 6.921119162 | 7.106250132 |
| 3-3.99 months | 0.41981509 | 6.391391982 | 0.124717085 | 4.992897896 | 5.157411653 | 5.416802856 | 5.866806254 | 6.391391982 | 6.942217106 | 7.460702368 | 7.781401145 | 7.993878049 |
| 4-4.99 months | 0.219866801 | 7.041836432 | 0.121040119 | 5.575169066 | 5.744751566 | 6.01371624 | 6.484969167 | 7.041836432 | 7.635323002 | 8.202193202 | 8.556813353 | 8.793443663 |
| 5-5.99 months | 0.077505598 | 7.630425182 | 0.1182712 | 6.096775274 | 6.272175299 | 6.551379244 | 7.043626918 | 7.630425182 | 8.262032991 | 8.871384112 | 9.255614546 | 9.51330656 |
| 6-6.99 months | -0.02190761 | 8.162951035 | 0.116153695 | 6.564430346 | 6.745992665 | 7.035656404 | 7.548345716 | 8.162951035 | 8.828786159 | 9.47546616 | 9.885435743 | 10.16135019 |
| 7-7.99 months | -0.0894409 | 8.644832479 | 0.114510349 | 6.984123338 | 7.171952393 | 7.472021438 | 8.004398775 | 8.644832479 | 9.34149038 | 10.02101374 | 10.45331433 | 10.74492376 |
| 8-8.99 months | -0.1334091 | 9.081119817 | 0.113217163 | 7.361236116 | 7.555286752 | 7.865532922 | 8.416718775 | 9.081119817 | 9.805593364 | 10.51406421 | 10.96573632 | 11.27083843 |
| 9-9.99 months | -0.1600954 | 9.476500305 | 0.11218624 | 7.700624405 | 7.90075516 | 8.220839211 | 8.789881892 | 9.476500305 | 10.22612395 | 10.96017225 | 11.42867623 | 11.74538465 |
| 10-10.99 months | -0.17429685 | 9.835307701 | 0.111354536 | 8.006677447 | 8.212683538 | 8.542195484 | 9.128109523 | 9.835307701 | 10.60772151 | 11.36445045 | 11.84763282 | 12.17435729 |
| 11-11.99 months | -0.1797189 | 10.16153567 | 0.110676413 | 8.283364855 | 8.494999555 | 8.833485623 | 9.43527941 | 10.16153567 | 10.9546603 | 11.73160184 | 12.2276612 | 12.56308347 |
| 12-12.99 months | -0.179254 | 10.45885399 | 0.110118635 | 8.534275028 | 8.751264252 | 9.098245709 | 9.714941801 | 10.45885399 | 11.27087147 | 12.06594792 | 12.57340193 | 12.91645043 |
| 13-13.99 months | -0.17518447 | 10.7306256 | 0.109656941 | 8.762648582 | 8.984701111 | 9.339687673 | 9.970337596 | 10.7306256 | 11.55996332 | 12.37145331 | 12.88910809 | 13.23893338 |
| 14-14.99 months | -0.16932268 | 10.97992482 | 0.109273653 | 8.971407287 | 9.198222429 | 9.560722369 | 10.20441778 | 10.97992482 | 11.82524099 | 12.65174864 | 13.17867019 | 13.53462171 |
| 15-15.99 months | -0.1631139 | 11.20955529 | 0.10895596 | 9.163180317 | 9.394453831 | 9.763981751 | 10.41986276 | 11.20955529 | 12.06972515 | 12.91015164 | 13.44563963 | 13.80724431 |
| 16-16.99 months | -0.15770999 | 11.4220677 | 0.108694678 | 9.340328068 | 9.575756968 | 9.951839998 | 10.61910138 | 11.4220677 | 12.29616991 | 13.14968707 | 13.6932508 | 14.0601935 |
| 17-17.99 months | -0.15402279 | 11.61977698 | 0.108483324 | 9.504964014 | 9.744250626 | 10.12643352 | 10.80432929 | 11.61977698 | 12.50708008 | 13.37310558 | 13.92444193 | 14.29654774 |
| 18-18.99 months | -0.15276214 | 11.80477902 | 0.108317416 | 9.658974787 | 9.901830339 | 10.28967982 | 10.97752662 | 11.80477902 | 12.70472779 | 13.58290165 | 14.14187481 | 14.51909298 |
| 19-19.99 months | -0.15446658 | 11.9789663 | 0.108193944 | 9.804039109 | 10.05018686 | 10.44329524 | 11.14047457 | 11.9789663 | 12.89116805 | 13.78133058 | 14.34795358 | 14.73034312 |
| 20-20.99 months | -0.15952202 | 12.14404334 | 0.108110954 | 10.091644878 | 10.19082308 | 10.58881155 | 11.2947714 | 12.14404334 | 13.06825426 | 13.9704249 | 14.54484233 | 14.93255878 |
| 21-21.99 months | -0.16817926 | 12.30154103 | 0.108067236 | 10.37310549 | 10.32507004 | 10.72759156 | 11.44184727 | 12.30154103 | 13.23765258 | 14.15200982 | 14.73448194 | 15.12776542 |
| 22-22.99 months | -0.1805668 | 12.45283028 | 0.108062078 | 10.19957488 | 10.45410181 | 10.86084353 | 11.58297823 | 12.45283028 | 13.40085582 | 14.3277181 | 14.91860604 | 15.31777023 |
| 23-23.99 months | -0.19670196 | 12.59913494 | 0.108095077 | 10.32206165 | 10.57894925 | 10.98963476 | 11.7192993 | 12.59913494 | 13.55919667 | 14.49900418 | 15.09875606 | 15.50417803 |
| 24-24.99 months | -0.21650121 | 12.74154396 | 0.108166005 | 10.4414422 | 10.70051298 | 11.11490406 | 11.85181666 | 12.74154396 | 13.71386029 | 14.6671577 | 15.27629562 | 15.68840631 |
| 25-25.99 months | -0.23979048 | 12.88102276 | 0.108274705 | 10.55847309 | 10.81957536 | 11.23747341 | 11.98141892 | 12.88102276 | 13.86589625 | 14.83331632 | 15.45242405 | 15.87169941 |
| 26-26.99 months | -0.26631585 | 13.01842382 | 0.108421024 | 10.67380261 | 10.93681171 | 11.35805876 | 12.10888759 | 13.01842382 | 14.0162298 | 14.99847794 | 15.62818936 | 16.05514188 |
| 27-27.99 months | -0.29575496 | 13.1544966 | 0.108604769 | 10.78798156 | 11.05280067 | 11.47727994 | 12.23490671 | 13.1544966 | 14.1656725 | 15.16351231 | 15.80450043 | 16.23967114 |
| 28-28.99 months | -0.32772936 | 13.28989667 | 0.108825681 | 10.90147346 | 11.168034 | 11.59566994 | 12.36007175 | 13.28989667 | 14.31493214 | 15.32917196 | 15.98213866 | 16.42608957 |
| 29-29.99 months | -0.36181746 | 13.42519408 | 0.109083423 | 11.01466395 | 11.28292555 | 11.7136834 | 12.48489772 | 13.42519408 | 14.46462206 | 15.49610261 | 16.16176896 | 16.61507584 |
| 30-30.99 months | -0.39756808 | 13.56088113 | 0.109377581 | 11.12786972 | 11.3978197 | 11.8317045 | 12.60982671 | 13.56088113 | 14.61526973 | 15.66485286 | 16.34395024 | 16.80719582 |
| 31-31.99 months | -0.43452025 | 13.69737858 | 0.109707646 | 11.24134752 | 11.51299966 | 11.95005435 | 12.73523417 | 13.69737858 | 14.76732387 | 15.83588308 | 16.52914562 | 17.00291386 |
| 32-32.99 months | -0.47218875 | 13.83504622 | 0.110073084 | 11.3552982 | 11.62869248 | 12.06899744 | 12.86143776 | 13.83504622 | 14.9211657 | 16.00957526 | 16.71773017 | 17.2025984 |
| 33-33.99 months | -0.51012309 | 13.97418199 | 0.110473238 | 11.46987977 | 11.74507947 | 12.18874835 | 12.98869905 | 13.97418199 | 15.07710916 | 16.18623873 | 16.91000241 | 17.40653835 |
| 34-34.99 months | -0.54788557 | 14.1150324 | 0.1109074 | 11.58520959 | 11.86229971 | 12.30947723 | 13.11723187 | 14.1150324 | 15.23541179 | 16.36611917 | 17.10619066 | 17.61494698 |
| 35-35.99 months | -0.5850701 | 14.25779618 | 0.111374787 | 11.70137143 | 11.98045644 | 12.43131521 | 13.24720657 | 14.25779618 | 15.3962791 | 16.54940494 | 17.30646132 | 17.8279717 |
| Girls | | | | | | | | | | | | |
| Birth | 1.509187507 | 3.39918645 | 0.142106724 | 2.414111983 | 2.54790518 | 2.747222257 | 3.06486465 | 3.39918645 | 3.717519384 | 3.992572231 | 4.152636594 | 4.254922004 |
| 0-0.99 months | 1.357944315 | 3.79752846 | 0.138075916 | 2.756916984 | 2.894442278 | 3.101767067 | 3.437628263 | 3.79752846 | 4.145593668 | 4.450125603 | 4.628836382 | 4.743581789 |
| 1-1.99 months | 1.105537708 | 4.544776513 | 0.131733888 | 3.402293298 | 3.547610305 | 3.770157472 | 4.13899376 | 4.544776513 | 4.946765504 | 5.305632496 | 5.51916925 | 5.657379108 |
| 2-2.99 months | 0.902596648 | 5.230584214 | 0.126892697 | 3.997805608 | 4.150638506 | 4.387041982 | 4.784820426 | 5.230584214 | 5.680083196 | 6.08764077 | 6.332837055 | 6.492574414 |
| 3-3.99 months | 0.734121414 | 5.859960798 | 0.123025182 | 4.54738333 | 4.70712251 | 4.95592631 | 5.379141034 | 5.859960798 | 6.351511983 | 6.707629825 | 7.076722522 | 7.256165568 |
| 4-4.99 months | 0.590235275 | 6.437587751 | 0.119840911 | 5.054538727 | 5.220487543 | 5.480295205 | 5.92588831 | 6.437587751 | 6.966523789 | 7.45711879 | 7.757233948 | 7.954730061 |
| 5-5.99 months | 0.464391566 | 6.967850457 | 0.117166868 | 5.522500226 | 5.693974176 | 5.963510428 | 6.428828208 | 6.967850457 | 7.53018045 | 8.056331004 | 8.380329759 | 8.59441348 |
| 6-6.99 months | 0.352164071 | 7.454854109 | 0.11489384 | 5.954272494 | 6.130641295 | 6.408775097 | 6.891533095 | 7.454854109 | 8.047178246 | 8.605635546 | 8.951543685 | 9.180938407 |
| 7-7.99 months | 0.250497889 | 7.902436186 | 0.112949644 | 6.352668277 | 6.533372908 | 6.819122283 | 7.317373091 | 7.902436186 | 8.52187726 | 9.109878097 | 9.476008728 | 9.719620693 |

Table 17. *L, M, and S, parameters and selected smoothed percentiles for weight (in kilograms) by sex and age: Birth to 36 months—Con.*

| Sex and age | Percentile | | | | | | | | | | | |
|---------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | | |
| 8–8.99 months | 0.15724751 | 8.314178377 | 0.11128469 | 6.720327734 | 6.904885578 | 7.197413532 | 7.709516114 | 8.314178377 | 8.958324062 | 9.573546299 | 9.958479736 | 10.2153883 |
| 9–9.99 months | 0.070885725 | 8.693418423 | 0.109863709 | 7.059731719 | 7.247735767 | 7.546341788 | 8.070932165 | 8.693418423 | 9.360270982 | 10.00079194 | 10.40335475 | 10.67280092 |
| 10–10.99 months | -0.00968493 | 9.043261854 | 0.10866078 | 7.373211901 | 7.564326904 | 7.868436369 | 8.404399764 | 9.043261854 | 9.7311934 | 10.3954511 | 10.81469528 | 11.0960696 |
| 11–11.99 months | -0.085258 | 9.366593571 | 0.10765621 | 7.662959063 | 7.856916169 | 8.166068895 | 8.712513432 | 9.366593571 | 10.07430572 | 10.76106284 | 11.19624565 | 11.48907597 |
| 12–12.99 months | -0.15640945 | 9.666089185 | 0.106834517 | 7.93103031 | 8.127621012 | 8.441459662 | 8.997691667 | 9.666089185 | 10.39257636 | 11.10088678 | 11.5514514 | 11.85539095 |
| 13–13.99 months | -0.22355869 | 9.944226063 | 0.106183085 | 8.179355552 | 8.378425424 | 8.696684147 | 9.262185089 | 9.944226063 | 10.68874201 | 11.4179197 | 11.88347697 | 12.19829279 |
| 14–14.99 months | -0.28701346 | 10.20329397 | 0.105691242 | 8.409743555 | 8.611186014 | 8.933679535 | 9.508084539 | 10.20329397 | 10.96532105 | 11.7149113 | 12.19522253 | 12.52078451 |
| 15–15.99 months | -0.34699919 | 10.4454058 | 0.105349631 | 8.62388725 | 8.827637666 | 9.154251142 | 9.737329319 | 10.4454058 | 11.2246268 | 11.99437938 | 12.48934 | 12.82561033 |
| 16–16.99 months | -0.40368918 | 10.67250698 | 0.105149754 | 8.82336957 | 9.029399482 | 9.360078736 | 9.951714686 | 10.67250698 | 11.46877937 | 12.258624 | 12.76824867 | 13.11527219 |
| 17–17.99 months | -0.45721877 | 10.88638558 | 0.105083666 | 9.00966812 | 9.217979979 | 9.55272268 | 10.15289979 | 10.88638558 | 11.69971783 | 12.50974133 | 13.03414978 | 13.39204468 |
| 18–18.99 months | -0.50770077 | 11.08868151 | 0.105143752 | 9.184160166 | 9.394782429 | 9.733629905 | 10.34241498 | 11.08868151 | 11.91921144 | 12.74963667 | 13.28904061 | 13.65798985 |
| 19–19.99 months | -0.55523599 | 11.28089537 | 0.105322575 | 9.348127323 | 9.561109949 | 9.904139709 | 10.52166904 | 11.28089537 | 12.1288704 | 12.98003694 | 13.53472797 | 13.91497124 |
| 20–20.99 months | -0.59992113 | 11.46439708 | 0.10561278 | 9.502760074 | 9.718170424 | 10.06548937 | 10.69195601 | 11.46439708 | 12.3301562 | 13.20250263 | 13.77284102 | 14.1646673 |
| 21–21.99 months | -0.64185418 | 11.64043402 | 0.106007025 | 9.649162144 | 9.867081272 | 10.21881956 | 10.85446195 | 11.64043402 | 12.52439148 | 13.41843913 | 14.00484351 | 14.40858419 |
| 22–22.99 months | -0.6811381 | 11.81013895 | 0.106497957 | 9.788354721 | 10.00887405 | 10.3651796 | 11.01027128 | 11.81013895 | 12.71276942 | 13.62910755 | 14.23204547 | 14.64806798 |
| 23–23.99 months | -0.71788283 | 11.97453748 | 0.107078197 | 9.921280547 | 10.14449891 | 10.50553251 | 11.16037297 | 11.97453748 | 12.89636272 | 13.8356351 | 14.45561433 | 14.88431632 |
| 24–24.99 months | -0.75220617 | 12.13455528 | 0.107740346 | 10.04880788 | 10.27482891 | 10.64075987 | 11.30566645 | 12.13455528 | 13.07613212 | 14.03902484 | 14.67658549 | 15.11838945 |
| 25–25.99 months | -0.78423359 | 12.2910249 | 0.108477009 | 10.17173431 | 10.40066414 | 10.77166654 | 11.44696728 | 12.2910249 | 13.25293459 | 14.24016506 | 14.89587242 | 15.35122083 |
| 26–26.99 months | -0.81409743 | 12.44469237 | 0.109280822 | 10.29079052 | 10.52273581 | 10.89898515 | 11.58501256 | 12.44469237 | 13.42753102 | 14.43983817 | 15.11427618 | 15.5836271 |
| 27–27.99 months | -0.8419355 | 12.59622335 | 0.110144488 | 10.40664383 | 10.64171007 | 11.02338047 | 11.72046615 | 12.59622335 | 13.60059358 | 14.63872906 | 15.33249457 | 15.8163176 |
| 28–28.99 months | -0.86788939 | 12.74620911 | 0.111060814 | 10.51990171 | 10.7581918 | 11.14545358 | 11.8539236 | 12.74620911 | 13.77271274 | 14.83743314 | 15.55113065 | 16.0499034 |
| 29–29.99 months | -0.89210264 | 12.89517218 | 0.112022758 | 10.63111516 | 10.8727282 | 11.26574591 | 11.98591692 | 12.89517218 | 13.94440383 | 15.03646393 | 15.770701 | 16.28490586 |
| 30–30.99 months | -0.91471881 | 13.04357164 | 0.113023466 | 10.74078194 | 10.98581228 | 11.38474303 | 12.11691911 | 13.04357164 | 14.11611337 | 15.23626013 | 15.99164336 | 16.52176469 |
| 31–31.99 months | -0.93587966 | 13.19180827 | 0.114056316 | 10.84934975 | 11.09788625 | 11.50287842 | 12.24734843 | 13.19180827 | 14.28822496 | 15.43719248 | 16.21432393 | 16.7608456 |
| 32–32.99 months | -0.95572344 | 13.34022934 | 0.115114952 | 10.95721927 | 11.2093447 | 11.62053697 | 12.37757256 | 13.34022934 | 14.46106492 | 15.63957012 | 16.43904429 | 17.00244749 |
| 33–33.99 months | -0.97438101 | 13.48913357 | 0.116193337 | 11.06474677 | 11.32053756 | 11.73805834 | 12.50791269 | 13.48913357 | 14.634908 | 15.84364677 | 16.66604772 | 17.24680884 |
| 34–34.99 months | -0.99198075 | 13.63877446 | 0.11728575 | 11.17224778 | 11.43177357 | 11.85574032 | 12.63864672 | 13.63877446 | 14.80998135 | 16.04962601 | 16.89552564 | 17.49411514 |
| 35–35.99 months | -1.00864074 | 13.78936547 | 0.118386847 | 11.27999893 | 11.54332263 | 11.9738418 | 12.77001339 | 13.78936547 | 14.98647034 | 16.25766706 | 17.12762297 | 17.74450372 |

Table 18. L, M, and S, parameters and selected smoothed percentiles for recumbent length (in centimeters) by sex and age: Birth to 36 months

| Sex and age | Percentile | | | | | | | | | | | |
|-----------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | L | M | S | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys | | | | | | | | | | | | |
| Birth | 1.267004226 | 49.98888408 | 0.053112191 | 45.00612553 | 45.63915075 | 46.60925664 | 48.218174 | 49.98888408 | 51.74273158 | 53.30756232 | 54.23810497 | 54.84011528 |
| 0–0.99 months | 0.511237696 | 52.6959753 | 0.048692684 | 48.04973769 | 48.6209095 | 49.506962 | 51.00525369 | 52.6959753 | 54.41405653 | 55.98376034 | 56.9337518 | 57.55495075 |
| 1–1.99 months | -0.45224446 | 56.62842855 | 0.04411683 | 52.26116691 | 52.781234 | 53.59708281 | 55.00240616 | 56.62842855 | 58.32626315 | 59.91924919 | 60.90339687 | 61.55532574 |
| 2–2.99 months | -0.990594599 | 59.60895343 | 0.041795583 | 55.32153252 | 55.82492468 | 56.61840131 | 57.99633728 | 59.60895343 | 61.31467574 | 62.93631975 | 63.94885006 | 64.62419672 |
| 3–3.99 months | -1.285837689 | 62.07700027 | 0.040454126 | 57.78649885 | 58.28692327 | 59.07746094 | 60.45550522 | 62.07700027 | 63.80289207 | 65.45448755 | 66.49126189 | 67.18521797 |
| 4–4.99 months | -1.43031238 | 64.2168641 | 0.039633879 | 59.88038198 | 60.38480884 | 61.18237422 | 62.57480445 | 64.2168641 | 65.96919935 | 67.65073205 | 68.70871502 | 69.41794083 |
| 5–5.99 months | -1.47657547 | 66.1253149 | 0.039123813 | 61.71780444 | 62.23030651 | 63.04073288 | 64.45590909 | 66.1253149 | 67.90752029 | 69.61844727 | 70.69531881 | 71.4173861 |
| 6–6.99 months | -1.456837849 | 67.8601799 | 0.038811994 | 63.36584892 | 63.889034 | 64.71604295 | 66.15925026 | 67.8601799 | 69.67415303 | 71.4137019 | 72.50762781 | 73.24070888 |
| 7–7.99 months | -1.391898768 | 69.45908458 | 0.038633209 | 64.86744574 | 65.40309649 | 66.24921112 | 67.72396873 | 69.45908458 | 71.30583396 | 73.07313903 | 74.18263173 | 74.92531457 |
| 8–8.99 months | -1.29571459 | 70.94803912 | 0.038546833 | 66.25187348 | 66.80126999 | 67.66827946 | 69.17701631 | 70.94803912 | 72.82802797 | 74.62219816 | 75.74602764 | 76.49719914 |
| 9–9.99 months | -1.177919048 | 72.34586111 | 0.038526262 | 67.54007513 | 68.10417305 | 68.99339048 | 70.53782479 | 72.34586111 | 74.25920575 | 76.07935957 | 77.21649287 | 77.97526103 |
| 10–10.99 months | -1.045326049 | 73.6666541 | 0.038553387 | 68.7475992 | 69.32713403 | 70.23954867 | 71.82091411 | 73.6666541 | 75.61324507 | 77.45852984 | 78.60808958 | 79.37373061 |
| 11–11.99 months | -0.902800887 | 74.92129717 | 0.038615501 | 69.88633417 | 70.48188777 | 71.41826211 | 73.03745271 | 74.92129717 | 76.90087558 | 78.77047479 | 79.93170629 | 80.7036248 |
| 12–12.99 months | -0.753908107 | 76.11837536 | 0.038703461 | 70.96559835 | 71.57764016 | 72.53857067 | 74.19623275 | 76.11837536 | 78.13058376 | 80.02372308 | 81.19597313 | 81.97367578 |
| 13–13.99 months | -0.601263523 | 77.26479911 | 0.038810557 | 71.99284334 | 72.62175913 | 73.60771866 | 75.30431489 | 77.26479911 | 79.30921541 | 81.22516353 | 82.40786231 | 83.19093672 |
| 14–14.99 months | -0.446805039 | 78.36622309 | 0.038931784 | 72.97413192 | 73.6202435 | 74.63161045 | 76.36746432 | 78.36622309 | 80.44238393 | 82.38045224 | 83.57309961 | 84.36119864 |
| 15–15.99 months | -0.291974772 | 79.4273405 | 0.039063356 | 73.91447032 | 74.57804959 | 75.61512873 | 77.39045632 | 79.4273405 | 81.53475764 | 83.4942989 | 84.69645352 | 85.48928313 |
| 16–16.99 months | -0.13784767 | 80.45209492 | 0.039202382 | 74.81804561 | 75.49932478 | 76.56236246 | 78.37729583 | 80.45209492 | 82.59026676 | 84.57067327 | 85.78194386 | 86.57925367 |
| 17–17.99 months | 0.014776155 | 81.44383603 | 0.039346629 | 75.68839929 | 76.38757841 | 77.4767739 | 79.33137846 | 81.44383603 | 83.6122559 | 85.61295738 | 86.83299553 | 87.63457134 |
| 18–18.99 months | 0.165304169 | 82.40543643 | 0.039494365 | 76.52855656 | 77.2458093 | 78.36132336 | 80.25561111 | 82.40543643 | 84.60359846 | 86.62405981 | 87.85255417 | 88.65821192 |
| 19–19.99 months | 0.313301809 | 83.33938063 | 0.039644238 | 77.3411245 | 78.07660252 | 79.21856401 | 81.15250374 | 83.33938063 | 85.56678396 | 87.60650304 | 88.84317438 | 89.65275537 |
| 20–20.99 months | 0.458455471 | 84.24783394 | 0.039795189 | 78.12836755 | 78.88220395 | 80.05071504 | 82.02424031 | 84.24783394 | 86.50398577 | 88.5624912 | 89.80708833 | 90.62045524 |
| 21–21.99 months | 0.600544631 | 85.13269658 | 0.039946388 | 78.8922666 | 79.66457861 | 80.85971886 | 82.87273432 | 85.13269658 | 87.4171142 | 89.49396332 | 90.7462596 | 91.56329326 |
| 22–22.99 months | 0.739438953 | 85.9956488 | 0.040097181 | 79.63456346 | 80.42545568 | 81.64728665 | 83.69967461 | 85.9956488 | 88.30786055 | 90.40263591 | 91.66242499 | 92.48302068 |
| 23–23.99 months | 0.875000447 | 86.8381751 | 0.04024706 | 80.35680765 | 81.16637022 | 82.41493357 | 84.50655294 | 86.8381751 | 89.1777232 | 91.29003583 | 92.55713369 | 93.38120251 |
| 24–24.99 months | 1.00720807 | 87.66160934 | 0.040395626 | 81.06037074 | 81.88868489 | 83.16400989 | 85.29470553 | 87.66160934 | 90.02804829 | 92.15753004 | 93.43176749 | 94.25923029 |
| 25–25.99 months | 0.837251351 | 88.45247282 | 0.040577525 | 81.8052937 | 82.63445202 | 83.91387064 | 86.05887745 | 88.45247282 | 90.85675457 | 93.02966054 | 94.33406648 | 95.18278047 |
| 26–26.99 months | 0.681492975 | 89.22326434 | 0.040723122 | 82.5341574 | 83.36406112 | 84.64716151 | 86.8051731 | 89.22326434 | 91.6626041 | 93.87608163 | 95.20884914 | 96.07761711 |
| 27–27.99 months | 0.538779654 | 89.97549228 | 0.040833194 | 83.24845648 | 84.07898582 | 85.36534433 | 87.53506945 | 89.97549228 | 92.44711353 | 94.69827114 | 96.05754106 | 96.94511823 |
| 28–28.99 months | 0.407697153 | 90.71040853 | 0.040909059 | 83.94944982 | 84.78045262 | 86.06961974 | 88.24977223 | 90.71040853 | 93.21159029 | 95.49757027 | 96.88148848 | 97.78662531 |
| 29–29.99 months | 0.286762453 | 91.42907762 | 0.040952433 | 84.63819399 | 85.46948449 | 86.76098331 | 88.95028421 | 91.42907762 | 93.95718995 | 96.27522083 | 97.68197981 | 98.6034532 |
| 30–30.99 months | 0.174489485 | 92.13242379 | 0.04096533 | 85.31558277 | 86.1469433 | 87.44027154 | 89.63745411 | 92.13242379 | 94.68495599 | 97.03239427 | 98.46026663 | 99.39690538 |
| 31–31.99 months | 0.069444521 | 92.82127167 | 0.040949976 | 85.98238019 | 86.81356554 | 88.10820085 | 90.3120186 | 92.82127167 | 95.39585394 | 97.77021533 | 99.2175791 | 100.1682833 |
| 32–32.99 months | -0.029720564 | 93.49637946 | 0.040908737 | 86.63925011 | 87.46999332 | 88.76540055 | 90.97463683 | 93.49637946 | 96.09079906 | 98.48978097 | 99.95513792 | 100.9188932 |
| 33–33.99 months | -0.124251789 | 94.15846546 | 0.040844062 | 87.28678276 | 88.11680155 | 89.41244073 | 91.62591867 | 94.15846546 | 96.77067824 | 99.19217521 | 100.6741635 | 101.6500508 |
| 34–34.99 months | -0.215288396 | 94.80822923 | 0.040758431 | 87.92551862 | 88.75452162 | 90.04985581 | 92.26644774 | 94.80822923 | 97.43636727 | 99.8784807 | 101.3758831 | 102.3630853 |
| 35–35.99 months | -0.30385434 | 95.44636981 | 0.040654312 | 88.55596799 | 89.38366128 | 90.67816458 | 92.89680119 | 95.44636981 | 98.08874542 | 100.5497877 | 102.0615351 | 103.0593402 |
| Girls | | | | | | | | | | | | |
| Birth | -1.295960857 | 49.28639612 | 0.05008556 | 45.16290983 | 45.63583839 | 46.38717056 | 47.70947448 | 49.28639612 | 50.99057602 | 52.64705428 | 53.70008709 | 54.41073727 |
| 0–0.99 months | -0.809249882 | 51.68358057 | 0.046818545 | 47.5343839 | 48.0208249 | 48.78800472 | 50.12141713 | 51.68358057 | 53.33761678 | 54.91147535 | 55.89473554 | 56.55076942 |
| 1–1.99 months | -0.050782985 | 55.28612813 | 0.0434439 | 51.01964 | 51.53503149 | 52.33953078 | 53.71386774 | 55.28612813 | 56.90755246 | 58.41025523 | 59.32973811 | 59.93512871 |
| 2–2.99 months | 0.476851407 | 58.09381906 | 0.041716103 | 53.69072443 | 54.23298148 | 55.07361272 | 56.49359771 | 58.09381906 | 59.71777002 | 61.19969178 | 62.09577757 | 62.68142294 |
| 3–3.99 months | 0.843299612 | 60.45980763 | 0.040705173 | 55.92026196 | 56.48662578 | 57.46048247 | 58.82538022 | 60.45980763 | 62.10128248 | 63.58457922 | 64.47491479 | 65.05417552 |
| 4–4.99 months | 1.097562257 | 62.53669656 | 0.040079765 | 57.86522501 | 58.4532373 | 59.3575223 | 60.86551938 | 62.53669656 | 64.20347124 | 65.69997036 | 66.59395216 | 67.17389743 |
| 5–5.99 months | 1.272509641 | 64.40632762 | 0.039686845 | 59.60832861 | 60.21593325 | 61.14823459 | 62.69739258 | 64.40632762 | 66.10283931 | 67.61954037 | 68.52274397 | 69.10755723 |
| 6–6.99 months | 1.390428859 | 66.11841553 | 0.039444555 | 61.19916978 | 61.82466699 | 62.78295251 | 64.37145135 | 66.11841553 | 67.84732266 | 69.38863359 | 70.30459957 | 70.89693895 |
| 7–7.99 months | 1.466733925 | 67.70574419 | 0.039304738 | 62.67013206 | 63.31211299 | 64.2946723 | 65.92086464 | 67.70574419 | 69.46866839 | 71.03747474 | 71.96855522 | 72.5701931 |

Table 18. L, M, and S, parameters and selected smoothed percentiles for recumbent length (in centimeters) by sex and age: Birth to 36 months—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|---------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | L | M | S | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | | |
| 8–8.99 months | 1.512301976 | 69.19123614 | 0.03923711 | 64.04368248 | 64.70097098 | 65.70635581 | 67.3687658 | 69.19123614 | 70.9891564 | 72.5873908 | 73.53519665 | 74.14735522 |
| 9–9.99 months | 1.534950767 | 70.59163924 | 0.039221665 | 65.33613405 | 66.0077396 | 67.03471346 | 68.73201986 | 70.59163924 | 72.42511841 | 74.05408822 | 75.01974455 | 75.64328643 |
| 10–10.99 months | 1.540390875 | 71.91961673 | 0.039244672 | 66.55975865 | 67.24483959 | 68.29233743 | 70.02335386 | 71.91961673 | 73.7889394 | 75.44952668 | 76.43382785 | 77.06937115 |
| 11–11.99 months | 1.532852892 | 73.1850104 | 0.03929642 | 67.7240539 | 68.42188876 | 69.48898529 | 71.25264177 | 73.1850104 | 75.09027076 | 76.78305993 | 77.78656813 | 78.43455934 |
| 12–12.99 months | 1.51550947 | 74.39564379 | 0.039369875 | 68.8365432 | 69.54650838 | 70.6323931 | 72.42771996 | 74.39564379 | 76.33680358 | 78.06216608 | 79.08527641 | 79.74603843 |
| 13–13.99 months | 1.490765028 | 75.5578544 | 0.039459832 | 69.9033028 | 70.62485507 | 71.72881264 | 73.55492682 | 75.5578544 | 77.53478229 | 79.29293439 | 80.33591931 | 81.00968409 |
| 14–14.99 months | 1.460458255 | 76.67685871 | 0.039562382 | 70.92932142 | 71.66198409 | 72.78337866 | 74.63947222 | 76.67685871 | 78.68935763 | 80.480401 | 81.54344138 | 82.2303728 |
| 15–15.99 months | 1.426006009 | 77.75700986 | 0.039674542 | 71.91875303 | 72.66210489 | 73.8003676 | 75.6856981 | 77.75700986 | 79.80483633 | 81.62878705 | 82.7119945 | 83.41220466 |
| 16–16.99 months | 1.388507095 | 78.80198406 | 0.03979401 | 72.87509898 | 73.6287655 | 74.78338431 | 76.69726669 | 78.80198406 | 80.88486219 | 82.74167188 | 83.84510502 | 84.55866622 |
| 17–17.99 months | 1.348818127 | 79.81491852 | 0.039918994 | 73.80134232 | 74.56498844 | 75.73549992 | 77.67729966 | 79.81491852 | 81.9325501 | 83.82212167 | 84.94579817 | 85.67275177 |
| 18–18.99 months | 1.307609654 | 80.79851532 | 0.040048084 | 74.70004853 | 75.47337286 | 76.6593554 | 78.62848273 | 80.79851532 | 82.9505873 | 84.87278665 | 86.01669241 | 86.75705551 |
| 19–19.99 months | 1.265408149 | 81.75512092 | 0.040180162 | 75.57344266 | 76.35617266 | 77.55724085 | 79.55314579 | 81.75512092 | 83.94131098 | 85.89597597 | 87.06007202 | 87.81384263 |
| 20–20.99 months | 1.222627732 | 82.6867881 | 0.04031434 | 76.42346895 | 77.21535696 | 78.43115695 | 80.45332508 | 82.6867881 | 84.90676875 | 86.89371606 | 88.07794398 | 88.84510488 |
| 21–21.99 months | 1.179594365 | 83.59532461 | 0.040449904 | 77.25183786 | 78.05265781 | 79.28286338 | 81.33081218 | 83.59532461 | 85.84876629 | 87.86779673 | 89.07208283 | 89.85260475 |
| 22–22.99 months | 1.136564448 | 84.48233206 | 0.040586283 | 78.06006336 | 78.86960798 | 80.11391724 | 82.18719293 | 84.48233206 | 86.76890547 | 88.81980812 | 90.0440667 | 90.83791074 |
| 23–23.99 months | 1.093731947 | 85.34923624 | 0.040723015 | 78.84949387 | 79.66757195 | 80.92570398 | 83.02387816 | 85.34923624 | 87.6686143 | 89.75117034 | 90.99530689 | 91.80242687 |
| 24–24.99 months | 1.051272912 | 86.1973169 | 0.040859727 | 79.62133263 | 80.44776859 | 81.71946302 | 83.84213246 | 86.1973169 | 88.54917522 | 90.66315834 | 91.92706971 | 92.74741225 |
| 25–25.99 months | 1.041951175 | 87.09026318 | 0.041142161 | 80.40197647 | 81.24225735 | 82.53540957 | 84.69430336 | 87.09026318 | 89.483435 | 91.63504785 | 92.92167631 | 93.75684975 |
| 26–26.99 months | 1.012592236 | 87.95714182 | 0.041349399 | 81.17554759 | 82.02666181 | 83.3369944 | 85.52592034 | 87.95714182 | 90.3875095 | 92.57420584 | 93.88254082 | 94.7320912 |
| 27–27.99 months | 0.970541909 | 88.7960184 | 0.041500428 | 81.9356973 | 82.79539596 | 84.11968453 | 86.33389245 | 88.7960184 | 91.26017565 | 93.47968776 | 94.80872819 | 95.67214661 |
| 28–28.99 months | 0.921129988 | 89.6055115 | 0.041610508 | 82.67746051 | 83.54410888 | 84.87997909 | 87.11588888 | 89.6055115 | 92.10065173 | 94.35096822 | 95.69974364 | 96.57649339 |
| 29–29.99 months | 0.868221392 | 90.38476689 | 0.041691761 | 83.39711819 | 84.26956585 | 85.61531679 | 87.87028387 | 90.38476689 | 92.90858598 | 95.18792816 | 96.55551171 | 97.44504712 |
| 30–30.99 months | 0.81454413 | 91.13341722 | 0.04175368 | 84.09206184 | 84.96952943 | 86.32398013 | 88.5960919 | 91.13341722 | 93.68403041 | 95.99083262 | 97.37635253 | 98.27813528 |
| 31–31.99 months | 0.761957977 | 91.8515436 | 0.041803562 | 84.76065415 | 85.64263937 | 87.00500071 | 89.29290603 | 91.8515436 | 94.42741325 | 96.76030359 | 98.16295103 | 99.07646264 |
| 32–32.99 months | 0.711660228 | 92.5396352 | 0.041846882 | 85.40209562 | 86.28829708 | 87.65806752 | 89.96083624 | 92.5396352 | 95.13950841 | 97.49728978 | 98.91632342 | 99.84107435 |
| 33–33.99 months | 0.664323379 | 93.19854429 | 0.041887626 | 86.01630353 | 86.90655881 | 88.28343922 | 90.60044644 | 93.19854429 | 95.82140026 | 98.20303421 | 99.63778417 | 100.5733217 |
| 34–34.99 months | 0.620285102 | 93.82945392 | 0.041928568 | 86.60378996 | 87.49803144 | 88.88186325 | 91.21270297 | 93.82945392 | 96.47445723 | 98.87904266 | 100.328907 | 101.2748164 |
| 35–35.99 months | 0.57955631 | 94.43382278 | 0.041971514 | 87.16557262 | 88.06378819 | 89.4544988 | 91.79890839 | 94.43382278 | 97.10028751 | 99.52704954 | 100.991497 | 101.9474075 |

Table 19. *L, M, and S, parameters and selected smoothed percentiles for weight (in kilograms) by sex and recumbent length (in centimeters): Birth to 36 months—Con.*

| Sex and length interval | Percentile | | | | | | | | | | | |
|--------------------------------|--------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys—Con. | | | | | | | | | | | | |
| 94–94.99 centimeters | -1.028990493 | 14.10065234 | 0.076466299 | 12.33079298 | 12.52772045 | 12.84375146 | 13.40955269 | 14.10065234 | 14.86806787 | 15.63507513 | 16.13376622 | 16.47529604 |
| 95–95.99 centimeters | -1.091024455 | 14.34419522 | 0.076687482 | 12.54591071 | 12.74530738 | 13.06564953 | 13.64028082 | 14.34419522 | 15.12860179 | 15.91565257 | 16.42909034 | 16.78152407 |
| 96–96.99 centimeters | -1.161574946 | 14.59115139 | 0.076937631 | 12.76441819 | 12.9661743 | 13.29070461 | 13.87412402 | 14.59115139 | 15.39339911 | 16.20197359 | 16.73150285 | 17.09595206 |
| 97–97.99 centimeters | -1.240820737 | 14.84177007 | 0.077214912 | 12.98660961 | 13.19060724 | 13.5191898 | 14.11133652 | 14.84177007 | 15.66274835 | 16.494444 | 17.04154573 | 17.41925008 |
| 98–98.99 centimeters | -1.328879402 | 15.0962879 | 0.077516968 | 13.21277431 | 13.41888786 | 13.75137383 | 14.3521657 | 15.0962879 | 15.93691963 | 16.79345342 | 17.35975605 | 17.75209809 |
| 99–99.99 centimeters | -1.425809463 | 15.35492729 | 0.077840877 | 13.44319598 | 13.65129272 | 13.98752021 | 14.59685108 | 15.35492729 | 16.21616173 | 17.09937174 | 17.68666374 | 18.09518631 |
| 100–100.99 centimeters | -1.531575592 | 15.61789822 | 0.078183177 | 13.67814897 | 13.88809057 | 14.22788616 | 14.8456253 | 15.61789822 | 16.50070256 | 17.41254676 | 18.02278798 | 18.44921206 |
| 101–101.99 centimeters | -1.646081976 | 15.88539464 | 0.078539804 | 13.91789949 | 14.12954284 | 14.47272193 | 15.09871195 | 15.88539464 | 16.79074422 | 17.73329941 | 18.36863542 | 18.81488277 |
| 102–102.99 centimeters | -1.769082483 | 16.15760201 | 0.078906277 | 14.16269719 | 14.37589784 | 14.722269 | 15.35632936 | 16.15760201 | 17.08646948 | 18.06192364 | 18.72469422 | 19.19290687 |
| Girls | | | | | | | | | | | | |
| 45–45.99 centimeters | 0.699616404 | 2.403256702 | 0.157654766 | 1.723754478 | 1.805222631 | 1.932850514 | 2.151843669 | 2.403256702 | 2.662835955 | 2.90317596 | 3.049956403 | 3.146436315 |
| 46–46.99 centimeters | 0.747915684 | 2.606020484 | 0.139389663 | 1.946460733 | 2.026496007 | 2.151303478 | 2.363960397 | 2.606020484 | 2.853889995 | 3.081735239 | 3.220172553 | 3.310892709 |
| 47–47.99 centimeters | 0.751754737 | 2.817114082 | 0.125837223 | 2.170805299 | 2.249554961 | 2.37216013 | 2.580564792 | 2.817114082 | 3.058703241 | 3.280280685 | 3.414702479 | 3.502712567 |
| 48–48.99 centimeters | 0.691329975 | 3.035356101 | 0.115888948 | 2.396673878 | 2.474214132 | 2.595089193 | 2.80098615 | 3.035356101 | 3.275451769 | 3.496304856 | 3.630584823 | 3.718622563 |
| 49–49.99 centimeters | 0.559107556 | 3.259693318 | 0.108648608 | 2.623845869 | 2.700266794 | 2.819827425 | 3.024685576 | 3.259693318 | 3.502419401 | 3.72742595 | 3.865029598 | 3.955569802 |
| 50–50.99 centimeters | 0.361549127 | 3.48922017 | 0.103402703 | 2.852008338 | 2.92747924 | 3.046162798 | 3.251250865 | 3.48922017 | 3.738025406 | 3.971395567 | 4.115400222 | 4.210681986 |
| 51–51.99 centimeters | 0.116436203 | 3.723195489 | 0.099599651 | 3.08077988 | 3.155581427 | 3.273900839 | 3.480372197 | 3.723195489 | 3.980867931 | 4.2261236 | 4.37920066 | 4.481218409 |
| 52–52.99 centimeters | -0.152509094 | 3.961034945 | 0.096830356 | 3.309743456 | 3.384266533 | 3.502832371 | 3.71180166 | 3.961034945 | 4.229754129 | 4.489708217 | 4.654076004 | 4.76453627 |
| 53–53.99 centimeters | -0.421478627 | 4.202270022 | 0.09480477 | 3.538486235 | 3.613206007 | 3.732716377 | 3.945306087 | 4.202270022 | 4.483693775 | 4.760455514 | 4.937828528 | 5.058090815 |
| 54–54.99 centimeters | -0.671388289 | 4.446476028 | 0.093323068 | 3.766648425 | 3.842082114 | 3.963283111 | 4.180622529 | 4.446476028 | 4.741844038 | 5.036873117 | 5.228445091 | 5.359480791 |
| 55–55.99 centimeters | -0.889973526 | 4.693220151 | 0.092246459 | 3.99394852 | 4.070613878 | 4.194251416 | 4.417443974 | 4.693220151 | 5.003447846 | 5.317643817 | 5.524112903 | 5.666497508 |
| 56–56.99 centimeters | -1.071844454 | 4.942029343 | 0.091473166 | 4.22019582 | 4.298576091 | 4.425349217 | 4.65542253 | 4.942029343 | 5.267777008 | 5.601587401 | 5.823223715 | 5.977171656 |
| 57–57.99 centimeters | -1.216671445 | 5.192403337 | 0.090923715 | 4.445271101 | 4.525795306 | 4.656327074 | 4.894194501 | 5.192403337 | 5.534118638 | 5.887634175 | 6.124358847 | 6.289778737 |
| 58–58.99 centimeters | -1.327360462 | 5.443830096 | 0.090532906 | 4.669110719 | 4.75214371 | 4.886964602 | 5.133398784 | 5.443830096 | 5.801772695 | 6.174806785 | 6.426273604 | 6.602835746 |
| 59–59.99 centimeters | -1.408261687 | 5.69581328 | 0.090246768 | 4.891682562 | 4.977524782 | 5.117070202 | 5.372695342 | 5.69581328 | 6.070070759 | 6.462216757 | 6.72878776 | 6.91507564 |
| 60–60.99 centimeters | -1.464051065 | 5.947889759 | 0.090021128 | 5.112971092 | 5.201863101 | 5.34647836 | 5.6111774363 | 5.947889759 | 6.33839139 | 6.749065162 | 7.025424353 | 7.225424353 |
| 61–61.99 centimeters | -1.499105627 | 6.199640267 | 0.089820688 | 5.332968047 | 5.42509726 | 5.57504651 | 5.850360248 | 6.199640267 | 6.606171625 | 7.034644746 | 7.326504329 | 7.532980555 |
| 62–62.99 centimeters | -1.517197913 | 6.450695818 | 0.089618171 | 5.551666409 | 5.64717487 | 5.80265208 | 6.088213081 | 6.450695818 | 6.872915135 | 7.3183342 | 7.622019771 | 7.836997958 |
| 63–63.99 centimeters | -1.521479703 | 6.700736725 | 0.089393174 | 5.769060531 | 5.868051772 | 6.029190763 | 6.325126546 | 6.700736725 | 7.138192567 | 7.59963607 | 7.914202723 | 8.136875366 |
| 64–64.99 centimeters | -1.514481331 | 6.949493534 | 0.089131254 | 5.985144406 | 6.08769022 | 6.254574837 | 6.560927184 | 6.949493534 | 7.401643498 | 7.878098236 | 8.202595917 | 8.432144771 |
| 65–65.99 centimeters | -1.498204976 | 7.196744733 | 0.088822943 | 6.199912645 | 6.306059022 | 6.478732239 | 6.795472337 | 7.196744733 | 7.662974516 | 8.15338936 | 8.486850867 | 8.722463522 |
| 66–66.99 centimeters | -1.474231858 | 7.442313819 | 0.088462854 | 6.413361985 | 6.523134146 | 6.701605945 | 7.028648027 | 7.442313819 | 7.921956215 | 8.425256531 | 8.766723181 | 9.00760766 |
| 67–67.99 centimeters | -1.443808911 | 7.686067039 | 0.088048963 | 6.625492182 | 6.738899009 | 6.923153436 | 7.260367355 | 7.686067039 | 8.17842062 | 8.693529674 | 9.04206755 | 9.287464886 |
| 68–68.99 centimeters | -1.407959107 | 7.92790936 | 0.087581916 | 6.836308446 | 6.953345818 | 7.143346471 | 7.49056809 | 7.92790936 | 8.432256562 | 8.958117069 | 9.312833279 | 9.562029761 |
| 69–69.99 centimeters | -1.367521025 | 8.167783677 | 0.087064605 | 7.045821054 | 7.166475096 | 7.362170518 | 7.719212002 | 8.167783677 | 8.683408324 | 9.219002186 | 9.579058661 | 9.831395513 |
| 70–70.99 centimeters | -1.32324327 | 8.405666621 | 0.086501667 | 7.254047943 | 7.378297165 | 7.579624634 | 7.946282454 | 8.405666621 | 8.931870645 | 9.47623884 | 9.840866488 | 10.09574977 |
| 71–71.99 centimeters | -1.275834578 | 8.641566305 | 0.085899159 | 7.461015613 | 7.588832522 | 7.795721098 | 8.171783008 | 8.641566305 | 9.177685743 | 9.729947188 | 10.09845888 | 10.35536822 |
| 72–72.99 centimeters | -1.226014257 | 8.875519723 | 0.085264271 | 7.666760352 | 7.798112411 | 8.010485082 | 8.395735838 | 8.875519723 | 9.420939935 | 9.980309503 | 10.3521122 | 10.61060874 |
| 73–73.99 centimeters | -1.174555804 | 9.107590221 | 0.084605096 | 7.871329398 | 8.006179356 | 8.223954294 | 8.61818018 | 9.107590221 | 9.661760324 | 10.22756595 | 10.60217203 | 10.86190554 |
| 74–74.99 centimeters | -1.122323639 | 9.337865054 | 0.083930435 | 8.07478203 | 8.213087629 | 8.436178609 | 8.839170822 | 9.337865054 | 9.900311537 | 10.47201035 | 10.84904795 | 11.10976332 |
| 75–75.99 centimeters | -1.070302348 | 9.566453061 | 0.083249631 | 8.277190538 | 8.418903651 | 8.647219687 | 9.05877667 | 9.566453061 | 10.13679255 | 10.7139859 | 11.09320847 | 11.35475136 |
| 76–76.99 centimeters | -1.019617172 | 9.793482492 | 0.082572421 | 8.478641037 | 8.623706299 | 8.857150596 | 9.277079452 | 9.793482492 | 10.37143354 | 10.95388092 | 11.33517576 | 11.59749766 |
| 77–77.99 centimeters | -0.971544123 | 10.01909902 | 0.081908788 | 8.679234065 | 8.82758712 | 9.066055489 | 9.494172583 | 10.01909902 | 10.60449286 | 11.19212443 | 11.57552036 | 11.83868308 |
| 78–78.99 centimeters | -0.927495981 | 10.24346467 | 0.081268832 | 8.879084281 | 9.03065003 | 9.274029292 | 9.710160711 | 10.24346467 | 10.83625465 | 11.42918192 | 11.81485555 | 12.07903468 |
| 79–79.99 centimeters | -0.889046221 | 10.46675386 | 0.080662561 | 9.078322619 | 9.233012616 | 9.481177715 | 9.925157686 | 10.46675386 | 11.06702353 | 11.66554993 | 12.05383282 | 12.3193224 |
| 80–80.99 centimeters | -0.857844783 | 10.6891553 | 0.080099785 | 9.277093118 | 9.434804244 | 9.68761705 | 10.13928821 | 10.6891553 | 11.29712459 | 11.90175234 | 12.29313502 | 12.56034996 |
| 81–81.99 centimeters | -0.835600041 | 10.91086924 | 0.079589888 | 9.475553729 | 9.636166759 | 9.893474476 | 10.35268693 | 10.91086924 | 11.52689868 | 12.13833477 | 12.53347134 | 12.80295084 |
| 82–82.99 centimeters | -0.824007806 | 11.13210717 | 0.079141623 | 9.673874713 | 9.837253816 | 10.0988884 | 10.56549933 | 11.13210717 | 11.75669976 | 12.37585953 | 12.77557129 | 13.04798203 |

Table 19. L, M, and S, parameters and selected smoothed percentiles for weight (in kilograms) by sex and recumbent length (in centimeters): Birth to 36 months—Con.

| Sex and length interval | Percentile | | | | | | | | | | | |
|------------------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | L | M | S | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | | |
| 83–83.99 centimeters | -0.824673085 | 11.35309164 | 0.078762888 | 9.872236954 | 10.03823028 | 10.30400903 | 10.77788274 | 11.35309164 | 11.98689198 | 12.61490029 | 13.02017859 | 13.29631805 |
| 84–84.99 centimeters | -0.839021353 | 11.57405623 | 0.078460511 | 10.07082987 | 10.2392715 | 10.50899902 | 10.9900078 | 11.57405623 | 12.21784683 | 12.85603662 | 13.26804494 | 13.54884494 |
| 85–85.99 centimeters | -0.868191531 | 11.79524697 | 0.078240047 | 10.26984825 | 10.44056188 | 10.71403421 | 11.20206069 | 11.79524697 | 12.44994139 | 13.0998487 | 13.51992325 | 13.80645301 |
| 86–86.99 centimeters | -0.912987527 | 12.0169203 | 0.078105554 | 10.46949211 | 10.64229536 | 10.9193044 | 11.41424337 | 12.0169203 | 12.68355339 | 13.346911 | 13.77656207 | 14.07003317 |
| 87–87.99 centimeters | -0.973732843 | 12.23934838 | 0.078059544 | 10.66996042 | 10.84467191 | 11.12501362 | 11.62677789 | 12.23934838 | 12.91906338 | 13.59778826 | 14.03869722 | 14.3404656 |
| 88–88.99 centimeters | -1.050238631 | 12.46281861 | 0.078102898 | 10.87145032 | 11.04789724 | 11.33138025 | 11.83990685 | 12.46281861 | 13.15685175 | 13.85303006 | 14.3070456 | 14.61861423 |
| 89–89.99 centimeters | -1.141750538 | 12.68763627 | 0.078234935 | 11.07415394 | 11.25218061 | 11.53863663 | 12.05389519 | 12.68763627 | 13.39729953 | 14.1131669 | 14.5822978 | 14.90531723 |
| 90–90.99 centimeters | -1.246935039 | 12.9141268 | 0.078453576 | 11.27825609 | 11.45773296 | 11.74702786 | 12.26903094 | 12.9141268 | 13.64078954 | 14.37870706 | 14.86511095 | 15.20137719 |
| 91–91.99 centimeters | -1.363881842 | 13.1426393 | 0.078755652 | 11.48393116 | 11.66476403 | 11.95681 | 12.48562589 | 13.1426393 | 13.88771008 | 14.65013514 | 15.1561012 | 15.50754879 |
| 92–92.99 centimeters | -1.490235591 | 13.37354263 | 0.079137144 | 11.69134669 | 11.87348344 | 12.16824818 | 12.70401141 | 13.37354263 | 14.13845236 | 14.92790917 | 15.45583919 | 15.82453284 |
| 93–93.99 centimeters | -1.623204367 | 13.60723197 | 0.079593737 | 11.9006578 | 12.08409573 | 12.38161332 | 12.92453941 | 13.60723197 | 14.39341959 | 15.21246325 | 15.76484189 | 16.1529576 |
| 94–94.99 centimeters | -1.759750536 | 13.84412275 | 0.080121122 | 12.11201227 | 12.29680209 | 12.5971797 | 13.14757603 | 13.84412275 | 14.65302443 | 15.5042068 | 16.08356951 | 16.49337198 |
| 95–95.99 centimeters | -1.896722704 | 14.08464853 | 0.080715361 | 12.32555163 | 12.51179974 | 12.81522219 | 13.37349756 | 14.08464853 | 14.91769089 | 15.80352641 | 16.41242128 | 16.84623319 |
| 96–96.99 centimeters | -2.031079769 | 14.32925018 | 0.081372938 | 12.54141939 | 12.72928607 | 13.03601505 | 13.60268237 | 14.32925018 | 15.1878468 | 16.11078394 | 16.75173457 | 17.21190355 |
| 97–97.99 centimeters | -2.159985258 | 14.57837334 | 0.082090922 | 12.75976132 | 12.9494582 | 13.25983009 | 13.83550775 | 14.57837334 | 15.4639243 | 16.42631821 | 17.10178143 | 17.59063809 |
| 98–98.99 centimeters | -2.280992946 | 14.8324557 | 0.082866693 | 12.98073439 | 13.17251854 | 13.48693728 | 14.07234276 | 14.8324557 | 15.74634796 | 16.7504403 | 17.46276845 | 17.9825849 |
| 99–99.99 centimeters | -2.392125361 | 15.09192012 | 0.083697706 | 13.20451042 | 13.39867734 | 13.71760521 | 14.31354493 | 15.09192012 | 16.03552754 | 17.08342993 | 17.83483458 | 18.38778042 |
| 100–100.99 centimeters . . . | -2.491985117 | 15.35716167 | 0.08458092 | 13.43128538 | 13.62815947 | 13.95210374 | 14.55945515 | 15.35716167 | 16.33184172 | 17.42552542 | 18.21805007 | 18.80615497 |
| 101–101.99 centimeters . . . | -2.579688446 | 15.62854849 | 0.085512655 | 13.66127661 | 13.86120318 | 14.19070443 | 14.81039951 | 15.62854849 | 16.63563645 | 17.77692011 | 18.61241094 | 19.23752318 |
| 102–102.99 centimeters . . . | -2.654922113 | 15.90640903 | 0.086487929 | 13.89473275 | 14.09806774 | 14.43368432 | 15.06668553 | 15.90640903 | 16.94720609 | 18.13774777 | 19.01783635 | 19.68159413 |

Table 20. *L, M, and S, parameters and selected smoothed percentiles for head circumference (in centimeters) by sex and age: Birth to 36 months*

| Sex and age | Percentile | | | | | | | | | | | |
|---------------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys | | | | | | | | | | | | |
| Birth | 4.427825037 | 35.81366835 | 0.052172542 | 31.48762321 | 32.14881105 | 33.08389492 | 34.46951803 | 35.81366835 | 37.00426196 | 37.97379421 | 38.51574 | 38.85417217 |
| 0–0.99 months | 4.310927464 | 37.19361054 | 0.047259148 | 33.25005839 | 33.83391575 | 34.67252717 | 35.93986771 | 37.19361054 | 38.3212548 | 39.24988502 | 39.77261565 | 40.10028445 |
| 1–1.99 months | 3.869576802 | 39.20742929 | 0.040947903 | 35.78126227 | 36.26427603 | 36.97376845 | 38.07877607 | 39.20742929 | 40.2498675 | 41.12605049 | 41.62581415 | 41.94137873 |
| 2–2.99 months | 3.305593039 | 40.65233195 | 0.037027722 | 37.55879748 | 37.97958783 | 38.60724429 | 39.60636994 | 40.65233195 | 41.63967944 | 42.48435504 | 42.97189144 | 43.28180775 |
| 3–3.99 months | 2.720590297 | 41.76516959 | 0.034364245 | 38.89944028 | 39.27893049 | 39.85122805 | 40.77712846 | 41.76516959 | 42.71454952 | 43.5390162 | 44.01984454 | 44.3273323 |
| 4–4.99 months | 2.16804824 | 42.66116148 | 0.032462175 | 39.956733 | 40.30765556 | 40.8411358 | 41.71483367 | 42.66116148 | 43.58358267 | 44.39471535 | 44.87197284 | 45.17876946 |
| 5–5.99 months | 1.675465689 | 43.40488731 | 0.031064702 | 40.8164238 | 41.14714268 | 41.65290563 | 42.48888872 | 43.40488731 | 44.30801 | 45.11034335 | 45.58592624 | 45.89299742 |
| 6–6.99 months | 1.255160322 | 44.03609923 | 0.03002267 | 41.53109397 | 41.84741554 | 42.33330145 | 43.14204136 | 44.03609923 | 44.92554888 | 45.72225458 | 46.19735808 | 46.50523827 |
| 7–7.99 months | 0.91054114 | 44.58096912 | 0.029242173 | 42.13520784 | 42.44134027 | 42.91311128 | 43.70245428 | 44.58096912 | 45.46103549 | 46.25442887 | 46.7298272 | 47.03879825 |
| 8–8.99 months | 0.639510474 | 45.05761215 | 0.028660454 | 42.65252672 | 42.95162383 | 43.41364704 | 44.18963565 | 45.05761215 | 45.93165855 | 46.72349076 | 47.19970004 | 47.50989695 |
| 9–9.99 months | 0.436978864 | 45.4790756 | 0.0282336 | 43.1000854 | 43.39457866 | 43.85025055 | 44.61764431 | 45.4790756 | 46.34979269 | 47.14142337 | 47.61879558 | 47.93026746 |
| 10–10.99 months | 0.296275856 | 45.85505706 | 0.027929764 | 43.49049033 | 43.78229887 | 44.23431798 | 44.99693519 | 45.85505706 | 46.72463077 | 47.5171388 | 47.99592075 | 48.30866909 |
| 11–11.99 months | 0.210107251 | 46.19295427 | 0.027725179 | 43.83331672 | 44.12398596 | 44.57453557 | 45.33548679 | 46.19295427 | 47.06318161 | 47.85743833 | 48.33780885 | 48.65181107 |
| 12–12.99 months | 0.171147024 | 46.49853438 | 0.027601686 | 44.1359978 | 44.42679395 | 44.87766812 | 45.6395204 | 46.49853438 | 47.37090639 | 48.1676259 | 48.64971976 | 48.96494367 |
| 13–13.99 months | 0.172393886 | 46.77637684 | 0.027545148 | 44.40441201 | 44.69638826 | 45.14908116 | 45.91397652 | 46.77637684 | 47.65213989 | 48.4519147 | 48.93583823 | 49.25225076 |
| 14–14.99 months | 0.207371541 | 47.03017599 | 0.027544382 | 44.6432831 | 44.93732702 | 45.39309769 | 46.16284044 | 47.03017599 | 47.9103782 | 48.71370522 | 49.19954641 | 49.51711865 |
| 15–15.99 months | 0.270226126 | 47.2629533 | 0.027590417 | 44.85646007 | 45.1533284 | 45.61324855 | 46.38937093 | 47.2629533 | 48.14848042 | 48.95578033 | 49.44361553 | 49.76232529 |
| 16–16.99 months | 0.355757274 | 47.47720989 | 0.02767598 | 45.0471177 | 45.34746216 | 45.81245227 | 46.5962646 | 47.47720989 | 48.36881356 | 49.18044547 | 49.67034368 | 49.99017661 |
| 17–17.99 months | 0.459407627 | 47.67503833 | 0.027795115 | 45.21790307 | 45.52229008 | 45.99314685 | 46.78577645 | 47.67503833 | 48.57335854 | 49.38963138 | 49.88165697 | 50.20260675 |
| 18–18.99 months | 0.577227615 | 47.85820606 | 0.0279429 | 45.37104465 | 45.67997038 | 46.1573882 | 46.95980996 | 47.85820606 | 48.76378933 | 49.58497069 | 50.07918514 | 50.40125302 |
| 19–19.99 months | 0.705826778 | 48.02821867 | 0.028115241 | 45.50843477 | 45.82233697 | 46.30692463 | 47.1199854 | 48.02821867 | 48.94153284 | 49.767856 | 50.26431891 | 50.58751304 |
| 20–20.99 months | 0.842319055 | 48.18636864 | 0.028308707 | 45.63169219 | 45.95096016 | 46.4432543 | 47.2676925 | 48.18636864 | 49.10781495 | 49.93948448 | 50.43825419 | 50.76258871 |
| 21–21.99 months | 0.984266833 | 48.3337732 | 0.028520407 | 45.74221477 | 46.06719402 | 46.56766983 | 47.4041314 | 48.3337732 | 49.26369641 | 50.10089268 | 50.60202648 | 50.92752068 |
| 22–22.99 months | 1.129626698 | 48.47140432 | 0.028747896 | 45.84121112 | 46.17221358 | 46.68129357 | 47.53034509 | 48.47140432 | 49.41010098 | 50.25298383 | 50.75653813 | 51.0832155 |
| 23–23.99 months | 1.276691223 | 48.60011223 | 0.028989089 | 45.92973857 | 46.26704456 | 46.78510558 | 47.64724492 | 48.60011223 | 49.54783776 | 50.39654965 | 50.90258011 | 51.23046767 |
| 24–24.99 months | 1.424084853 | 48.72064621 | 0.029242207 | 46.00872286 | 46.35258644 | 46.87996641 | 47.75563267 | 48.72064621 | 49.67762038 | 50.53228805 | 51.04084871 | 51.36997568 |
| 25–25.99 months | 1.570621291 | 48.83366629 | 0.029505723 | 46.07898233 | 46.42963351 | 46.96663488 | 47.85621436 | 48.83366629 | 49.80007885 | 50.6608169 | 51.17196156 | 51.50235977 |
| 26–26.99 months | 1.715393998 | 48.93976089 | 0.029778323 | 46.14123974 | 46.49888834 | 47.0457837 | 47.9496179 | 48.93976089 | 49.91577508 | 50.78268619 | 51.29646691 | 51.62816923 |
| 27–27.99 months | 1.857652984 | 49.03945383 | 0.030058871 | 46.19613885 | 46.56097639 | 47.11801133 | 48.03640172 | 49.03945383 | 50.02521023 | 50.89838727 | 51.41485491 | 51.74789519 |
| 28–28.99 months | 1.996810563 | 49.13321432 | 0.030346384 | 46.24425435 | 46.61645615 | 47.18385241 | 48.11706526 | 49.13321432 | 50.12883385 | 51.00836092 | 51.52756491 | 51.8619775 |
| 29–29.99 months | 2.132411346 | 49.22146409 | 0.030640006 | 46.28610129 | 46.66582817 | 47.24378625 | 48.19205668 | 49.22146409 | 50.22705052 | 51.11300399 | 51.63499226 | 51.97081164 |
| 30–30.99 months | 2.264111009 | 49.30458348 | 0.030938992 | 46.32214286 | 46.70954267 | 47.29824404 | 48.26177952 | 49.30458348 | 50.32022568 | 51.212675 | 51.73749389 | 52.0747544 |
| 31–31.99 months | 2.391658052 | 49.38291658 | 0.031242693 | 46.35279696 | 46.7480058 | 47.34761489 | 48.32659828 | 49.38291658 | 50.4086904 | 51.30769888 | 51.83539311 | 52.17412868 |
| 32–32.99 months | 2.514878222 | 49.45677569 | 0.031550537 | 46.37844176 | 46.78158515 | 47.39225099 | 48.38684322 | 49.45677569 | 50.49274559 | 51.39837096 | 51.92898358 | 52.26922758 |
| 33–33.99 months | 2.633661226 | 49.526445 | 0.031862026 | 46.39942043 | 46.81061427 | 47.43247203 | 48.44281439 | 49.526445 | 50.57266545 | 51.48496048 | 52.01853284 | 52.36031789 |
| 34–34.99 months | 2.747949445 | 49.59218385 | 0.03217672 | 46.41604524 | 46.83539667 | 47.46856894 | 48.49478513 | 49.59218385 | 50.64870057 | 51.56771347 | 52.10428523 | 52.44764311 |
| 35–35.99 months | 2.857728375 | 49.65422952 | 0.032494231 | 46.42860105 | 46.85620919 | 47.50080715 | 48.54300509 | 49.65422952 | 50.72108047 | 51.64685536 | 52.18646448 | 52.53142603 |
| Girls | | | | | | | | | | | | |
| Birth | –1.298749689 | 34.7115617 | 0.046905108 | 31.93019666 | 32.25089861 | 32.75948527 | 33.65186554 | 34.7115617 | 35.85124044 | 36.9534983 | 37.65137722 | 38.12110271 |
| 0–0.99 months | –1.440271514 | 36.03453876 | 0.042999604 | 33.38070525 | 33.68743507 | 34.17345861 | 35.02508397 | 36.03453876 | 37.11806755 | 38.16405088 | 38.82535049 | 39.27005698 |
| 1–1.99 months | –1.581016348 | 37.97671987 | 0.038067862 | 35.48627093 | 35.77560367 | 36.23325692 | 37.03281566 | 37.97671987 | 38.9853304 | 39.95458524 | 40.56517149 | 40.97482424 |
| 2–2.99 months | –1.593136386 | 39.3801263 | 0.035079612 | 36.98550023 | 37.26521982 | 37.70685493 | 38.47603153 | 39.3801263 | 40.34145495 | 41.2606303 | 41.83732218 | 42.22321458 |
| 3–3.99 months | –1.521492427 | 40.46773733 | 0.033096443 | 38.13114313 | 38.40560987 | 38.83813686 | 39.58904997 | 40.46773733 | 41.39732095 | 42.28152907 | 42.83395649 | 43.20260356 |
| 4–4.99 months | –1.394565915 | 41.34841008 | 0.03170963 | 39.04619196 | 39.31813786 | 39.74588078 | 40.4861083 | 41.34841008 | 42.2560375 | 43.11489105 | 43.64924082 | 44.00485959 |
| 5–5.99 months | –1.231713389 | 42.0833507 | 0.030709039 | 39.79959574 | 40.07085921 | 40.49672423 | 41.23135738 | 42.0833507 | 42.97566066 | 43.81574641 | 44.33630066 | 44.68183088 |
| 6–6.99 months | –1.046582628 | 42.71033603 | 0.029974303 | 40.43379494 | 40.70567458 | 41.13171253 | 41.86434514 | 42.71033603 | 43.59207071 | 44.41814599 | 44.92802856 | 45.26562921 |
| 7–7.99 months | –0.848932692 | 43.25428882 | 0.029430992 | 40.97671526 | 41.25016088 | 41.67787092 | 42.41113299 | 43.25428882 | 44.1289691 | 44.94460711 | 45.44618705 | 45.77750554 |

Table 20. *L*, *M*, and *S*, parameters and selected smoothed percentiles for head circumference (in centimeters) by sex and age: Birth to 36 months—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|---------------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | | |
| 8–8.99 months | -0.645779124 | 43.73249646 | 0.029030379 | 41.44767738 | 41.72340175 | 42.15390873 | 42.88977797 | 43.73249646 | 44.60281599 | 45.41078317 | 45.90591158 | 46.23224218 |
| 9–9.99 months | -0.442165412 | 44.15742837 | 0.028739112 | 41.86058302 | 42.1391311 | 42.57329563 | 43.31329057 | 44.15742837 | 45.025498 | 45.82798881 | 46.31814685 | 46.64053024 |
| 10–10.99 months | -0.24163206 | 44.53836794 | 0.028533537 | 42.22575305 | 42.50754798 | 42.94603917 | 43.69134604 | 44.53836794 | 45.40587424 | 46.2046631 | 46.69105794 | 47.01034581 |
| 11–11.99 months | -0.046673786 | 44.88240562 | 0.028396382 | 42.55105219 | 42.83642568 | 43.27976931 | 44.03132658 | 44.88240562 | 45.75071845 | 46.54726413 | 47.0308956 | 47.34779597 |
| 12–12.99 months | 0.141031094 | 45.19507651 | 0.028314722 | 42.84260355 | 43.13181766 | 43.58043062 | 44.33898883 | 45.19507651 | 46.06532374 | 46.86084173 | 47.34254856 | 47.65765724 |
| 13–13.99 months | 0.320403169 | 45.48078147 | 0.028278682 | 43.10526272 | 43.39852553 | 43.85274045 | 44.61890505 | 45.48078147 | 46.3539026 | 47.14941728 | 47.62991078 | 47.9437344 |
| 14–14.99 months | 0.490807133 | 45.74307527 | 0.028280585 | 43.34294145 | 43.64041855 | 44.10050201 | 44.87476468 | 45.74307527 | 46.61986076 | 47.41624393 | 47.89613288 | 48.20910612 |
| 15–15.99 months | 0.65193505 | 45.98486901 | 0.028314363 | 43.55883459 | 43.86065785 | 44.32682391 | 45.10958609 | 45.98486901 | 46.86598965 | 47.66398946 | 48.14379909 | 48.45629769 |
| 16–16.99 months | 0.803718086 | 46.20857558 | 0.028375159 | 43.75558315 | 44.06185727 | 44.53427792 | 45.32586864 | 46.20857558 | 47.09460485 | 47.89486804 | 48.37505457 | 48.68740549 |
| 17–17.99 months | 0.946259679 | 46.41621635 | 0.028459033 | 43.93539362 | 44.24620133 | 44.72501451 | 45.52570414 | 46.41621635 | 47.30764771 | 48.11073684 | 48.59169895 | 48.90418837 |
| 18–18.99 months | 1.079784984 | 46.60950084 | 0.028562759 | 44.10012707 | 44.4155332 | 44.90084908 | 45.71086007 | 46.60950084 | 47.50676129 | 48.31316842 | 48.79525631 | 49.10813597 |
| 19–19.99 months | 1.204602687 | 46.78988722 | 0.028683666 | 44.25136665 | 44.57142131 | 45.06332728 | 45.88284266 | 46.78988722 | 47.69334806 | 48.50350565 | 48.98702837 | 49.30052069 |
| 20–20.99 months | 1.321076285 | 46.95862881 | 0.028819525 | 44.39046947 | 44.71521065 | 45.21377531 | 46.04294544 | 46.95862881 | 47.86861428 | 48.68290399 | 49.16813538 | 49.48243771 |
| 21–21.99 months | 1.429602576 | 47.11681039 | 0.028968459 | 44.51860703 | 44.84806267 | 45.35333901 | 46.19228703 | 47.11681039 | 48.03360465 | 48.85236462 | 49.33954821 | 49.65483625 |
| 22–22.99 months | 1.530595677 | 47.26537682 | 0.029128879 | 44.63679702 | 44.9709867 | 45.48301476 | 46.33184096 | 47.26537682 | 48.18922971 | 49.01276045 | 49.50211352 | 49.81854421 |
| 23–23.99 months | 1.624475262 | 47.40515585 | 0.029299426 | 44.74592866 | 45.08486501 | 45.60367396 | 46.46245944 | 47.40515585 | 48.3362876 | 49.16485698 | 49.65657394 | 49.97428788 |
| 24–24.99 months | 1.71165803 | 47.53687649 | 0.029478937 | 44.8467831 | 45.19047292 | 45.71608285 | 46.58489242 | 47.53687649 | 48.47548169 | 49.30932908 | 49.80358436 | 50.12270782 |
| 25–25.99 months | 1.792551616 | 47.66118396 | 0.029666406 | 44.94004992 | 45.28849516 | 45.82091847 | 46.69980317 | 47.66118396 | 48.60743482 | 49.44677462 | 49.94372506 | 50.26437172 |
| 26–26.99 months | 1.867550375 | 47.77865186 | 0.02986096 | 45.02634065 | 45.37953915 | 45.91878183 | 46.80778091 | 47.77865186 | 48.73270105 | 49.57772565 | 50.07751255 | 50.39978499 |
| 27–27.99 months | 1.93703258 | 47.8897923 | 0.030061839 | 45.10619989 | 45.46414607 | 46.01020865 | 46.90935129 | 47.8897923 | 48.85177527 | 49.70265762 | 50.20540857 | 50.52939951 |
| 28–28.99 months | 2.001358669 | 47.99506422 | 0.030268375 | 45.18011452 | 45.54279995 | 46.09567835 | 47.00498513 | 47.99506422 | 48.96510128 | 49.82199704 | 50.32782741 | 50.65362082 |
| 29–29.99 months | 2.060870301 | 48.09488048 | 0.030479985 | 45.24852146 | 45.61593528 | 46.17562155 | 47.0951056 | 48.09488048 | 49.07307846 | 49.93612795 | 50.44514221 | 50.77281425 |
| 30–30.99 months | 2.115889982 | 48.18961365 | 0.03069615 | 45.31181411 | 45.68394345 | 46.25042633 | 47.18009439 | 48.18961365 | 49.17606748 | 50.04539729 | 50.55769018 | 50.88731003 |
| 31–31.99 months | 2.16672113 | 48.2796011 | 0.030916413 | 45.37034782 | 45.74717813 | 46.32044357 | 47.26029687 | 48.2796011 | 49.27439505 | 50.15011948 | 50.66577699 | 50.99740757 |
| 32–32.99 months | 2.21364844 | 48.36514917 | 0.031140368 | 45.42444455 | 45.80595987 | 46.38599146 | 47.33602646 | 48.36514917 | 49.36835799 | 50.25058031 | 50.7696806 | 51.10337919 |
| 33–33.99 months | 2.256943216 | 48.44653703 | 0.031367651 | 45.47439662 | 45.86057993 | 46.44735943 | 47.40756856 | 48.44653703 | 49.45822692 | 50.34704031 | 50.86965434 | 51.20547307 |
| 34–34.99 months | 2.296844024 | 48.52401894 | 0.031597939 | 45.52047097 | 45.91130407 | 46.50481123 | 47.47518307 | 48.52401894 | 49.54424855 | 50.43973755 | 50.96593013 | 51.30391674 |
| 35–35.99 months | 2.333589434 | 48.59782828 | 0.031830942 | 45.56291074 | 45.95837475 | 46.55858812 | 47.53910827 | 48.59782828 | 49.62664932 | 50.52889019 | 51.05872021 | 51.39891816 |

Table 21. L, M, and S parameters and selected smoothed percentiles for weight (in kilograms) by sex and stature (in centimeters): 77 to 121 cm—Con.

| Sex and stature interval | Percentile | | | | | | | | | | | | | | |
|--------------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--|
| | L | M | S | 3rd | 5th | 10th | 25th | 50th | 75th | 85th | 90th | 95th | 97th | P97 | |
| Girls | | | | | | | | | | | | | | | |
| 77–77.99 centimeters | -0.935908436 | 10.19868351 | 0.081394448 | 8.839167516 | 8.990097375 | 9.232504092 | 9.667046213 | 10.19868351 | 10.78999185 | 11.13546634 | 11.13546634 | 11.38184191 | 11.76703846 | 12.03099456 | |
| 78–78.99 centimeters | -0.89621042 | 10.42217324 | 0.080780644 | 9.038517201 | 9.192590101 | 9.439808634 | 9.882231734 | 10.42217324 | 11.02093382 | 11.36987072 | 11.36987072 | 11.61830668 | 12.00603364 | 12.27123186 | |
| 79–79.99 centimeters | -0.863423474 | 10.64473659 | 0.080208403 | 9.23736905 | 9.39448496 | 9.646379965 | 10.09652511 | 10.64473659 | 11.25114165 | 11.60377608 | 11.60377608 | 11.85449919 | 12.24521487 | 12.51204563 | |
| 80–80.99 centimeters | -0.839250279 | 10.86657146 | 0.079687207 | 9.43587839 | 9.595921376 | 9.852343066 | 10.31005891 | 10.86657146 | 11.4809532 | 11.837632 | 11.837632 | 12.09096109 | 12.48528658 | 12.75426396 | |
| 81–81.99 centimeters | -0.825395013 | 11.08788714 | 0.079225952 | 9.634213141 | 9.797050683 | 10.05783406 | 10.52297639 | 11.08788714 | 11.71072003 | 12.07190393 | 12.07190393 | 12.32825177 | 12.72697467 | 12.99873959 | |
| 82–82.99 centimeters | -0.823487667 | 11.30890397 | 0.078832728 | 9.832552217 | 9.998035565 | 10.26300074 | 10.73543239 | 11.30890397 | 11.94080449 | 12.30706872 | 12.30706872 | 12.56694308 | 12.97102053 | 13.24634405 | |
| 83–83.99 centimeters | -0.83497067 | 11.52985331 | 0.078514592 | 10.03108351 | 10.19904933 | 10.46800322 | 10.94759478 | 11.52985331 | 12.17157684 | 12.54361009 | 12.54361009 | 12.80761383 | 13.21817476 | 13.49796154 | |
| 84–84.99 centimeters | -0.861125495 | 11.75097872 | 0.078277372 | 10.23000087 | 10.40027462 | 10.67301464 | 11.15964652 | 11.75097872 | 12.40341329 | 12.78201467 | 12.78201467 | 13.05084457 | 13.46919053 | 13.75448195 | |
| 85–85.99 centimeters | -0.902755588 | 11.97253416 | 0.078125431 | 10.42950375 | 10.60190372 | 10.87822198 | 11.37178607 | 11.97253416 | 12.63669132 | 13.02276601 | 13.02276601 | 13.29721122 | 13.72481792 | 14.01679695 | |
| 86–86.99 centimeters | -0.960308955 | 12.19478883 | 0.078061602 | 10.62979128 | 10.80413535 | 11.08382637 | 11.5842315 | 12.19478883 | 12.87179128 | 13.26634311 | 13.26634311 | 13.54728098 | 13.98579574 | 14.28578915 | |
| 87–87.99 centimeters | -1.033704489 | 12.41802682 | 0.078087089 | 10.83106129 | 11.00717426 | 11.29004337 | 11.79722112 | 12.41802682 | 13.10909353 | 13.51321579 | 13.51321579 | 13.80160677 | 14.25284528 | 14.56232653 | |
| 88–88.99 centimeters | -1.122303405 | 12.64254963 | 0.078201515 | 11.03350713 | 11.21122918 | 11.49710258 | 12.01101528 | 12.64254963 | 13.34897889 | 13.76384274 | 13.76384274 | 14.06072319 | 14.52666298 | 14.84725316 | |
| 89–89.99 centimeters | -1.224887418 | 12.86867851 | 0.07840306 | 11.23731521 | 11.41651085 | 11.70524667 | 12.22589739 | 12.86867851 | 13.59182967 | 14.01867037 | 14.01867037 | 14.32514317 | 14.80791321 | 15.14137958 | |
| 90–90.99 centimeters | -1.339655646 | 13.09675786 | 0.078688751 | 11.44266196 | 11.62322932 | 11.91472966 | 12.44217465 | 13.09675786 | 13.83803305 | 14.27813372 | 14.27813372 | 14.59535621 | 15.09722208 | 15.44547079 | |
| 91–91.99 centimeters | -1.464342037 | 13.32715202 | 0.079054697 | 11.64971679 | 11.83159463 | 12.12581512 | 12.66017439 | 13.32715202 | 14.08797892 | 14.54265433 | 14.54265433 | 14.87182549 | 15.39516617 | 15.76023992 | |
| 92–92.99 centimeters | -1.596224732 | 13.56025156 | 0.079496621 | 11.85863674 | 12.04181213 | 12.33877299 | 12.88024501 | 13.56025156 | 14.34206849 | 14.81264629 | 14.81264629 | 15.15499004 | 15.70227723 | 16.0863298 | |
| 93–93.99 centimeters | -1.732305592 | 13.79646793 | 0.080010179 | 12.06957102 | 12.25408376 | 12.55387711 | 13.10725007 | 13.79646793 | 14.6007123 | 15.08851573 | 15.08851573 | 15.42526407 | 16.01902591 | 16.42430655 | |
| 94–94.99 centimeters | -1.869440665 | 14.03623165 | 0.080591346 | 12.28266198 | 12.46860734 | 12.77140239 | 13.32806438 | 14.03623165 | 14.86433237 | 15.37066369 | 15.37066369 | 15.74303877 | 16.34582383 | 16.77464616 | |
| 95–95.99 centimeters | -2.004558693 | 14.27998232 | 0.081236502 | 12.49805271 | 12.68558031 | 12.99162337 | 13.55656614 | 14.27998232 | 15.13335566 | 15.65948286 | 15.65948286 | 16.04868075 | 16.68302101 | 17.13773099 | |
| 96–96.99 centimeters | -2.134764169 | 14.5281658 | 0.08194262 | 12.71588767 | 12.9051993 | 13.21481233 | 13.78863356 | 14.5281658 | 15.40821452 | 15.95535951 | 15.95535951 | 16.36253385 | 17.0309025 | 17.51383737 | |
| 97–97.99 centimeters | -2.224887418 | 14.78122196 | 0.082707038 | 12.93632124 | 13.12765544 | 13.44123956 | 14.02463766 | 14.78122196 | 15.68933564 | 16.25866615 | 16.25866615 | 16.68491497 | 17.38968816 | 17.90133512 | |
| 98–98.99 centimeters | -2.370762249 | 15.03957746 | 0.083527227 | 13.15952176 | 13.35318702 | 13.67117381 | 14.2649386 | 15.03957746 | 15.97713269 | 16.56975626 | 16.56975626 | 17.01611063 | 17.75953058 | 18.30568297 | |
| 99–99.99 centimeters | -2.472965302 | 15.30363303 | 0.084400264 | 13.38568043 | 13.58198599 | 13.9048846 | 14.50988056 | 15.30363303 | 16.2719909 | 16.88895128 | 16.88895128 | 17.35636782 | 18.14051413 | 18.72143304 | |
| 100–100.99 centimeters | -2.563140425 | 15.5737634 | 0.085322654 | 13.61500935 | 13.81429721 | 14.14264285 | 14.759793 | 15.5737634 | 16.57426445 | 17.21653714 | 17.21653714 | 17.70589007 | 18.5326498 | 19.15022213 | |
| 101–101.99 centimeters | -2.640873937 | 15.8503043 | 0.086289668 | 13.84775164 | 14.05037619 | 14.38472456 | 15.01498669 | 15.8503043 | 16.88425753 | 17.55274622 | 17.55274622 | 18.06482316 | 18.93587281 | 19.59178174 | |
| 102–102.99 centimeters | -2.706178899 | 16.1335593 | 0.087295416 | 14.08417388 | 14.29049454 | 14.63141037 | 15.27575841 | 16.1335593 | 17.20222861 | 17.89775821 | 17.89775821 | 18.4332529 | 19.35003441 | 20.04572382 | |
| 103–103.99 centimeters | -2.759500412 | 16.42379037 | 0.088332358 | 14.32457385 | 14.53494603 | 14.88298893 | 15.54238872 | 16.42379037 | 17.52837462 | 18.2516835 | 18.2516835 | 18.8111906 | 19.77489735 | 20.51154925 | |
| 104–104.99 centimeters | -2.801578893 | 16.72122308 | 0.089391426 | 14.56927503 | 14.78404331 | 15.13975644 | 15.8151455 | 16.72122308 | 17.86283343 | 18.61456222 | 18.61456222 | 19.1985691 | 20.21012731 | 20.98863696 | |
| 105–105.99 centimeters | -2.833376069 | 17.02604617 | 0.090461996 | 14.81862634 | 15.03811803 | 15.40201748 | 16.09428485 | 17.02604617 | 18.20567994 | 18.98635782 | 18.98635782 | 19.59525691 | 20.65528582 | 21.47624048 | |
| 106–106.99 centimeters | -2.855987198 | 17.33841369 | 0.09153201 | 15.07299942 | 15.29751915 | 15.67008464 | 16.38005272 | 17.33841369 | 18.55692603 | 19.3669544 | 19.3669544 | 20.00094429 | 21.10982248 | 21.97348019 | |
| 107–107.99 centimeters | -2.870584724 | 17.65844486 | 0.092588053 | 15.33278813 | 15.56261274 | 15.94427872 | 16.67268526 | 17.65844486 | 18.91651802 | 19.75615211 | 19.75615211 | 20.41535516 | 21.57306793 | 22.47933846 | |
| 108–108.99 centimeters | -2.878341197 | 17.98622785 | 0.093615622 | 15.59840399 | 15.83377861 | 16.2249273 | 16.97241047 | 17.98622785 | 19.28434006 | 20.15366815 | 20.15366815 | 20.83802746 | 22.04422649 | 22.99264818 | |
| 109–109.99 centimeters | -2.880404823 | 18.32181829 | 0.094599184 | 15.87027673 | 16.11141079 | 16.5123649 | 17.27944769 | 18.32181829 | 19.66021061 | 20.55913174 | 20.55913174 | 21.26841517 | 22.5223689 | 23.51208703 | |
| 110–110.99 centimeters | -2.877853767 | 18.66524194 | 0.095522442 | 16.14885045 | 16.39591448 | 16.80693136 | 17.5940083 | 18.66524194 | 20.04388538 | 20.97208562 | 20.97208562 | 21.7058694 | 23.00642737 | 24.03616881 | |
| 111–111.99 centimeters | -2.871676584 | 19.01649457 | 0.096368448 | 16.43458256 | 16.6877053 | 17.10897135 | 17.91629559 | 19.01649457 | 20.43505617 | 21.39198329 | 21.39198329 | 22.14962753 | 23.49518765 | 24.56323314 | |
| 112–112.99 centimeters | -2.86277466 | 19.37553957 | 0.097119646 | 16.72794483 | 16.98720984 | 17.41883434 | 18.24650364 | 19.37553957 | 20.8333469 | 21.81818429 | 21.81818429 | 22.59881442 | 23.98728419 | 25.09144275 | |
| 113–113.99 centimeters | -2.851915004 | 19.74231348 | 0.097758211 | 17.02941648 | 17.29486046 | 17.73687191 | 18.58481884 | 19.74231348 | 21.23832075 | 22.24995962 | 22.24995962 | 23.05244169 | 24.48119347 | 25.61866229 | |
| 114–114.99 centimeters | -2.839760032 | 20.11672014 | 0.098265916 | 17.33948852 | 17.61109835 | 18.06343891 | 18.93141779 | 20.11672014 | 21.64947133 | 22.6864823 | 22.6864823 | 23.50939939 | 24.97522873 | 26.14297963 | |
| 115–115.99 centimeters | -2.826824189 | 20.4986363 | 0.098624434 | 17.65865664 | 17.93636825 | 18.39889081 | 19.28646882 | 20.4986363 | 22.06622967 | 23.12683271 | 23.12683271 | 23.96845835 | 25.46753358 | 26.66164921 | |
| 116–116.99 centimeters | -2.813480089 | 20.88790914 | 0.09881529 | 17.98742223 | 18.27111906 | 18.74358385 | 19.65013122 | 20.88790914 | 22.48795967 | 23.56999284 | 23.56999284 | 24.42826397 | 25.95607618 | 27.17212889 | |
| 117–117.99 centimeters | -2.799924586 | 21.28435965 | 0.09882 | 18.32628747 | 18.61580027 | 19.09787338 | 20.02255635 | 21.28435965 | 22.91396132 | 24.01484769 | 24.01484769 | 24.8873352 | 26.43864271 | 27.67154822 | |
| 118–118.99 centimeters | -2.786142221 | 21.6877854 | 0.098620143 | 18.67575115 | 18.97085907 | 19.46211272 | 20.40388907 | 21.6877854 | 23.34347238 | 24.46018471 | 24.46018471 | 25.34406179 | 26.91283039 | 28.15680318 | |
| 119–119.99 centimeters | -2.771843402 | 22.09796571 | 0.098197431 | 19.03630228 | 19.33673586 | 19.83665164 | 20.79427025 | 22.09796571 | 23.77567219 | 24.90469458 | 24.90469458 | 25.79670194 | 27.37603973 | 28.62454542 | |
| 120–120.99 centimeters | -2.756365595 | 22.51466977 | 0.097533789 | 19.4084109 | 19.71385824 | 20.22183471 | 21.19384134 | 22.51466977 | 24.20968794 | 25.34697329 | 25.34697329 | 26.24338024 | 27.82546527 | 29.07117005 | |

Table 22. *L*, *M*, and *S* parameters and selected smoothed percentiles for weight (in kilograms) by sex and age: 2 to 20 years

| Sex and age | Percentile | | | | | | | | | | | |
|-----------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys | | | | | | | | | | | | |
| 24–24.99 months | -0.216501213 | 12.74154396 | 0.108166006 | 10.4414422 | 10.70051298 | 11.11490406 | 11.85181666 | 12.74154396 | 13.71386029 | 14.6671577 | 15.27629562 | 15.68840631 |
| 25–25.99 months | -0.239790488 | 12.88102276 | 0.108274706 | 10.55847309 | 10.81957536 | 11.23747341 | 11.98141892 | 12.88102276 | 13.86589625 | 14.83331632 | 15.45242405 | 15.87169941 |
| 26–26.99 months | -0.266315853 | 13.01842382 | 0.108421025 | 10.67380261 | 10.93681171 | 11.35805876 | 12.10888759 | 13.01842382 | 14.0162298 | 14.99847794 | 15.62818936 | 16.05514188 |
| 27–27.99 months | -0.295754969 | 13.1544966 | 0.10860477 | 10.78798157 | 11.05280067 | 11.47727994 | 12.23490671 | 13.1544966 | 14.1656725 | 15.16351231 | 15.80450043 | 16.23967114 |
| 28–28.99 months | -0.327729368 | 13.28989667 | 0.108825681 | 10.90147346 | 11.168034 | 11.59566994 | 12.36007175 | 13.28989667 | 14.31493214 | 15.32917196 | 15.98213866 | 16.42608957 |
| 29–29.99 months | -0.361817468 | 13.42519408 | 0.109083424 | 11.01466395 | 11.28292555 | 11.7136834 | 12.48489772 | 13.42519408 | 14.46462206 | 15.49610261 | 16.16176896 | 16.61507584 |
| 30–30.99 months | -0.397568087 | 13.56088113 | 0.109377581 | 11.12786972 | 11.3978197 | 11.83170451 | 12.60982671 | 13.56088113 | 14.61526973 | 15.66485286 | 16.34395025 | 16.80719583 |
| 31–31.99 months | -0.434520252 | 13.69737858 | 0.109707646 | 11.24134752 | 11.51299966 | 11.95005435 | 12.73523417 | 13.69737858 | 14.76732387 | 15.83588309 | 16.52914562 | 17.00291386 |
| 32–32.99 months | -0.472188756 | 13.83504622 | 0.110073084 | 11.3552982 | 11.62869248 | 12.06899744 | 12.86143776 | 13.83504622 | 14.9211657 | 16.00957526 | 16.71773017 | 17.2025984 |
| 33–33.99 months | -0.510116627 | 13.97418299 | 0.110473254 | 11.46987889 | 11.74507892 | 12.18874828 | 12.98869962 | 13.97418299 | 15.07711012 | 16.18623907 | 16.91000204 | 17.40653734 |
| 34–34.99 months | -0.547885579 | 14.1150324 | 0.1109074 | 11.58520959 | 11.86229971 | 12.30947723 | 13.11723187 | 14.1150324 | 15.23541179 | 16.36611917 | 17.10619066 | 17.61494698 |
| 35–35.99 months | -0.58507011 | 14.25779618 | 0.111374787 | 11.70137143 | 11.98045644 | 12.43131521 | 13.24720657 | 14.25779618 | 15.3962791 | 16.54940494 | 17.30646132 | 17.8279717 |
| 36–36.99 months | -0.621319726 | 14.40262749 | 0.111874514 | 11.81842214 | 12.09962308 | 12.55435953 | 13.37875374 | 14.40262749 | 15.5598683 | 16.73623287 | 17.51092666 | 18.04570363 |
| 37–37.99 months | -0.656295986 | 14.54964614 | 0.112405687 | 11.93639129 | 12.21984466 | 12.67867752 | 13.51197197 | 14.54964614 | 15.72629889 | 16.92669619 | 17.7196494 | 18.26817893 |
| 38–38.99 months | -0.689735029 | 14.69893326 | 0.112967254 | 12.05529277 | 12.34114672 | 12.80431149 | 13.64692711 | 14.69893326 | 15.89564892 | 17.12084685 | 17.93265202 | 18.49539445 |
| 39–39.99 months | -0.721410388 | 14.85054151 | 0.11355811 | 12.17512305 | 12.46353554 | 12.93128204 | 13.78365965 | 14.85054151 | 16.06796532 | 17.31870281 | 18.14992024 | 18.72730763 |
| 40–40.99 months | -0.751175223 | 15.00449143 | 0.114176956 | 12.29587074 | 12.5870056 | 13.05959214 | 13.92218431 | 15.00449143 | 16.24326063 | 17.52024974 | 18.37141087 | 18.96385009 |
| 41–41.99 months | -0.778904279 | 15.16078454 | 0.114822482 | 12.41751102 | 12.71153714 | 13.18922941 | 14.06249859 | 15.16078454 | 16.4215262 | 17.72544898 | 18.59705318 | 19.20492292 |
| 42–42.99 months | -0.804515498 | 15.31940246 | 0.115493292 | 12.54001161 | 12.83710098 | 13.32016918 | 14.2045836 | 15.31940246 | 16.60273167 | 17.93423997 | 18.8267549 | 19.45040584 |
| 43–43.99 months | -0.828003255 | 15.48030313 | 0.116187777 | 12.66334091 | 12.96366474 | 13.45237788 | 14.34840318 | 15.48030313 | 16.78682117 | 18.14654091 | 19.06040859 | 19.70016918 |
| 44–44.99 months | -0.849380372 | 15.64343309 | 0.116904306 | 12.78746137 | 13.09118938 | 13.5858142 | 14.49391163 | 15.64343309 | 16.97372594 | 18.36225594 | 19.29789203 | 19.95406774 |
| 45–45.99 months | -0.86869965 | 15.80872535 | 0.117641148 | 12.91233523 | 13.21963362 | 13.72043155 | 14.64105343 | 15.80872535 | 17.16336229 | 18.58127627 | 19.53907323 | 20.21194963 |
| 46–46.99 months | -0.886033992 | 15.97610456 | 0.118396541 | 13.03792328 | 13.34895376 | 13.85617947 | 14.78976688 | 15.97610456 | 17.3556371 | 18.80348418 | 19.78381251 | 20.47365655 |
| 47–47.99 months | -0.901507878 | 16.14548194 | 0.119168555 | 13.16419231 | 13.47910915 | 13.99300607 | 14.93998212 | 16.14548194 | 17.55044259 | 19.02875229 | 20.03196776 | 20.73903469 |
| 48–48.99 months | -0.915241589 | 16.31676727 | 0.11995532 | 13.29110715 | 13.61005739 | 14.13085804 | 15.0916281 | 16.31676727 | 17.74766896 | 19.25695041 | 20.28339348 | 21.00792648 |
| 49–49.99 months | -0.927377772 | 16.48986646 | 0.120754916 | 13.41863676 | 13.74175874 | 14.26968247 | 15.24463077 | 16.48986646 | 17.94720007 | 19.48794495 | 20.53794512 | 21.28017953 |
| 50–50.99 months | -0.938069819 | 16.66467529 | 0.121565421 | 13.54675344 | 13.87417598 | 14.40942768 | 15.39891519 | 16.66467529 | 18.14891672 | 19.72160147 | 20.79548054 | 21.55564717 |
| 51–51.99 months | -0.94747794 | 16.84109948 | 0.122384927 | 13.67543322 | 14.0072749 | 14.55004391 | 15.55440665 | 16.84109948 | 18.35269841 | 19.95778649 | 21.05586181 | 21.83419011 |
| 52–52.99 months | -0.955765694 | 17.01903746 | 0.123211562 | 13.8046561 | 14.14102471 | 14.69148397 | 15.71103166 | 17.01903746 | 18.55842485 | 20.19636905 | 21.31895671 | 22.11567799 |
| 53–53.99 months | -0.963096972 | 17.1983908 | 0.124043503 | 13.93440617 | 14.27539832 | 14.83370375 | 15.86871877 | 17.1983908 | 18.76597736 | 20.43722215 | 21.58464011 | 22.39999059 |
| 54–54.99 months | -0.969633434 | 17.37906341 | 0.124878992 | 14.06467165 | 14.41037252 | 14.97666256 | 16.0273993 | 17.37906341 | 18.9752401 | 20.68022399 | 21.85279508 | 22.68701888 |
| 55–55.99 months | -0.975532355 | 17.56096245 | 0.125716348 | 14.19544485 | 14.54592801 | 15.12032345 | 16.18700795 | 17.56096245 | 19.18610119 | 20.92525904 | 22.12331387 | 22.97666583 |
| 56–56.99 months | -0.980937915 | 17.74400082 | 0.126554022 | 14.3267205 | 14.68204842 | 15.26465308 | 16.34748412 | 17.74400082 | 19.39845556 | 21.17221993 | 22.3960982 | 23.26884512 |
| 57–57.99 months | -0.986006518 | 17.92809121 | 0.127390453 | 14.45850147 | 14.81872422 | 15.40962296 | 16.50876909 | 17.92809121 | 19.61219848 | 21.42100482 | 22.67106204 | 23.56348925 |
| 58–58.99 months | -0.99086694 | 18.11315625 | 0.128224294 | 14.59079005 | 14.95594682 | 15.55520788 | 16.70811 | 18.11315625 | 19.82723683 | 21.67152294 | 22.94812899 | 23.86053886 |
| 59–59.99 months | -0.995644402 | 18.29912286 | 0.129054277 | 14.7235931 | 15.09371211 | 15.70138696 | 16.83356209 | 18.29912286 | 20.04348292 | 21.92369204 | 23.22723469 | 24.15995003 |
| 60–60.99 months | -1.000453886 | 18.48592413 | 0.129879257 | 14.85692044 | 15.23201937 | 15.8481433 | 16.99697963 | 18.48592413 | 20.26085668 | 22.17743954 | 23.50832656 | 24.46169255 |
| 61–61.99 months | -1.005399668 | 18.67349965 | 0.130698212 | 14.99078448 | 15.37087094 | 15.9954639 | 17.16102601 | 18.67349965 | 20.47928605 | 22.43270288 | 23.79136391 | 24.76574995 |
| 62–62.99 months | -1.010575003 | 18.86179576 | 0.131510245 | 15.12519986 | 15.51027205 | 16.14333947 | 17.32566884 | 18.86179576 | 20.69870731 | 22.6894297 | 24.07631802 | 25.07211926 |
| 63–63.99 months | -1.016061941 | 19.05076579 | 0.132314586 | 15.26018306 | 15.65023042 | 16.29176433 | 17.49088098 | 19.05076579 | 20.9190654 | 22.94757799 | 24.36317198 | 25.38081076 |
| 64–64.99 months | -1.021931241 | 19.24037019 | 0.133110593 | 15.39575201 | 15.79075599 | 16.44073615 | 17.65664052 | 19.24037019 | 21.14031403 | 23.20711615 | 24.65192058 | 25.69184758 |
| 65–65.99 months | -1.028242376 | 19.43057662 | 0.133897752 | 15.53192567 | 15.93186059 | 16.59025577 | 17.82293074 | 19.43057662 | 21.36241588 | 23.46802293 | 24.94257 | 26.00526525 |
| 66–66.99 months | -1.035043608 | 19.62136007 | 0.134675673 | 15.66872366 | 16.07355758 | 16.74032694 | 17.98974005 | 19.62136007 | 21.58534268 | 23.73028735 | 25.23513755 | 26.32111112 |
| 67–67.99 months | -1.042372125 | 19.8127028 | 0.13544409 | 15.80616582 | 16.21586154 | 16.8909561 | 18.15706188 | 19.8127028 | 21.80907518 | 23.99390857 | 25.52965118 | 26.6394437 |
| 68–68.99 months | -1.050254232 | 20.0045944 | 0.13620286 | 15.94427185 | 16.35878793 | 17.04215212 | 18.32489457 | 20.0045944 | 22.03360322 | 24.25889565 | 25.82614911 | 26.96033222 |
| 69–69.99 months | -1.058705595 | 20.19703171 | 0.136951959 | 16.08306098 | 16.50235277 | 17.19392605 | 18.49324122 | 20.19703171 | 22.25892561 | 24.52526733 | 26.12467926 | 27.28385531 |
| 70–70.99 months | -1.067731529 | 20.39001872 | 0.137691478 | 16.22255158 | 16.64657235 | 17.34629087 | 18.66210955 | 20.39001872 | 22.48505007 | 24.79305175 | 26.42529873 | 27.6101008 |
| 71–71.99 months | -1.077321193 | 20.58356862 | 0.138421673 | 16.36275897 | 16.79146158 | 17.49926081 | 18.83151262 | 20.58356862 | 22.71199557 | 25.06228739 | 26.72807261 | 27.93916194 |
| 72–72.99 months | -1.087471249 | 20.77769565 | 0.139142773 | 16.50370229 | 16.93703875 | 17.65285271 | 19.00146515 | 20.77769565 | 22.93978291 | 25.33301794 | 27.03307565 | 28.27114631 |

Table 22. *L*, *M*, and *S* parameters and selected smoothed percentiles for weight (in kilograms) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-------------------|---------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys—Con. | | | | | | | | | | | | |
| 73–73.99 months | -1.098152984 | 20.97242631 | 0.139855242 | 16.64539409 | 17.08331814 | 17.80708353 | 19.17198834 | 20.97242631 | 23.16844769 | 25.60529875 | 27.34038832 | 28.60616106 |
| 74–74.99 months | -1.10933408 | 21.16779192 | 0.140559605 | 16.78784656 | 17.23031439 | 17.96197153 | 19.34310643 | 21.16779192 | 23.39803173 | 25.87919213 | 27.6500983 | 28.94432077 |
| 75–75.99 months | -1.120974043 | 21.36383013 | 0.141256489 | 16.93106986 | 17.37804118 | 18.11753578 | 19.51484724 | 21.36383013 | 23.62858485 | 26.15476795 | 27.96229925 | 29.2857444 |
| 76–76.99 months | -1.133024799 | 21.56058467 | 0.141946613 | 17.07507197 | 17.52651109 | 18.2737959 | 19.68724198 | 21.56058467 | 23.86016456 | 26.43210324 | 28.27709021 | 29.63055429 |
| 77–77.99 months | -1.145431351 | 21.75810506 | 0.142630785 | 17.21985864 | 17.6757355 | 18.43077195 | 19.86032494 | 21.75810506 | 24.09283575 | 26.71128177 | 28.59457486 | 29.97887524 |
| 78–78.99 months | -1.158132499 | 21.95644627 | 0.143309898 | 17.36543339 | 17.82572453 | 18.58848423 | 20.03413327 | 21.95644627 | 24.32667035 | 26.99239357 | 28.91486092 | 30.33083356 |
| 79–79.99 months | -1.171061612 | 22.15566842 | 0.143984924 | 17.511179749 | 17.97648696 | 18.74695318 | 20.20870673 | 22.15566842 | 24.56174697 | 27.27553447 | 29.23805946 | 30.68655618 |
| 80–80.99 months | -1.184141975 | 22.35583862 | 0.144656953 | 17.65894807 | 18.12802886 | 18.90619877 | 20.38408835 | 22.35583862 | 24.79815314 | 27.56080718 | 29.56428369 | 31.04616685 |
| 81–81.99 months | -1.197307185 | 22.55702268 | 0.145327009 | 17.80688538 | 18.28035866 | 19.06624222 | 20.56032091 | 22.55702268 | 25.03597537 | 27.84831538 | 29.89365038 | 31.40979543 |
| 82–82.99 months | -1.210475099 | 22.75929558 | 0.145996289 | 17.95560314 | 18.4334803 | 19.22710346 | 20.73745116 | 22.75929558 | 25.27531174 | 28.13817063 | 30.2262764 | 31.77756321 |
| 83–83.99 months | -1.2233565263 | 22.9627344 | 0.146666 | 18.10509471 | 18.58739757 | 19.38880264 | 20.9155269 | 22.9627344 | 25.51626345 | 28.43048732 | 30.56227989 | 32.14959054 |
| 84–84.99 months | -1.236497304 | 23.16741888 | 0.147337375 | 18.25535252 | 18.74211363 | 19.55135989 | 21.09459707 | 23.16741888 | 25.75893543 | 28.72538282 | 30.90177938 | 32.52599493 |
| 85–85.99 months | -1.249186293 | 23.37343341 | 0.148011715 | 18.4063661 | 18.89762965 | 19.71479476 | 21.2747126 | 23.37343341 | 26.00343881 | 29.02297867 | 31.24489263 | 32.90688716 |
| 86–86.99 months | -1.261555446 | 23.58086145 | 0.148690256 | 18.55812709 | 19.05394835 | 19.87912757 | 21.45592408 | 23.58086145 | 26.24988395 | 29.32339625 | 31.59173734 | 33.29237745 |
| 87–87.99 months | -1.273523619 | 23.78979096 | 0.149374297 | 18.71062426 | 19.21107044 | 20.044378 | 21.63828396 | 23.78979096 | 26.49838713 | 29.62676053 | 31.94242919 | 33.68256717 |
| 88–88.99 months | -1.285013783 | 24.00031064 | 0.150065107 | 18.86384686 | 19.36899699 | 20.21056603 | 21.82184504 | 24.00031064 | 26.74906587 | 29.93319702 | 32.29708214 | 34.07755271 |
| 89–89.99 months | -1.295952066 | 24.21251028 | 0.150763933 | 19.01778428 | 19.52772926 | 20.37771189 | 22.00666068 | 24.21251028 | 27.00203925 | 30.24283177 | 32.65580771 | 34.47742403 |
| 90–90.99 months | -1.306268473 | 24.42648043 | 0.151471982 | 19.17242647 | 19.68726895 | 20.54583618 | 22.19278461 | 24.42648043 | 27.25742737 | 30.55579074 | 33.01871449 | 34.88226421 |
| 91–91.99 months | -1.31589753 | 24.642312 | 0.152190413 | 19.32776424 | 19.84761848 | 20.71496001 | 22.38027095 | 24.642312 | 27.51535075 | 30.87219924 | 33.38590769 | 35.2921491 |
| 92–92.99 months | -1.324778843 | 24.86009596 | 0.152920322 | 19.48378967 | 20.00878127 | 20.88510518 | 22.56917407 | 24.86009596 | 27.77592982 | 31.19218135 | 33.75748861 | 35.707147 |
| 93–93.99 months | -1.332857581 | 25.07992303 | 0.153662731 | 19.64049642 | 20.17076208 | 21.05629437 | 22.75954858 | 25.07992303 | 28.03928438 | 31.51585929 | 34.13355426 | 36.12731836 |
| 94–94.99 months | -1.340080195 | 25.30188584 | 0.154418635 | 19.79787788 | 20.33356558 | 21.22855059 | 22.95145019 | 25.30188584 | 28.30553622 | 31.8433549 | 34.51419632 | 36.55271218 |
| 95–95.99 months | -1.346412105 | 25.52606977 | 0.155188768 | 19.95593574 | 20.49720276 | 21.40189997 | 23.14493249 | 25.52606977 | 28.57479705 | 32.17478161 | 34.89950266 | 36.98337837 |
| 96–96.99 months | -1.351813296 | 25.75256528 | 0.155973912 | 20.1146687 | 20.66168259 | 21.57636833 | 23.34005152 | 25.75256528 | 28.84718437 | 32.51025437 | 35.28955426 | 37.41934991 |
| 97–97.99 months | -1.356253969 | 25.9814599 | 0.156774684 | 20.27408001 | 20.82701772 | 21.75198362 | 23.53686295 | 25.9814599 | 29.12281085 | 32.84988252 | 35.68442647 | 37.86065382 |
| 98–98.99 months | -1.359710858 | 26.2128399 | 0.157591579 | 20.43417606 | 20.9932234 | 21.92877558 | 23.73542282 | 26.2128399 | 29.40178631 | 33.19377093 | 36.08418823 | 38.30730842 |
| 99–99.99 months | -1.362167159 | 26.44679027 | 0.158424964 | 20.59496663 | 21.16031766 | 22.10677591 | 23.93578761 | 26.44679027 | 29.68421748 | 33.54201944 | 36.48890176 | 38.75932329 |
| 100–100.99 months | -1.363612378 | 26.68339457 | 0.159275071 | 20.75646502 | 21.32832161 | 22.28601843 | 24.13801431 | 26.68339457 | 29.97020767 | 33.8947225 | 36.89862215 | 39.21669915 |
| 101–101.99 months | -1.364042106 | 26.92273494 | 0.160141995 | 20.91868832 | 21.49725951 | 22.46653924 | 24.34216053 | 26.92273494 | 30.25985653 | 34.25196875 | 37.31339712 | 39.67942783 |
| 102–102.99 months | -1.363457829 | 27.16489199 | 0.161025689 | 21.08165758 | 21.66715902 | 22.64837687 | 24.54828458 | 27.16489199 | 30.5532598 | 34.61384061 | 37.73326669 | 40.14749235 |
| 103–103.99 months | -1.361865669 | 27.40994539 | 0.161925976 | 21.24539741 | 21.83805093 | 22.83157226 | 24.75644457 | 27.40994539 | 30.85050986 | 34.98041447 | 38.15826287 | 40.62086606 |
| 104–104.99 months | -1.35928261 | 27.65796978 | 0.162842452 | 21.40993987 | 22.00997207 | 23.01617007 | 24.96670281 | 27.65796978 | 31.15169009 | 35.35175676 | 38.5884101 | 41.09951874 |
| 105–105.99 months | -1.355720571 | 27.90904433 | 0.163774719 | 21.57531575 | 22.18295884 | 23.20221593 | 25.17911785 | 27.90904433 | 31.45688766 | 35.72793225 | 39.02372343 | 41.58340237 |
| 106–106.99 months | -1.351202536 | 28.16324264 | 0.164722138 | 21.74156399 | 22.35705429 | 23.38975956 | 25.39375238 | 28.16324264 | 31.76617973 | 36.10899472 | 39.46421007 | 42.07246636 |
| 107–107.99 months | -1.345754408 | 28.42063744 | 0.165683945 | 21.90872739 | 22.53230492 | 23.57885344 | 25.61066925 | 28.42063744 | 32.07963965 | 36.49499102 | 39.90986854 | 42.56665066 |
| 108–108.99 months | -1.339405453 | 28.68130005 | 0.166659247 | 22.07685313 | 22.70876108 | 23.769553 | 25.82993243 | 28.68130005 | 32.39733625 | 36.8859604 | 40.36068858 | 43.06588662 |
| 109–109.99 months | -1.332188093 | 28.94530029 | 0.167647017 | 22.24599293 | 22.8864771 | 23.96191672 | 26.05160708 | 28.94530029 | 32.71933351 | 37.28193426 | 40.81665117 | 43.57009739 |
| 110–110.99 months | -1.324137479 | 29.21270645 | 0.168646104 | 22.41620302 | 23.06551129 | 24.15600612 | 26.27575951 | 29.21270645 | 33.04569055 | 37.68293608 | 41.27772848 | 44.07919809 |
| 111–111.99 months | -1.315291073 | 29.48358527 | 0.169655235 | 22.58754414 | 23.24592593 | 24.35188577 | 26.50245719 | 29.48358527 | 33.37646157 | 38.08898133 | 41.74388392 | 44.59309597 |
| 112–112.99 months | -1.30568824 | 29.75800198 | 0.170673022 | 22.76008145 | 23.42778723 | 24.54962324 | 26.73176876 | 29.75800198 | 33.7116958 | 38.50007744 | 42.21507216 | 45.11169064 |
| 113–113.99 months | -1.295369867 | 30.03602021 | 0.17169797 | 22.93388449 | 23.61116524 | 24.74928911 | 26.96376399 | 30.03602021 | 34.05143747 | 38.9162238 | 42.69123922 | 45.63487433 |
| 114–114.99 months | -1.284374967 | 30.31770417 | 0.17272854 | 23.10902476 | 23.79613202 | 24.95095592 | 27.19851432 | 30.31770417 | 34.39572894 | 39.33741401 | 43.17232241 | 46.16252884 |
| 115–115.99 months | -1.272750864 | 30.60311107 | 0.173762961 | 23.28558367 | 23.98276774 | 25.15470129 | 27.43609072 | 30.60311107 | 34.74459982 | 39.76362815 | 43.65825106 | 46.69453697 |
| 116–116.99 months | -1.260539193 | 30.89230072 | 0.174799493 | 23.46364195 | 24.17115246 | 25.36060368 | 27.67656629 | 30.89230072 | 35.09808092 | 40.19484291 | 44.14894598 | 47.23076853 |
| 117–117.99 months | -1.247783611 | 31.18532984 | 0.175836284 | 23.6432856 | 24.36137073 | 25.56874466 | 27.92001453 | 31.18532984 | 35.45619608 | 40.63102576 | 44.64432008 | 47.77108893 |
| 118–118.99 months | -1.234527763 | 31.48225315 | 0.176871417 | 23.8246044 | 24.55351042 | 25.77920825 | 28.16650963 | 31.48225315 | 35.81896391 | 41.07213642 | 45.1442785 | 48.31535768 |
| 119–119.99 months | -1.220815047 | 31.78312329 | 0.177902912 | 24.00769173 | 24.74766249 | 25.99208072 | 28.41612623 | 31.78312329 | 36.18639776 | 41.51812687 | 45.64871885 | 48.86342877 |
| 120–120.99 months | -1.206688407 | 32.08799062 | 0.17892874 | 24.19264433 | 24.94392079 | 26.20745042 | 28.66893932 | 32.08799062 | 36.55850564 | 41.96894158 | 46.15753154 | 49.41515104 |
| 121–121.99 months | -1.19219015 | 32.39690313 | 0.17994683 | 24.37956211 | 25.14238189 | 26.42540754 | 28.92502395 | 32.39690313 | 36.9352902 | 42.42451755 | 46.67060006 | 49.97036852 |

Table 22. *L*, *M*, and *S* parameters and selected smoothed percentiles for weight (in kilograms) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys—Con. | | | | | | | | | | | | |
| 122–122.99 months | -1.177361786 | 32.7099062 | 0.180955078 | 24.5685479 | 25.34314479 | 26.64604388 | 29.18445509 | 32.7099062 | 37.31674867 | 42.88478457 | 47.18780128 | 50.52892088 |
| 123–123.99 months | -1.162243894 | 33.02704244 | 0.181951361 | 24.75970717 | 25.54631065 | 26.86945259 | 29.44730733 | 33.02704244 | 37.70287276 | 43.34966531 | 47.70900582 | 51.09064381 |
| 124–124.99 months | -1.146876007 | 33.34835148 | 0.182933537 | 24.95314776 | 25.75198256 | 27.09572788 | 29.7136546 | 33.34835148 | 38.09364865 | 43.81907554 | 48.23407839 | 51.65536941 |
| 125–125.99 months | -1.131296524 | 33.67386973 | 0.183899465 | 25.14897956 | 25.96026515 | 27.32496472 | 29.98356997 | 33.67386973 | 38.48905687 | 44.29292431 | 48.76287816 | 52.22292668 |
| 126–126.99 months | -1.115542634 | 34.00363017 | 0.184847006 | 25.3473142 | 26.17126436 | 27.55725852 | 30.25712523 | 34.00363017 | 38.88907228 | 44.77111415 | 49.29525914 | 52.79314187 |
| 127–127.99 months | -1.099650267 | 34.33766207 | 0.185774041 | 25.54826471 | 26.38508699 | 27.79270478 | 30.53439065 | 34.33766207 | 39.29366396 | 45.2535413 | 49.83107058 | 53.36583897 |
| 128–128.99 months | -1.083654055 | 34.67599076 | 0.18667847 | 25.75194512 | 26.60184044 | 28.03139872 | 30.8154346 | 34.67599076 | 39.70279517 | 45.74009589 | 50.37015732 | 53.94084012 |
| 129–129.99 months | -1.067587314 | 35.01863732 | 0.187558229 | 25.95847011 | 26.82163224 | 28.27343489 | 31.1003232 | 35.01863732 | 40.11642323 | 46.23066219 | 50.91236024 | 54.51796605 |
| 130–130.99 months | -1.051482972 | 35.36561737 | 0.18841128 | 26.16795559 | 27.0445704 | 28.51890714 | 31.38911963 | 35.36561737 | 40.53449819 | 46.72511793 | 51.45751679 | 55.09703793 |
| 131–131.99 months | -1.035367321 | 35.71694723 | 0.189235738 | 26.38051177 | 27.27075818 | 28.76790586 | 31.6818858 | 35.71694723 | 40.95697152 | 47.22334049 | 52.00546039 | 55.67786843 |
| 132–132.99 months | -1.019277299 | 36.07262569 | 0.190029545 | 26.59626062 | 27.50030694 | 29.02052392 | 31.97867622 | 36.07262569 | 41.38377162 | 47.72519072 | 52.55602363 | 56.26028801 |
| 133–133.99 months | -1.003235326 | 36.43265996 | 0.190790973 | 26.81530934 | 27.73331628 | 29.27684696 | 32.27954601 | 36.43265996 | 41.81483955 | 48.23053714 | 53.10903452 | 56.84410756 |
| 134–134.99 months | -0.987269866 | 36.79704392 | 0.191518224 | 27.03777112 | 27.96988937 | 29.53696045 | 32.58454356 | 36.79704392 | 42.25009969 | 48.73923662 | 53.66432034 | 57.42914961 |
| 135–135.99 months | -0.971406609 | 37.1657671 | 0.192209619 | 27.26375553 | 28.21012567 | 29.80094595 | 32.89371309 | 37.1657671 | 42.68947235 | 49.25114312 | 54.22170647 | 58.01523548 |
| 136–136.99 months | -0.955670107 | 37.53881268 | 0.192863569 | 27.49336962 | 28.45412164 | 30.06888124 | 33.20709368 | 37.53881268 | 43.13287143 | 49.76610635 | 54.7810171 | 58.60218796 |
| 137–137.99 months | -0.940083834 | 37.91615721 | 0.193478582 | 27.72671746 | 28.70197022 | 30.34083979 | 33.52471882 | 37.91615721 | 43.58020437 | 50.28397203 | 55.34207557 | 59.18983178 |
| 138–138.99 months | -0.924670244 | 38.2977703 | 0.194053274 | 27.96389959 | 28.95376036 | 30.61689027 | 33.84661596 | 38.2977703 | 44.03137211 | 50.80458216 | 55.90470472 | 59.77799389 |
| 139–139.99 months | -0.909450843 | 38.6836143 | 0.194586368 | 28.20501252 | 29.20957645 | 30.89709604 | 34.17280606 | 38.6836143 | 44.48626901 | 51.32777521 | 56.46872726 | 60.36650388 |
| 140–140.99 months | -0.894446258 | 39.07364401 | 0.195076705 | 28.4501482 | 29.46949781 | 31.18151463 | 34.50330312 | 39.07364401 | 44.94478284 | 51.85338637 | 57.03396609 | 60.95519425 |
| 141–141.99 months | -0.879676305 | 39.46780643 | 0.195523246 | 28.69939347 | 29.73359819 | 31.47019723 | 34.83811379 | 39.46780643 | 45.40679475 | 52.38124777 | 57.6002466 | 61.54390076 |
| 142–142.99 months | -0.865160071 | 39.86604044 | 0.195925079 | 28.95282957 | 30.00194519 | 31.76318818 | 35.17723687 | 39.86604044 | 45.8721792 | 52.91118868 | 58.167387 | 62.13246268 |
| 143–143.99 months | -0.850915987 | 40.26827652 | 0.196281418 | 29.21053153 | 30.27459974 | 32.06052445 | 35.52066292 | 40.26827652 | 46.34080401 | 53.44303574 | 58.73521857 | 62.72072311 |
| 144–144.99 months | -0.836961905 | 40.67443658 | 0.196591612 | 29.47256769 | 30.55161562 | 32.36223514 | 35.8683738 | 40.67443658 | 46.81253029 | 53.97661318 | 59.30356596 | 63.30852916 |
| 145–145.99 months | -0.823315176 | 41.08443363 | 0.19685514 | 29.73899917 | 30.83303885 | 32.66834099 | 36.22034231 | 41.08443363 | 47.28721249 | 54.51174297 | 59.87225739 | 63.89573222 |
| 146–146.99 months | -0.809992726 | 41.49817164 | 0.19707162 | 30.00987927 | 31.11890724 | 32.97885387 | 36.57653175 | 41.49817164 | 47.76469837 | 55.04824506 | 60.44112289 | 64.48218816 |
| 147–147.99 months | -0.797011132 | 41.91554528 | 0.197240806 | 30.28525305 | 31.40924987 | 33.29377635 | 36.9368956 | 41.91554528 | 48.24482905 | 55.58593751 | 61.00999451 | 65.06775743 |
| 148–148.99 months | -0.784386693 | 42.33643978 | 0.197362591 | 30.56515671 | 31.70408654 | 33.61310119 | 37.3013771 | 42.33643978 | 48.72743903 | 56.1246367 | 61.5787065 | 65.65230527 |
| 149–149.99 months | -0.772135506 | 42.76073078 | 0.197437004 | 30.84961718 | 32.00342738 | 33.93681092 | 37.669909 | 42.76073078 | 49.21235624 | 56.66415748 | 62.14709543 | 66.23570179 |
| 150–150.99 months | -0.760273528 | 43.18828419 | 0.19746421 | 31.13865154 | 32.30727227 | 34.26487746 | 38.04241318 | 43.18828419 | 49.6994021 | 57.20431332 | 62.71500036 | 66.81782206 |
| 151–151.99 months | -0.748815968 | 43.61895703 | 0.197444522 | 31.43226571 | 32.61560983 | 34.59726137 | 38.4188008 | 43.61895703 | 50.1883928 | 57.74491716 | 63.28226272 | 67.39854294 |
| 152–152.99 months | -0.737780398 | 44.0525931 | 0.197378345 | 31.73045808 | 32.92841993 | 34.9339128 | 38.79897039 | 44.0525931 | 50.67913392 | 58.2857783 | 63.84872734 | 67.97775861 |
| 153–153.99 months | -0.727181568 | 44.48903027 | 0.197266263 | 32.03321196 | 33.24566815 | 35.27476898 | 39.18281045 | 44.48903027 | 51.17142989 | 58.82670813 | 64.41424088 | 68.5553511 |
| 154–154.99 months | -0.717035494 | 44.92809483 | 0.197108968 | 32.34050069 | 33.56730937 | 35.61975555 | 39.57019714 | 44.92809483 | 51.66507694 | 59.36751587 | 64.97865313 | 69.13121752 |
| 155–155.99 months | -0.707358338 | 45.36960315 | 0.196907274 | 32.6522856 | 33.8932863 | 35.96878581 | 39.96099475 | 45.36960315 | 52.15986523 | 59.90801 | 65.54181664 | 69.70525793 |
| 156–156.99 months | -0.698166437 | 45.81336172 | 0.196662115 | 32.96851571 | 34.22952911 | 36.32176053 | 40.35505561 | 45.81336172 | 52.65557906 | 60.44799828 | 66.1035867 | 70.27737718 |
| 157–157.99 months | -0.689476327 | 46.25916729 | 0.196374538 | 33.28912731 | 34.5579552 | 36.67856768 | 40.75222006 | 46.25916729 | 53.15199704 | 60.98728788 | 66.66382131 | 70.8474848 |
| 158–158.99 months | -0.68130475 | 46.70680701 | 0.196045701 | 33.61404373 | 34.8964689 | 37.03908232 | 41.15231646 | 46.70680701 | 53.64889226 | 61.52568545 | 67.22238111 | 71.41549477 |
| 159–159.99 months | -0.673668658 | 47.15605863 | 0.195676862 | 33.94317499 | 35.23896126 | 37.40316649 | 41.55516124 | 47.15605863 | 54.14603254 | 62.06299719 | 67.77912926 | 71.98132532 |
| 160–160.99 months | -0.666585194 | 47.60669074 | 0.19526938 | 34.27641756 | 35.58530989 | 37.7706691 | 41.96055897 | 47.60669074 | 54.64318067 | 62.59902894 | 68.33393136 | 72.54489869 |
| 161–161.99 months | -0.660069969 | 48.05846572 | 0.19482473 | 34.61365176 | 35.9353771 | 38.14142532 | 42.36830371 | 48.05846572 | 55.14009784 | 63.13358794 | 68.88665453 | 73.10613746 |
| 162–162.99 months | -0.654142602 | 48.51113138 | 0.19434441 | 34.95474943 | 36.28901539 | 38.51525867 | 42.77817554 | 48.51113138 | 55.63653354 | 63.66647721 | 69.43716965 | 73.66497514 |
| 163–163.99 months | -0.648819666 | 48.96443224 | 0.193830046 | 35.29956396 | 36.64606043 | 38.89197851 | 43.1899454 | 48.96443224 | 56.13223889 | 64.19750276 | 69.98534819 | 74.22134215 |
| 164–164.99 months | -0.644118611 | 49.41810374 | 0.193283319 | 35.64793577 | 37.00633501 | 39.27138168 | 43.6033728 | 49.41810374 | 56.62695959 | 64.72646954 | 70.53106367 | 74.77517319 |
| 165–165.99 months | -0.640056805 | 49.87187409 | 0.192705974 | 35.99969112 | 37.36964826 | 39.65325233 | 44.01820683 | 49.87187409 | 57.12043787 | 65.25318239 | 71.07419108 | 75.32640513 |
| 166–166.99 months | -0.636651424 | 50.32546478 | 0.192099812 | 36.354642 | 37.73579576 | 40.03736224 | 44.43418656 | 50.32546478 | 57.61241293 | 65.77744608 | 71.6146066 | 75.87497649 |
| 167–167.99 months | -0.633919328 | 50.77859121 | 0.191466681 | 36.71258626 | 38.10455963 | 40.42347105 | 44.8510416 | 50.77859121 | 58.10262135 | 66.29906539 | 72.15218736 | 76.42082697 |
| 168–168.99 months | -0.631876912 | 51.23096332 | 0.190808471 | 37.07330766 | 38.47570882 | 40.81132672 | 45.26849262 | 51.23096332 | 58.59079757 | 66.81784516 | 72.68681109 | 76.96389688 |
| 169–169.99 months | -0.63053994 | 51.68228625 | 0.190127105 | 37.43657601 | 38.84899932 | 41.20066588 | 45.68625203 | 51.68228625 | 59.07667438 | 67.33359031 | 73.21835588 | 77.50412655 |
| 170–170.99 months | -0.629923353 | 52.13226113 | 0.18942453 | 37.80214741 | 39.22417451 | 41.59121144 | 46.10402466 | 52.13226113 | 59.55998349 | 67.846106 | 73.7466998 | 78.04145573 |

Table 22. *L*, *M*, and *S* parameters and selected smoothed percentiles for weight (in kilograms) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys—Con. | | | | | | | | | | | | |
| 171–171.99 months | -0.630041066 | 52.58058583 | 0.188702714 | 38.16976444 | 39.60096552 | 41.98268787 | 46.5215085 | 52.58058583 | 60.04045606 | 68.35519765 | 74.27172061 | 78.57582294 |
| 172–172.99 months | -0.630905733 | 53.02695588 | 0.187963636 | 38.53915657 | 39.97909172 | 42.37479226 | 46.93839552 | 53.02695588 | 60.51782332 | 68.86067105 | 74.79329538 | 79.10716478 |
| 173–173.99 months | -0.632528509 | 53.47106525 | 0.187209281 | 38.91004046 | 40.35826115 | 42.76722456 | 47.35437254 | 53.47106525 | 60.99181722 | 69.36233252 | 75.31130018 | 79.63541524 |
| 174–174.99 months | -0.634918779 | 53.91260737 | 0.18644163 | 39.28212045 | 40.73817116 | 43.15967355 | 47.76912213 | 53.91260737 | 61.46217111 | 69.85998897 | 75.82560968 | 80.16050495 |
| 175–175.99 months | -0.638083884 | 54.35127608 | 0.185662657 | 39.65508906 | 41.118509 | 43.55182054 | 48.18232356 | 54.35127608 | 61.92862037 | 70.35344811 | 76.33609688 | 80.68236046 |
| 176–176.99 months | -0.642028835 | 54.78676659 | 0.184874323 | 40.02862762 | 41.49895256 | 43.94334028 | 48.59365384 | 54.78676659 | 62.3909033 | 70.8425186 | 76.84263269 | 81.20090348 |
| 177–177.99 months | -0.646756013 | 55.21877657 | 0.184078567 | 40.40240687 | 41.8791711 | 44.33390178 | 49.00278873 | 55.21877657 | 62.84876169 | 71.32701026 | 77.34508562 | 81.71605007 |
| 178–178.99 months | -0.652262297 | 55.64701131 | 0.183277339 | 40.77608405 | 42.25882349 | 44.72316843 | 49.40940563 | 55.64701131 | 63.30194659 | 71.80673678 | 77.84332029 | 82.22770492 |
| 179–179.99 months | -0.658551638 | 56.07116407 | 0.182472427 | 41.14932239 | 42.63757221 | 45.1108035 | 49.81317566 | 56.07116407 | 63.75019486 | 72.2815034 | 78.33720309 | 82.73578555 |
| 180–180.99 months | -0.665609025 | 56.49095862 | 0.181665781 | 41.52175462 | 43.01505816 | 45.49646217 | 50.21378283 | 56.49095862 | 64.19327833 | 72.75113236 | 78.82658994 | 83.24017154 |
| 181–181.99 months | -0.673425951 | 56.90610886 | 0.18085918 | 41.89302144 | 43.39092788 | 45.87980164 | 50.61090716 | 56.90610886 | 64.63095632 | 73.21543801 | 79.31133801 | 83.74075385 |
| 182–182.99 months | -0.681987284 | 57.31634059 | 0.180054395 | 42.26275389 | 43.76482163 | 46.26047782 | 51.0042348 | 57.31634059 | 65.06300059 | 73.6742397 | 79.79129954 | 84.23740907 |
| 183–183.99 months | -0.691273614 | 57.72138846 | 0.179253153 | 42.63057829 | 44.13637714 | 46.63814737 | 51.39345743 | 57.72138846 | 65.48919135 | 74.12735965 | 80.26632286 | 84.73000377 |
| 184–184.99 months | -0.701261055 | 58.12099696 | 0.178457127 | 42.99611758 | 44.50523096 | 47.01246901 | 51.77827341 | 58.12099696 | 65.90931806 | 74.57462329 | 80.73625224 | 85.21839391 |
| 185–185.99 months | -0.711921092 | 58.51492143 | 0.177667942 | 43.3589927 | 44.87101979 | 47.3831047 | 52.15838887 | 58.51492143 | 66.32318017 | 75.01585966 | 81.20092786 | 85.70242429 |
| 186–186.99 months | -0.723218488 | 58.90293208 | 0.176887192 | 43.71882106 | 45.23337973 | 47.74972019 | 52.53352018 | 58.90293208 | 66.73059164 | 75.45090384 | 81.66018503 | 86.18192445 |
| 187–187.99 months | -0.735121189 | 59.28479948 | 0.176116307 | 44.07523324 | 45.59195858 | 48.11199053 | 52.90338872 | 59.28479948 | 67.13136309 | 75.87958721 | 82.11385795 | 86.65672655 |
| 188–188.99 months | -0.747580416 | 59.66032626 | 0.175356814 | 44.42784452 | 45.94639581 | 48.46959303 | 53.26773454 | 59.66032626 | 67.52533948 | 76.30175821 | 82.56177239 | 87.12662858 |
| 189–189.99 months | -0.760550666 | 60.02931704 | 0.174610071 | 44.77628678 | 46.29634576 | 48.82221709 | 53.62630488 | 60.02931704 | 67.91236375 | 76.71726244 | 83.00375329 | 87.59143077 |
| 190–190.99 months | -0.773984558 | 60.39158721 | 0.173877336 | 45.1202019 | 46.64147321 | 49.16956302 | 53.97885832 | 60.39158721 | 68.29228717 | 77.12594864 | 83.43962339 | 88.05092631 |
| 191–191.99 months | -0.787817728 | 60.74698785 | 0.173159953 | 45.45922209 | 46.98143987 | 49.51133821 | 54.32517625 | 60.74698785 | 68.66499835 | 77.5276843 | 83.8691966 | 88.50487158 |
| 192–192.99 months | -0.801993069 | 61.09536847 | 0.172459052 | 45.79300591 | 47.31593016 | 49.84726703 | 54.66504759 | 61.09536847 | 69.03037911 | 77.92233231 | 84.29228904 | 88.95303286 |
| 193–193.99 months | -0.816446409 | 61.43660077 | 0.171775726 | 46.12121938 | 47.64463827 | 50.17708708 | 54.9982797 | 61.43660077 | 69.38833214 | 78.30976593 | 84.70871297 | 89.39515827 |
| 194–194.99 months | -0.831110299 | 61.77057372 | 0.171110986 | 46.4435428 | 47.96727332 | 50.5005518 | 55.32469696 | 61.77057372 | 69.73877506 | 78.68986591 | 85.1182789 | 89.83098491 |
| 195–195.99 months | -0.845914498 | 62.09719399 | 0.170465756 | 46.75967279 | 48.2835611 | 50.81743186 | 55.64414166 | 62.09719399 | 70.08164061 | 79.0625209 | 85.52079616 | 90.26023965 |
| 196–196.99 months | -0.860786514 | 62.41638628 | 0.169840869 | 47.06932426 | 48.52324591 | 51.12751661 | 55.95647478 | 62.41638628 | 70.41687682 | 79.42762779 | 85.91607365 | 90.68264001 |
| 197–197.99 months | -0.875652181 | 62.72809362 | 0.169237063 | 47.37223239 | 48.89609218 | 51.43061537 | 56.26157681 | 62.72809362 | 70.74444713 | 79.78509216 | 86.30392061 | 91.09789536 |
| 198–198.99 months | -0.890436283 | 63.03227756 | 0.168654971 | 47.66815456 | 49.1918862 | 51.72655874 | 56.55934839 | 63.03227756 | 71.06433046 | 80.13482859 | 86.68414749 | 91.50570814 |
| 199–199.99 months | -0.905063185 | 63.32891841 | 0.168095124 | 47.9568721 | 49.4804377 | 52.01519982 | 56.8497111 | 63.32891841 | 71.3765212 | 80.47676112 | 87.0565669 | 91.90577541 |
| 200–200.99 months | -0.919455749 | 63.61801537 | 0.16755794 | 48.23819204 | 49.76158125 | 52.29641539 | 57.13260799 | 63.61801537 | 71.68102918 | 80.81082354 | 87.42099463 | 92.2979046 |
| 201–201.99 months | -0.933544683 | 63.89958662 | 0.167043722 | 48.5119486 | 50.03517772 | 52.57010692 | 57.40800416 | 63.89958662 | 71.97787966 | 81.1369598 | 87.77725073 | 92.6814447 |
| 202–202.99 months | -0.947251765 | 64.17366943 | 0.166552654 | 48.77800463 | 50.30111539 | 52.83620153 | 57.67588728 | 64.17366943 | 72.26711325 | 81.45512442 | 88.12516072 | 93.05642962 |
| 203–203.99 months | -0.960507855 | 64.44032016 | 0.166084798 | 49.03625275 | 50.55931105 | 53.09465275 | 57.93626794 | 64.44032016 | 72.54878582 | 81.76528289 | 88.46455683 | 93.42243904 |
| 204–204.99 months | -0.973244762 | 64.69961427 | 0.16564009 | 49.28661635 | 50.8097108 | 53.34544121 | 58.18918 | 64.69961427 | 72.82296841 | 82.06741212 | 88.79527942 | 93.77917145 |
| 205–205.99 months | -0.985397502 | 64.95164625 | 0.165218341 | 49.52905029 | 51.05229071 | 53.58857507 | 58.4368077 | 64.95164625 | 73.08974718 | 82.3615009 | 89.11717836 | 94.12633257 |
| 206–206.99 months | -0.996904762 | 65.1965295 | 0.164819236 | 49.76354136 | 51.28705716 | 53.82409032 | 58.67285105 | 65.1965295 | 73.34922324 | 82.64755047 | 89.43011463 | 94.46363806 |
| 207–207.99 months | -1.007705555 | 65.43440186 | 0.16444238 | 49.99010333 | 51.51404335 | 54.05204939 | 58.90379742 | 65.43440186 | 73.60151968 | 82.92557908 | 89.73396054 | 94.79080897 |
| 208–208.99 months | -1.017756047 | 65.66540015 | 0.164087103 | 50.2087994 | 51.73332523 | 54.27254708 | 59.1276417 | 65.66540015 | 73.84675041 | 83.19560496 | 90.02860798 | 95.10760779 |
| 209–209.99 months | -1.027002713 | 65.88970117 | 0.163752791 | 50.41970456 | 51.94499451 | 54.48570012 | 59.3445374 | 65.88970117 | 74.08507097 | 83.45767612 | 90.31395969 | 95.41378755 |
| 210–210.99 months | -1.035402243 | 66.10749114 | 0.163438661 | 50.62293176 | 52.14917717 | 54.69165364 | 59.55465678 | 66.10749114 | 74.31664141 | 83.71184998 | 90.58993909 | 95.70913474 |
| 211–211.99 months | -1.042916356 | 66.31897311 | 0.163143825 | 50.81862346 | 52.34602709 | 54.89057819 | 59.75819326 | 66.31897311 | 74.54163604 | 83.95819995 | 90.85649043 | 95.99346235 |
| 212–212.99 months | -1.049511871 | 66.52436618 | 0.162867311 | 51.00695001 | 52.53572455 | 55.08266832 | 59.95536025 | 66.52436618 | 74.76024322 | 84.19681638 | 91.11358115 | 96.26661385 |
| 213–213.99 months | -1.055160732 | 66.72390443 | 0.162608072 | 51.18810764 | 52.71847428 | 55.26814081 | 60.1463897 | 66.72390443 | 74.97266503 | 84.42780754 | 91.36120451 | 96.52846743 |
| 214–214.99 months | -1.059840019 | 66.91783563 | 0.162365006 | 51.36231608 | 52.89450319 | 55.44723255 | 60.33153027 | 66.91783563 | 75.17911684 | 84.6513007 | 91.59938232 | 96.77894046 |
| 215–215.99 months | -1.063531973 | 67.10641956 | 0.162136973 | 51.52981582 | 53.06405769 | 55.62019799 | 60.51104512 | 67.10641956 | 75.37982657 | 84.86744322 | 91.82816795 | 97.01799447 |
| 216–216.99 months | -1.066224038 | 67.28992603 | 0.161922819 | 51.69086489 | 53.22740059 | 55.78730622 | 60.68520928 | 67.28992603 | 75.57503388 | 85.07640364 | 92.04764958 | 97.24564034 |
| 217–217.99 months | -1.067908908 | 67.46863255 | 0.161721398 | 51.8457352 | 53.38480749 | 55.94883747 | 60.85430662 | 67.46863255 | 75.76498909 | 85.27837286 | 92.25795363 | 97.46194398 |
| 218–218.99 months | -1.068589885 | 67.64281378 | 0.16153153 | 51.99471665 | 53.53656883 | 56.10508206 | 61.0186237 | 67.64281378 | 75.94994171 | 85.47355853 | 92.4592488 | 97.66704065 |
| 219–219.99 months | -1.068261146 | 67.8127675 | 0.161352313 | 52.13808124 | 53.68296205 | 56.25632509 | 61.17845532 | 67.8127675 | 76.13017744 | 85.66221241 | 92.65174946 | 97.8611107 |

Table 22. *L*, *M*, and *S* parameters and selected smoothed percentiles for weight (in kilograms) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys—Con. | | | | | | | | | | | | |
| 220–220.99 months | -1.066933756 | 67.97877331 | 0.161182785 | 52.27611902 | 53.82427723 | 56.402856 | 61.33408787 | 67.97877331 | 76.30596623 | 85.84459728 | 92.83571985 | 98.04442516 |
| 221–221.99 months | -1.064620976 | 68.14111022 | 0.161022184 | 52.4091082 | 53.96079321 | 56.54495425 | 61.48580086 | 68.14111022 | 76.47758936 | 86.02100855 | 93.0114792 | 98.21733128 |
| 222–222.99 months | -1.061341755 | 68.30004741 | 0.160869943 | 52.53731392 | 54.09277512 | 56.68288493 | 61.63385984 | 68.30004741 | 76.64533092 | 86.1917714 | 93.17940638 | 98.38026471 |
| 223–223.99 months | -1.057116957 | 68.4558454 | 0.160725793 | 52.66097508 | 54.22046291 | 56.81689002 | 61.77851223 | 68.4558454 | 76.80948323 | 86.35724712 | 93.33994398 | 98.53374986 |
| 224–224.99 months | -1.051988979 | 68.60872174 | 0.160589574 | 52.78032448 | 54.34408388 | 56.94718918 | 61.91996953 | 68.60872174 | 76.97030781 | 86.51781277 | 93.49360895 | 98.67844376 |
| 225–225.99 months | -1.04599033 | 68.75889263 | 0.1604617 | 52.89553346 | 54.46381004 | 57.073957 | 62.05841733 | 68.75889263 | 77.12809294 | 86.6739 | 93.64099003 | 98.8150862 |
| 226–226.99 months | -1.039168248 | 68.90653028 | 0.160342924 | 53.00673755 | 54.57977424 | 57.1932448 | 62.19399335 | 68.90653028 | 77.28310484 | 86.82596904 | 93.7827601 | 98.94455298 |
| 227–227.99 months | -1.031579574 | 69.05176427 | 0.160234478 | 53.11401756 | 54.69205355 | 57.31736613 | 62.32678127 | 69.05176427 | 77.43559533 | 86.97451776 | 93.91968135 | 99.06785516 |
| 228–228.99 months | -1.023291946 | 69.19467288 | 0.160138158 | 53.21738885 | 54.80065842 | 57.43408908 | 62.45680021 | 69.19467288 | 77.58579719 | 87.12008338 | 94.05261232 | 99.18615007 |
| 229–229.99 months | -1.014385118 | 69.33527376 | 0.160056393 | 53.31678976 | 54.90552089 | 57.54742113 | 62.58399337 | 69.33527376 | 77.73391919 | 87.26324432 | 94.18251529 | 99.30075287 |
| 230–230.99 months | -1.004952366 | 69.47351373 | 0.159992344 | 53.41206904 | 55.00648181 | 57.6571979 | 62.70821568 | 69.47351373 | 77.88014066 | 87.40462203 | 94.31046411 | 99.41314881 |
| 231–231.99 months | -0.995101924 | 69.60925782 | 0.159949989 | 53.50297229 | 55.10327703 | 57.7631489 | 62.8292204 | 69.60925782 | 78.02460556 | 87.54488282 | 94.43765234 | 99.5250061 |
| 232–232.99 months | -0.984958307 | 69.74227758 | 0.159934231 | 53.58912711 | 55.19552245 | 57.86488244 | 62.94664487 | 69.74227758 | 78.16741625 | 87.6847398 | 94.56540179 | 99.63818945 |
| 233–233.99 months | -0.974663325 | 69.87223885 | 0.159951004 | 53.67002691 | 55.28269761 | 57.96186944 | 63.0599953 | 69.87223885 | 78.30862691 | 87.82495478 | 94.69517136 | 99.75477412 |
| 234–234.99 months | -0.964376555 | 69.99868896 | 0.160007394 | 53.74501298 | 55.36412796 | 58.05342591 | 63.16863065 | 69.99868896 | 78.44823694 | 87.96634036 | 94.82856611 | 99.87706036 |
| 235–235.99 months | -0.954274945 | 70.12104381 | 0.160111769 | 53.8132547 | 55.43896526 | 58.13869414 | 63.27174585 | 70.12104381 | 78.58618425 | 88.10976202 | 94.96734651 | 100.0075883 |
| 236–236.99 months | -0.944551187 | 70.23857482 | 0.160273918 | 53.87372737 | 55.50616614 | 58.2166225 | 63.36835431 | 70.23857482 | 78.72233893 | 88.25614046 | 95.11343784 | 100.1491529 |
| 237–237.99 months | -0.935410427 | 70.35039626 | 0.160505203 | 53.92518731 | 55.56446839 | 58.28594368 | 63.45727001 | 70.35039626 | 78.85649725 | 88.40645399 | 95.26893942 | 100.3048189 |
| 238–238.99 months | -0.927059784 | 70.45546105 | 0.160818788 | 53.96613658 | 55.61235958 | 58.34514946 | 63.53709257 | 70.45546105 | 78.98838596 | 88.56174643 | 95.43613181 | 100.477926 |
| 239–239.99 months | -0.919718461 | 70.55252127 | 0.161229617 | 53.99481762 | 55.64806673 | 58.39247268 | 63.6061772 | 70.55252127 | 79.11762417 | 88.72311137 | 95.61749303 | 100.6721384 |
| Girls | | | | | | | | | | | | |
| 24–24.99 months | -0.75220657 | 12.13455523 | 0.107740345 | 10.04880792 | 10.27482893 | 10.64075988 | 11.30566642 | 12.13455523 | 13.07613207 | 14.03902482 | 14.67658551 | 15.1183895 |
| 25–25.99 months | -0.78423366 | 12.2910249 | 0.10847701 | 10.17173432 | 10.40066415 | 10.77166654 | 11.44696728 | 12.2910249 | 13.25293458 | 14.24016506 | 14.89587242 | 15.35122084 |
| 26–26.99 months | -0.81409582 | 12.44469258 | 0.109280828 | 10.29079033 | 10.52273569 | 10.89898512 | 11.58501268 | 12.44469258 | 13.42753123 | 14.43983825 | 15.1142761 | 15.58362686 |
| 27–27.99 months | -0.841935504 | 12.59622335 | 0.110144488 | 10.40664383 | 10.64171007 | 11.02338047 | 11.72046615 | 12.59622335 | 13.60059358 | 14.63872906 | 15.33249457 | 15.8163176 |
| 28–28.99 months | -0.867889398 | 12.74620911 | 0.111060815 | 10.51990171 | 10.7581918 | 11.14545358 | 11.8539236 | 12.74620911 | 13.77271274 | 14.83743315 | 15.55113065 | 16.0499034 |
| 29–29.99 months | -0.892102647 | 12.89517218 | 0.112022759 | 10.63111516 | 10.8727282 | 11.26574591 | 11.98591692 | 12.89517218 | 13.94440383 | 15.03646393 | 15.770701 | 16.28490586 |
| 30–30.99 months | -0.914718817 | 13.04357164 | 0.113023467 | 10.74078194 | 10.98581228 | 11.38474303 | 12.11691911 | 13.04357164 | 14.11611337 | 15.23626013 | 15.99164336 | 16.52176469 |
| 31–31.99 months | -0.935876584 | 13.19180874 | 0.114056328 | 10.84934933 | 11.09788597 | 11.50287836 | 12.24734867 | 13.19180874 | 14.28822545 | 15.43719269 | 16.21432377 | 16.76084508 |
| 32–32.99 months | -0.955723447 | 13.34022934 | 0.115114953 | 10.95721927 | 11.2093447 | 11.62053698 | 12.3775256 | 13.34022934 | 14.46106492 | 15.63957012 | 16.43904429 | 17.00244749 |
| 33–33.99 months | -0.974383363 | 13.48913319 | 0.116193327 | 11.0647471 | 11.32053778 | 11.7380584 | 12.50791249 | 13.48913319 | 14.6349076 | 15.8436466 | 16.66604785 | 17.24680927 |
| 34–34.99 months | -0.991980756 | 13.63877446 | 0.11728575 | 11.17224778 | 11.43177357 | 11.85574032 | 12.63864672 | 13.63877446 | 14.80998135 | 16.04962601 | 16.89552564 | 17.49411514 |
| 35–35.99 months | -1.008640742 | 13.78936547 | 0.118386848 | 11.27999893 | 11.54332263 | 11.9738418 | 12.77001339 | 13.78936547 | 14.98647034 | 16.25766706 | 17.12762297 | 17.74450372 |
| 36–36.99 months | -1.024471278 | 13.94108332 | 0.119491669 | 11.38824099 | 11.65541879 | 12.0925858 | 12.90221529 | 13.94108332 | 15.16452247 | 16.46788956 | 17.3624437 | 17.9980699 |
| 37–37.99 months | -1.039573604 | 14.09407175 | 0.120595658 | 11.49718137 | 11.76826286 | 12.21216229 | 13.03542218 | 14.09407175 | 15.34425164 | 16.68037834 | 17.60005585 | 18.25487219 |
| 38–38.99 months | -1.054039479 | 14.24844498 | 0.121694676 | 11.60699649 | 11.88202491 | 12.33273088 | 13.16977393 | 14.24844498 | 15.52574208 | 16.89518784 | 17.84049621 | 18.51493707 |
| 39–39.99 months | -1.067946784 | 14.40429169 | 0.12278503 | 11.71783343 | 11.99684628 | 12.45442324 | 13.3053838 | 14.40429169 | 15.7090529 | 17.11234657 | 18.08377443 | 18.77826268 |
| 40–40.99 months | -1.081374153 | 14.56167529 | 0.12386634 | 11.82981465 | 12.11284345 | 12.57734604 | 13.44233976 | 14.56167529 | 15.89421842 | 17.33185956 | 18.329878 | 19.04482627 |
| 41–41.99 months | -1.094381409 | 14.72064045 | 0.124926943 | 11.94303682 | 12.23010816 | 12.7015826 | 13.58070885 | 14.72064045 | 16.08125551 | 17.55371382 | 18.57877485 | 19.31458378 |
| 42–42.99 months | -1.107021613 | 14.88121352 | 0.125973221 | 12.05757491 | 12.34871076 | 12.82719552 | 13.72053844 | 14.88121352 | 16.27016402 | 17.77788046 | 18.83041754 | 19.58747608 |
| 43–43.99 months | -1.119338692 | 15.04340553 | 0.127000212 | 12.17348363 | 12.46870194 | 12.95422865 | 13.86185877 | 15.04340553 | 16.4609302 | 18.00431807 | 19.08474635 | 19.86343169 |
| 44–44.99 months | -1.131367831 | 15.20721443 | 0.128006292 | 12.29079939 | 12.59011469 | 13.08270906 | 14.00468502 | 15.20721443 | 16.65352914 | 18.23297548 | 19.34169227 | 20.14236985 |
| 45–45.99 months | -1.143135936 | 15.37262729 | 0.128990225 | 12.40954207 | 12.71296607 | 13.21264896 | 14.14901929 | 15.37262729 | 16.84792719 | 18.46379435 | 19.60117968 | 20.42420335 |
| 46–46.99 months | -1.15466215 | 15.53962221 | 0.129951143 | 12.52971675 | 12.837259 | 13.3440474 | 14.29485248 | 15.53962221 | 17.04408407 | 18.69671155 | 19.86312888 | 20.70884106 |
| 47–47.99 months | -1.165958392 | 15.70817017 | 0.130888527 | 12.65131534 | 12.96298387 | 13.47689199 | 14.44216593 | 15.70817017 | 17.24195488 | 18.9316613 | 20.12745836 | 20.99619028 |
| 48–48.99 months | -1.177029925 | 15.87823668 | 0.131802186 | 12.77431816 | 13.09012012 | 13.61116044 | 14.59093307 | 15.87823668 | 17.44149184 | 19.16857713 | 20.3940868 | 21.28615884 |
| 49–49.99 months | -1.187871001 | 16.04978452 | 0.132692269 | 12.89869431 | 13.21863694 | 13.74682181 | 14.74112146 | 16.04978452 | 17.64264736 | 19.40739437 | 20.66293462 | 21.57865549 |
| 50–50.99 months | -1.198484073 | 16.2227706 | 0.133559108 | 13.0244072 | 13.34849756 | 13.88383882 | 14.89269209 | 16.2227706 | 17.84537017 | 19.64804889 | 20.93392691 | 21.8735972 |

Table 22. *L, M, and S* parameters and selected smoothed percentiles for weight (in kilograms) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-----------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | | |
| 51–51.99 months | -1.208853947 | 16.39715363 | 0.134403386 | 13.15141009 | 13.47965651 | 14.02216781 | 15.04560355 | 16.39715363 | 18.04961414 | 19.8904825 | 21.20699305 | 22.17090276 |
| 52–52.99 months | -1.218965087 | 16.57289122 | 0.13522599 | 13.279651 | 13.61206342 | 14.16176079 | 15.19981137 | 16.57289122 | 18.25533469 | 20.13464164 | 21.48206912 | 22.47049907 |
| 53–53.99 months | -1.228798212 | 16.74994187 | 0.136028014 | 13.40907302 | 13.74566354 | 14.30256641 | 15.35526953 | 16.74994187 | 18.46249096 | 20.38047905 | 21.75909881 | 22.7723211 |
| 54–54.99 months | -1.238330855 | 16.92826587 | 0.136810739 | 13.53961547 | 13.88039891 | 14.44453095 | 15.51193144 | 16.92826587 | 18.67104666 | 20.62795467 | 22.0380343 | 23.07631287 |
| 55–55.99 months | -1.247537914 | 17.10782615 | 0.137575606 | 13.67121491 | 14.0162093 | 14.58759933 | 15.66975084 | 17.10782615 | 18.88097086 | 20.87703643 | 22.31883709 | 23.3824283 |
| 56–56.99 months | -1.256392179 | 17.28858894 | 0.138324193 | 13.80380614 | 14.15303322 | 14.731716 | 15.82868259 | 17.28858894 | 19.09223862 | 21.12770084 | 22.60147865 | 23.69063187 |
| 57–57.99 months | -1.264864846 | 17.47052444 | 0.139058192 | 13.9373231 | 14.29080875 | 14.87682577 | 15.98868834 | 17.47052444 | 19.30483153 | 21.37993353 | 22.88594093 | 24.00089913 |
| 58–58.99 months | -1.272926011 | 17.65360733 | 0.139779387 | 14.07169977 | 14.42947441 | 15.02287453 | 16.14971251 | 17.65360733 | 19.51873814 | 21.63372961 | 23.17221677 | 24.31321719 |
| 59–59.99 months | -1.28054514 | 17.83781722 | 0.140489635 | 14.20687088 | 14.56896986 | 15.16981002 | 16.31173224 | 17.83781722 | 19.73395429 | 21.88909396 | 23.46031012 | 24.62758492 |
| 60–60.99 months | -1.287691525 | 18.02313904 | 0.141190842 | 14.34277271 | 14.70923661 | 15.31758235 | 16.47470852 | 18.02313904 | 19.95048336 | 22.14604136 | 23.75023626 | 24.94401317 |
| 61–61.99 months | -1.294332076 | 18.20956418 | 0.141884974 | 14.47934293 | 14.85021811 | 15.46614444 | 16.63861163 | 18.20956418 | 20.16833747 | 22.40459718 | 24.04202158 | 25.26252369 |
| 62–62.99 months | -1.300441561 | 18.3970876 | 0.142573939 | 14.61652406 | 14.9918623 | 15.61545325 | 16.80341543 | 18.3970876 | 20.38753372 | 22.66479513 | 24.33570429 | 25.5831532 |
| 63–63.99 months | -1.305989011 | 18.58571243 | 0.143259709 | 14.75426001 | 15.13411929 | 15.76546914 | 16.96909934 | 18.58571243 | 20.60809964 | 22.92668027 | 24.63133325 | 25.90594748 |
| 64–64.99 months | -1.310946941 | 18.77544728 | 0.143944216 | 14.89249907 | 15.27694359 | 15.91615695 | 17.13564756 | 18.77544728 | 20.83006969 | 23.19030686 | 24.92896835 | 26.23096473 |
| 65–65.99 months | -1.315289534 | 18.966307 | 0.144629359 | 15.03119376 | 15.42029408 | 16.06748615 | 17.30304956 | 18.966307 | 21.05348599 | 23.45573857 | 25.22868007 | 26.55827443 |
| 66–66.99 months | -1.318992925 | 19.15831267 | 0.14531699 | 15.17030121 | 15.56413437 | 16.21943117 | 17.4713002 | 19.15831267 | 21.27839816 | 23.72304816 | 25.5305491 | 26.88795694 |
| 67–67.99 months | -1.322035315 | 19.35149163 | 0.146008903 | 15.30978338 | 15.70843301 | 16.37197155 | 17.64039992 | 19.35149163 | 21.50486316 | 23.99231712 | 25.83466581 | 27.2201029 |
| 68–68.99 months | -1.324398133 | 19.54587708 | 0.146706813 | 15.4496077 | 15.85316397 | 16.52509225 | 17.81035463 | 19.54587708 | 21.7329446 | 24.263635 | 26.14112991 | 27.55481321 |
| 69–69.99 months | -1.326064539 | 19.74150854 | 0.147412363 | 15.5897467 | 15.99830645 | 16.67878363 | 17.98117606 | 19.74150854 | 21.96271325 | 24.53709941 | 26.45004964 | 27.89219758 |
| 70–70.99 months | -1.327020415 | 19.93843145 | 0.148127109 | 15.73017845 | 16.1438452 | 16.83304163 | 18.15288153 | 19.93843145 | 22.19424627 | 24.8128152 | 26.76154129 | 28.2323743 |
| 71–71.99 months | -1.327256387 | 20.13669623 | 0.148852482 | 15.87088741 | 16.28977109 | 16.98786798 | 18.32549376 | 20.13669623 | 22.42762598 | 25.09089343 | 27.07572865 | 28.57547042 |
| 72–72.99 months | -1.326763834 | 20.33635961 | 0.149589838 | 16.01186303 | 16.43608019 | 17.14326985 | 18.49904125 | 20.33635961 | 22.66294138 | 25.3714519 | 27.39274198 | 28.92161906 |
| 73–73.99 months | -1.325538668 | 20.53748298 | 0.1503404 | 16.15310112 | 16.58277468 | 17.29926017 | 18.67355775 | 20.53748298 | 22.90028597 | 25.65461346 | 27.71271759 | 29.27096042 |
| 74–74.99 months | -1.323579654 | 20.74013277 | 0.151105277 | 16.29460329 | 16.72986243 | 17.4558574 | 18.84908224 | 20.74013277 | 23.13975807 | 25.94050589 | 28.03579694 | 29.62364011 |
| 75–75.99 months | -1.320888012 | 20.94438028 | 0.151885464 | 16.43637669 | 16.87735682 | 17.61308542 | 19.02565892 | 20.94438028 | 23.38146064 | 26.22926131 | 28.36212579 | 29.97980811 |
| 76–76.99 months | -1.317468695 | 21.15030093 | 0.152681819 | 16.57843458 | 17.02527707 | 17.77097356 | 19.20333679 | 21.15030093 | 23.62550009 | 26.52101516 | 28.69185351 | 30.33961853 |
| 77–77.99 months | -1.313331446 | 21.35797332 | 0.15349505 | 16.72079656 | 17.17364841 | 17.92955656 | 19.38216922 | 21.35797332 | 23.87198507 | 26.815905 | 29.02513239 | 30.70322948 |
| 78–78.99 months | -1.308487081 | 21.56748045 | 0.154325756 | 16.86348713 | 17.32250091 | 18.08887399 | 19.56221428 | 21.56748045 | 24.12102802 | 27.11407112 | 29.36211644 | 31.07080008 |
| 79–79.99 months | -1.302948173 | 21.77890902 | 0.155174414 | 17.00653572 | 17.47186953 | 18.24897012 | 19.74353436 | 21.77890902 | 24.37274421 | 27.41565556 | 29.70296069 | 31.44248988 |
| 80–80.99 months | -1.296733913 | 21.99234686 | 0.15604132 | 17.14997871 | 17.62179544 | 18.40989435 | 19.92619507 | 21.99234686 | 24.62724833 | 27.72079958 | 29.04782073 | 31.81846107 |
| 81–81.99 months | -1.289863329 | 22.20788541 | 0.156926667 | 17.2938564 | 17.77232382 | 18.57170012 | 20.110266 | 22.20788541 | 24.88465774 | 28.02964533 | 30.39685131 | 32.19887352 |
| 82–82.99 months | -1.282358762 | 22.4256177 | 0.157830504 | 17.43821437 | 17.92350474 | 18.73444512 | 20.29581981 | 22.4256177 | 25.14508981 | 28.3423338 | 30.75020585 | 32.58388611 |
| 83–83.99 months | -1.274244931 | 22.64563824 | 0.158752743 | 17.58310295 | 18.07539265 | 18.89819089 | 20.48293203 | 22.64563824 | 25.40866182 | 28.65900443 | 31.10803553 | 32.97365535 |
| 84–84.99 months | -1.265548787 | 22.86804258 | 0.159693163 | 17.72857693 | 18.2280462 | 19.06300261 | 20.6716806 | 22.86804258 | 25.67549032 | 28.97979428 | 31.47048848 | 33.3683346 |
| 85–85.99 months | -1.256299378 | 23.09292679 | 0.16065141 | 17.87469542 | 18.38152794 | 19.22894873 | 20.86214582 | 23.09292679 | 25.94569055 | 29.30483741 | 31.83770901 | 33.76807319 |
| 86–86.99 months | -1.24653066 | 23.32038549 | 0.161626956 | 18.02152302 | 18.53590513 | 19.39610118 | 21.05440884 | 23.32038549 | 26.21937378 | 29.63426278 | 32.2098371 | 34.17301785 |
| 87–87.99 months | -1.236266832 | 23.55051871 | 0.162619308 | 18.16912246 | 18.69124428 | 19.56453273 | 21.24855446 | 23.55051871 | 26.49665657 | 29.96819988 | 32.58700628 | 34.5833014 |
| 88–88.99 months | -1.225551344 | 23.78341652 | 0.1636276 | 18.31756871 | 18.84762137 | 19.73432134 | 21.44466518 | 23.78341652 | 26.77764034 | 30.30676532 | 32.96934568 | 34.99906317 |
| 89–89.99 months | -1.214410914 | 24.01917703 | 0.1646511 | 18.46693089 | 19.00510849 | 19.90554403 | 21.64282737 | 24.01917703 | 27.06243533 | 30.65007797 | 33.35697585 | 35.42042208 |
| 90–90.99 months | -1.202884389 | 24.25789074 | 0.165688808 | 18.61728653 | 19.16378421 | 20.07828129 | 21.84312554 | 24.25789074 | 27.35113996 | 30.99824532 | 33.75001097 | 35.84749737 |
| 91–91.99 months | -1.191007906 | 24.49964778 | 0.166739662 | 18.76871394 | 19.32372789 | 20.25261432 | 22.04564463 | 24.49964778 | 27.64385046 | 31.3513695 | 34.14855665 | 36.28039703 |
| 92–92.99 months | -1.178818621 | 24.74453536 | 0.167802495 | 18.92129383 | 19.48502077 | 20.42862531 | 22.25046892 | 24.74453536 | 27.94065757 | 31.70954484 | 34.55270981 | 36.71922013 |
| 93–93.99 months | -1.166354376 | 24.99263735 | 0.168876037 | 19.07510898 | 19.64774563 | 20.60639712 | 22.45768158 | 24.99263735 | 28.24164611 | 32.07285742 | 34.96255799 | 37.16405609 |
| 94–94.99 months | -1.153653688 | 25.24403371 | 0.169958922 | 19.23024402 | 19.8119865 | 20.7860129 | 22.6673643 | 25.24403371 | 28.54689431 | 32.44138436 | 35.37817885 | 37.61498429 |
| 95–95.99 months | -1.140751404 | 25.49880264 | 0.171049756 | 19.38678267 | 19.9778266 | 20.96755499 | 22.87959773 | 25.49880264 | 28.85647669 | 32.81519554 | 35.79963916 | 38.07206991 |
| 96–96.99 months | -1.127684095 | 25.7570168 | 0.172147043 | 19.54481057 | 20.14535023 | 21.15110555 | 23.09445998 | 25.7570168 | 29.17045929 | 33.19435025 | 36.2269949 | 38.53536809 |
| 97–97.99 months | -1.114490244 | 26.01874261 | 0.173249185 | 19.70441527 | 20.31464276 | 21.33674635 | 23.31202608 | 26.01874261 | 29.4888987 | 33.5788965 | 36.66029091 | 39.00492396 |
| 98–98.99 months | -1.101204848 | 26.28404312 | 0.174354569 | 19.86568272 | 20.48578791 | 21.52455736 | 23.53236883 | 26.28404312 | 29.8118461 | 33.9688734 | 37.09955982 | 39.48076746 |
| 99–99.99 months | -1.087863413 | 26.55297507 | 0.175461512 | 20.02869944 | 20.65886924 | 21.71461721 | 23.75555744 | 26.55297507 | 30.13934341 | 34.3643086 | 37.54482215 | 39.96291669 |

Table 22. *L, M, and S* parameters and selected smoothed percentiles for weight (in kilograms) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | | |
| 100–100.99 months | -1.074500927 | 26.82558904 | 0.176568284 | 20.19355165 | 20.83396942 | 21.90700268 | 23.98165745 | 26.82558904 | 30.47142364 | 34.76521834 | 37.99608589 | 40.45137672 |
| 101–101.99 months | -1.061151213 | 27.1019295 | 0.177673124 | 20.36032458 | 21.01116968 | 22.10178826 | 24.21073043 | 27.1019295 | 30.80811106 | 35.17160751 | 38.45334608 | 40.94613881 |
| 102–102.99 months | -1.047847141 | 27.38203422 | 0.178774242 | 20.52910239 | 21.19054959 | 22.29904589 | 24.44283365 | 27.38203422 | 31.14942058 | 35.58346914 | 38.91658465 | 41.44718044 |
| 103–103.99 months | -1.034620551 | 27.66593402 | 0.179869829 | 20.6999678 | 21.37218677 | 22.49884459 | 24.67801969 | 27.66593402 | 31.49535747 | 36.00078421 | 39.38577014 | 41.95446506 |
| 104–104.99 months | -1.021502197 | 27.9536524 | 0.180958063 | 20.8730018 | 21.55615653 | 22.7012502 | 24.9163362 | 27.9536524 | 31.8459171 | 36.42352136 | 39.86085756 | 42.46794195 |
| 105–105.99 months | -1.008521695 | 28.24520531 | 0.182037118 | 21.04828336 | 21.74253164 | 22.90632506 | 25.15782551 | 28.24520531 | 32.20108468 | 36.85163675 | 40.3417882 | 42.98754609 |
| 106–106.99 months | -0.995707494 | 28.54060085 | 0.183105172 | 21.22588911 | 21.93138197 | 23.11412177 | 25.40252443 | 28.54060085 | 32.56083507 | 37.28507392 | 40.82848957 | 43.51319807 |
| 107–107.99 months | -0.983086844 | 28.83983907 | 0.18416041 | 21.40589307 | 22.12277423 | 23.32471257 | 25.65046392 | 28.83983907 | 32.92513255 | 37.72376365 | 41.32087531 | 44.04480409 |
| 108–108.99 months | -0.970685789 | 29.14291171 | 0.185201039 | 21.58836636 | 22.31677169 | 23.53812979 | 25.90166889 | 29.14291171 | 33.29393074 | 38.16762389 | 41.8188452 | 44.58225593 |
| 109–109.99 months | -0.958529157 | 29.44980208 | 0.186225287 | 21.77337689 | 22.51343388 | 23.75442484 | 26.15615792 | 29.44980208 | 33.66717239 | 38.61655976 | 42.32228515 | 45.12543098 |
| 110–110.99 months | -0.946640568 | 29.76048479 | 0.187231416 | 21.96098914 | 22.71281638 | 23.97363834 | 26.41394306 | 29.76048479 | 34.04478937 | 39.0704635 | 42.83106725 | 45.67419242 |
| 111–111.99 months | -0.935042447 | 30.0749257 | 0.188217723 | 22.15126389 | 22.91497052 | 24.19580583 | 26.67502964 | 30.0749257 | 34.42670255 | 39.52921454 | 43.34504991 | 46.22838923 |
| 112–112.99 months | -0.923756041 | 30.39308176 | 0.18918255 | 22.34425792 | 23.11994316 | 24.4209575 | 26.93941607 | 30.39308176 | 34.8128218 | 39.99267955 | 43.86407795 | 46.78785646 |
| 113–113.99 months | -0.912801445 | 30.71490093 | 0.190124286 | 22.54002382 | 23.32777646 | 24.64911804 | 27.20709368 | 30.71490093 | 35.20304599 | 40.46071256 | 44.38798278 | 47.3524154 |
| 114–114.99 months | -0.902197638 | 31.0403221 | 0.191041375 | 22.73860975 | 23.53850764 | 24.88030638 | 27.47804659 | 31.0403221 | 35.59726302 | 40.9331551 | 44.91658265 | 47.92187383 |
| 115–115.99 months | -0.891962513 | 31.36927506 | 0.191932319 | 22.94005917 | 23.7521688 | 25.11453557 | 27.75225159 | 31.36927506 | 35.99534989 | 41.40983639 | 45.44968284 | 48.49602631 |
| 116–116.99 months | -0.882112919 | 31.7016805 | 0.192795682 | 23.14441069 | 23.96878672 | 25.35181259 | 28.029678 | 31.7016805 | 36.3971728 | 41.89057352 | 45.98707597 | 49.07465451 |
| 117–117.99 months | -0.872664706 | 32.03744999 | 0.193630095 | 23.35169781 | 24.18838263 | 25.59213818 | 28.31028765 | 32.03744999 | 36.80258726 | 42.37517172 | 46.52854232 | 49.65752758 |
| 118–118.99 months | -0.863632768 | 32.37648607 | 0.19443426 | 23.56194878 | 24.4109721 | 25.83550673 | 28.59403476 | 32.37648607 | 37.21143829 | 42.86342465 | 47.07385017 | 50.24440253 |
| 119–119.99 months | -0.855031092 | 32.71868225 | 0.195206948 | 23.77518637 | 24.63656488 | 26.08190616 | 28.88086594 | 32.71868225 | 37.62356058 | 43.35511467 | 47.62275619 | 50.83502464 |
| 120–120.99 months | -0.846872805 | 33.06392318 | 0.195947008 | 23.99142774 | 24.86516468 | 26.33131782 | 29.17072015 | 33.06392318 | 38.03877869 | 43.85001322 | 48.17500585 | 51.42912799 |
| 121–121.99 months | -0.839170224 | 33.4120847 | 0.196653365 | 24.21068424 | 25.09676913 | 26.58371638 | 29.4635287 | 33.4120847 | 38.45690737 | 44.34788119 | 48.73033386 | 52.02643587 |
| 122–122.99 months | -0.831934903 | 33.76303402 | 0.197325023 | 24.43296131 | 25.33136962 | 26.8390698 | 29.7592153 | 33.76303402 | 38.87775177 | 44.84846931 | 49.28846466 | 52.62666135 |
| 123–123.99 months | -0.825177688 | 34.1166299 | 0.197961065 | 24.65825833 | 25.56895119 | 27.09733925 | 30.05769609 | 34.1166299 | 39.30110778 | 45.35151857 | 49.84911291 | 53.22950783 |
| 124–124.99 months | -0.818908758 | 34.47272283 | 0.198560655 | 24.88656847 | 25.80949245 | 27.35847906 | 30.35887971 | 34.47272283 | 39.72676238 | 45.8567607 | 50.41198402 | 53.8346696 |
| 125–125.99 months | -0.813137675 | 34.83115524 | 0.199123037 | 25.11787864 | 26.05296553 | 27.62243677 | 30.66266737 | 34.83115524 | 40.15449395 | 46.36391866 | 50.9767747 | 54.44183245 |
| 126–126.99 months | -0.807873433 | 35.19176177 | 0.199647538 | 25.35216934 | 26.29933598 | 27.88915304 | 30.96895298 | 35.19176177 | 40.58407272 | 46.87270712 | 51.54317357 | 55.0506743 |
| 127–127.99 months | -0.803122613 | 35.55437176 | 0.200133598 | 25.58941249 | 26.5485612 | 28.15856107 | 31.27762411 | 35.55437176 | 41.01526401 | 47.38283479 | 52.11086123 | 55.66086287 |
| 128–128.99 months | -0.79889771 | 35.91879976 | 0.200580618 | 25.82958069 | 26.80059725 | 28.43058954 | 31.58855853 | 35.91879976 | 41.44781609 | 47.89399722 | 52.67951305 | 56.27206944 |
| 129–129.99 months | -0.795203499 | 36.28486194 | 0.200988216 | 26.0726318 | 27.05538753 | 28.70515783 | 31.90163028 | 36.28486194 | 41.88148136 | 48.40589011 | 53.24887136 | 56.88394797 |
| 130–130.99 months | -0.792047959 | 36.65236365 | 0.201356017 | 26.31852113 | 27.31287184 | 28.98217994 | 32.21670522 | 36.65236365 | 42.31600037 | 48.91819978 | 53.81837358 | 57.49615297 |
| 131–131.99 months | -0.789435274 | 37.02110818 | 0.201683791 | 26.56719327 | 27.57298031 | 29.26156199 | 32.5336442 | 37.02110818 | 42.75111318 | 49.43061053 | 54.38790173 | 58.10832895 |
| 132–132.99 months | -0.787374433 | 37.39088668 | 0.201971282 | 26.81859231 | 27.83564104 | 29.5432056 | 32.85229967 | 37.39088668 | 43.18654635 | 49.94279684 | 54.95703466 | 58.72012509 |
| 133–133.99 months | -0.785870695 | 37.76148905 | 0.202218375 | 27.0726516 | 28.10077256 | 29.82700474 | 33.17251956 | 37.76148905 | 43.62202704 | 50.45443246 | 55.52542195 | 59.33118206 |
| 134–134.99 months | -0.784929893 | 38.1326991 | 0.202425006 | 27.3292989 | 28.3682877 | 30.11284746 | 33.49414573 | 38.1326991 | 44.05727678 | 50.96518685 | 56.0927106 | 59.94113978 |
| 135–135.99 months | -0.784557605 | 38.50429603 | 0.202591183 | 27.5884554 | 28.63809288 | 30.4006158 | 33.81701463 | 38.50429603 | 44.49201341 | 51.47472671 | 56.65854557 | 60.54963673 |
| 136–136.99 months | -0.78475917 | 38.87605489 | 0.20271698 | 27.85003573 | 28.91008824 | 30.69018587 | 34.14095759 | 38.87605489 | 44.92595166 | 51.98271665 | 57.22257051 | 61.15631078 |
| 137–137.99 months | -0.785539703 | 39.24774707 | 0.202802535 | 28.11394809 | 29.18416775 | 30.98142809 | 34.46580111 | 39.24774707 | 45.35880379 | 52.48881992 | 57.78442851 | 61.76079992 |
| 138–138.99 months | -0.786904102 | 39.61914076 | 0.202848049 | 28.38009427 | 29.46021931 | 31.27420739 | 34.79136727 | 39.61914076 | 45.79028017 | 52.99269914 | 58.34376285 | 62.36274309 |
| 139–139.99 months | -0.788858208 | 39.98999994 | 0.202853758 | 28.64837137 | 29.73812611 | 31.56838398 | 35.11747352 | 39.98999994 | 46.22008796 | 53.49401569 | 58.90021802 | 62.96178288 |
| 140–140.99 months | -0.791403051 | 40.36009244 | 0.202820053 | 28.91866389 | 30.01776074 | 31.8638107 | 35.44393549 | 40.36009244 | 46.64794172 | 53.99243685 | 59.45343918 | 63.55755646 |
| 141–141.99 months | -0.794546352 | 40.72917544 | 0.202747236 | 29.1908599 | 30.29899746 | 32.16033905 | 35.77056256 | 40.72917544 | 47.07354407 | 54.48762378 | 60.00307549 | 64.14971608 |
| 142–142.99 months | -0.79829102 | 41.09701099 | 0.202635758 | 29.46483511 | 30.58170029 | 32.45781366 | 36.09716305 | 41.09701099 | 47.4966064 | 54.97924502 | 60.5487783 | 64.73791012 |
| 143–143.99 months | -0.802640891 | 41.46335907 | 0.202486098 | 29.74046108 | 30.86572924 | 32.75607548 | 36.4235422 | 41.46335907 | 47.91683947 | 55.4669708 | 61.09020319 | 65.32197369 |
| 144–144.99 months | -0.807599577 | 41.82797963 | 0.202298783 | 30.01760377 | 31.15093935 | 33.05496144 | 36.7495031 | 41.82797963 | 48.33395608 | 55.9504751 | 61.62701045 | 65.90102746 |
| 145–145.99 months | -0.813170461 | 42.19063313 | 0.202074385 | 30.29612378 | 31.43718091 | 33.35430482 | 37.07484703 | 42.19063313 | 48.74767177 | 56.42943635 | 62.15886584 | 66.47527837 |
| 146–146.99 months | -0.819356692 | 42.55108107 | 0.201813521 | 30.57587654 | 31.72429973 | 33.6539355 | 37.39937399 | 42.55108107 | 49.15770541 | 56.90353811 | 62.68544133 | 67.04422046 |
| 147–147.99 months | -0.826161176 | 42.90908653 | 0.201516851 | 30.85671255 | 32.01213742 | 33.95368036 | 37.72288302 | 42.90908653 | 49.56377988 | 57.37246984 | 63.20641583 | 67.60753554 |
| 148–148.99 months | -0.833586038 | 43.2644155 | 0.201185082 | 31.13847695 | 32.30053116 | 34.25336333 | 38.04517298 | 43.2644155 | 49.96562365 | 57.83592807 | 63.72147556 | 68.16491273 |

Table 22. *L*, *M*, and *S* parameters and selected smoothed percentiles for weight (in kilograms) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-------------------|--------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | | |
| 149–149.99 months | –0.841634949 | 43.61683402 | 0.200818928 | 31.42101289 | 32.58931625 | 34.55280676 | 38.36604173 | 43.61683402 | 50.36296721 | 58.29361488 | 64.2303163 | 68.7160548 |
| 150–150.99 months | –0.850307441 | 43.9661169 | 0.200419208 | 31.70415418 | 32.87832086 | 34.85182934 | 38.68528952 | 43.9661169 | 50.75555403 | 58.74524431 | 64.73264089 | 69.26066574 |
| 151–151.99 months | –0.859607525 | 44.31203579 | 0.199986681 | 31.98773757 | 33.16737518 | 35.15025041 | 39.0027151 | 44.31203579 | 51.14312509 | 59.19053344 | 65.22816347 | 69.7984699 |
| 152–152.99 months | –0.869534339 | 44.65437319 | 0.199522233 | 32.27158972 | 33.45630184 | 35.44788577 | 39.31812066 | 44.65437319 | 51.52543729 | 59.62921442 | 65.7166078 | 70.32919455 |
| 153–153.99 months | –0.880088651 | 44.99291356 | 0.199026736 | 32.55553716 | 33.74492348 | 35.74455149 | 39.63130927 | 44.99291356 | 51.90225139 | 60.06102656 | 66.19770861 | 70.85258197 |
| 154–154.99 months | –0.891270585 | 45.32744704 | 0.198501096 | 32.83940314 | 34.03306041 | 36.04006296 | 39.94208624 | 45.32744704 | 52.273337 | 60.48572025 | 66.67121259 | 71.36838696 |
| 155–155.99 months | –0.903079458 | 45.65777013 | 0.197946255 | 33.12300797 | 34.3205311 | 36.33423538 | 40.25025974 | 45.65777013 | 52.63847339 | 60.90305741 | 67.13687835 | 71.87637634 |
| 156–156.99 months | –0.915513542 | 45.98368656 | 0.197363191 | 33.40616909 | 34.60715224 | 36.62688403 | 40.55564134 | 45.98368656 | 52.99745045 | 61.31281247 | 67.59447719 | 72.37632936 |
| 157–157.99 months | –0.928569454 | 46.30500858 | 0.196752931 | 33.68870064 | 34.89273857 | 36.91782442 | 40.85804669 | 46.30500858 | 53.35007037 | 61.71477365 | 68.04379345 | 72.86803693 |
| 158–158.99 months | –0.942245864 | 46.62155183 | 0.196116472 | 33.97041915 | 35.17710718 | 37.20687443 | 41.15729406 | 46.62155183 | 53.69614073 | 62.10873877 | 68.4846261 | 73.35131006 |
| 159–159.99 months | –0.956537923 | 46.93314404 | 0.19545489 | 34.25113618 | 35.46007223 | 37.49385217 | 41.45320759 | 46.93314404 | 54.03548596 | 62.49452276 | 68.91678763 | 73.82596855 |
| 160–160.99 months | –0.971440492 | 47.23962058 | 0.194769279 | 34.53066634 | 35.74144871 | 37.77857793 | 41.74561603 | 47.23962058 | 54.36794129 | 62.87195405 | 69.34010551 | 74.2918484 |
| 161–161.99 months | –0.986947308 | 47.54082604 | 0.194060758 | 34.80881186 | 36.0210521 | 38.06087423 | 42.03435353 | 47.54082604 | 54.69335479 | 63.24087599 | 69.75442235 | 74.74880046 |
| 162–162.99 months | –1.003050887 | 47.83661466 | 0.193330477 | 35.08539244 | 36.29869877 | 38.34056621 | 42.31926009 | 47.83661466 | 55.01158787 | 63.60114743 | 70.15959636 | 75.19669066 |
| 163–163.99 months | –1.019742425 | 48.12685082 | 0.192579614 | 35.36021624 | 36.57420636 | 38.61748204 | 42.60018191 | 48.12685082 | 55.32251577 | 63.95264314 | 70.55550168 | 75.63540025 |
| 164–164.99 months | –1.037011698 | 48.41140938 | 0.191809374 | 35.63309497 | 36.84739419 | 38.89145331 | 42.87697183 | 48.41140938 | 56.62602801 | 64.29525433 | 70.94202872 | 76.0648259 |
| 165–165.99 months | –1.054846957 | 48.69017613 | 0.191020995 | 35.90384139 | 37.11808367 | 39.16231542 | 43.14948969 | 48.69017613 | 55.9220288 | 64.62888901 | 71.31908448 | 76.48487978 |
| 166–166.99 months | –1.073234825 | 48.9630481 | 0.190215739 | 36.17226975 | 37.38609874 | 39.42990799 | 43.4176027 | 48.9630481 | 56.21043748 | 64.95347244 | 71.68659282 | 76.8954897 |
| 167–167.99 months | –1.092160195 | 49.22993391 | 0.189394901 | 36.43819618 | 37.65126622 | 39.69407521 | 43.68118578 | 49.22993391 | 56.49118881 | 65.26894746 | 72.04449469 | 77.29659902 |
| 168–168.99 months | –1.111606122 | 49.49075409 | 0.188559804 | 36.70143915 | 37.91341628 | 39.95466626 | 43.94012186 | 49.49075409 | 56.76423337 | 65.57527484 | 72.39274832 | 77.68816668 |
| 169–169.99 months | –1.131553723 | 49.74544132 | 0.187711798 | 36.96181994 | 38.17238283 | 40.21153565 | 44.19430225 | 49.74544132 | 57.02953776 | 65.87243353 | 72.73132942 | 78.0701671 |
| 170–170.99 months | –1.151982079 | 49.99394068 | 0.186852266 | 37.21916305 | 38.42800396 | 40.4645436 | 44.4436269 | 49.99394068 | 57.2870849 | 66.16042095 | 73.06023127 | 78.44259001 |
| 171–171.99 months | –1.172868141 | 50.23620985 | 0.185982617 | 37.47329665 | 38.68012233 | 40.71355642 | 44.68800466 | 50.23620985 | 57.53687418 | 66.43925318 | 73.37946482 | 78.80544037 |
| 172–172.99 months | –1.19418462 | 50.47222213 | 0.185104331 | 37.72405025 | 38.92858345 | 40.95844577 | 44.92735442 | 50.47222213 | 57.77892568 | 66.70896797 | 73.68905842 | 79.15873364 |
| 173–173.99 months | –1.215907492 | 50.70195581 | 0.184218803 | 37.97126574 | 39.17324412 | 41.19909297 | 45.16160204 | 50.70195581 | 58.01326503 | 66.96961412 | 73.98905915 | 79.5025122 |
| 174–174.99 months | –1.238005268 | 50.92540942 | 0.18327556 | 38.2147829 | 39.41396159 | 41.4353838 | 45.39068521 | 50.92540942 | 58.23994486 | 67.22126661 | 74.27953085 | 79.83682168 |
| 175–175.99 months | –1.260445591 | 51.14259229 | 0.182432113 | 38.45444923 | 39.65060094 | 41.66721226 | 45.61455072 | 51.14259229 | 58.45903143 | 67.46401722 | 74.5605553 | 80.16172522 |
| 176–176.99 months | –1.283193626 | 51.3535268 | 0.181534018 | 38.69011819 | 39.8830339 | 41.89448008 | 45.83315528 | 51.3535268 | 58.67060766 | 67.69797665 | 74.83223179 | 80.47729968 |
| 177–177.99 months | –1.306212032 | 51.55824831 | 0.180634839 | 38.92164966 | 40.11113919 | 42.11709702 | 46.0464657 | 51.55824831 | 58.87477302 | 67.92327441 | 75.09467698 | 80.78363524 |
| 178–178.99 months | –1.329460945 | 51.75680513 | 0.179736168 | 39.14891037 | 40.33480295 | 42.33498116 | 46.25445894 | 51.75680513 | 59.07164337 | 68.14005866 | 75.38202466 | 81.08083497 |
| 179–179.99 months | –1.35289798 | 51.94925841 | 0.178839614 | 39.37177435 | 40.55391906 | 42.54805916 | 46.45712228 | 51.94925841 | 59.26135066 | 68.34849595 | 75.5924255 | 81.36901438 |
| 180–180.99 months | –1.376478254 | 52.13568193 | 0.177946804 | 39.59012338 | 40.76838955 | 42.7562665 | 46.65445329 | 52.13568193 | 59.44404265 | 68.5487709 | 75.82804673 | 81.64830091 |
| 181–181.99 months | –1.400154426 | 52.31616197 | 0.177059379 | 39.80384736 | 40.97812493 | 42.95954776 | 46.84645992 | 52.31616197 | 59.61988254 | 68.74108582 | 76.05507182 | 81.91883344 |
| 182–182.99 months | –1.423876772 | 52.49079703 | 0.17617899 | 40.21284477 | 41.18304453 | 43.1578568 | 47.03316051 | 52.49079703 | 59.78904852 | 68.92566027 | 76.27369999 | 82.18076174 |
| 183–183.99 months | –1.447593267 | 52.65969757 | 0.175307296 | 40.401270202 | 41.3830768 | 43.35115698 | 47.21458375 | 52.65969757 | 59.95173329 | 69.10273048 | 76.48414576 | 82.43424593 |
| 184–184.99 months | –1.471249702 | 52.82298572 | 0.174445958 | 40.41629881 | 41.57815964 | 43.53942133 | 47.39076866 | 52.82298572 | 60.10814351 | 69.27254876 | 76.68663841 | 82.67945587 |
| 185–185.99 months | –1.494789826 | 52.9807949 | 0.173596636 | 40.61059851 | 41.76824065 | 43.72263271 | 47.56176451 | 52.9807949 | 60.25849917 | 69.43538282 | 76.88142138 | 82.91657062 |
| 186–186.99 months | –1.518155513 | 53.13326946 | 0.172760982 | 40.79985847 | 41.95327736 | 43.90078396 | 47.72763073 | 53.13326946 | 60.40303292 | 69.59151495 | 77.06875157 | 83.1457778 |
| 187–187.99 months | –1.541286949 | 53.28056425 | 0.17194064 | 40.98402528 | 42.1332375 | 44.07387796 | 47.8884368 | 53.28056425 | 60.54198938 | 69.74124122 | 77.24889863 | 83.36727297 |
| 188–188.99 months | –1.564122852 | 53.42284417 | 0.171137232 | 41.16305606 | 42.30809914 | 44.24192774 | 48.04426208 | 53.42284417 | 60.67562433 | 69.8848705 | 77.42214413 | 83.581259 |
| 189–189.99 months | –1.586600712 | 53.5602837 | 0.170352363 | 41.33691866 | 42.4778509 | 44.40495652 | 48.19519564 | 53.5602837 | 60.80420388 | 70.0227235 | 77.58878071 | 83.78794544 |
| 190–190.99 months | –1.608657054 | 53.69306637 | 0.169587605 | 41.50559186 | 42.642492 | 44.5629977 | 48.34133606 | 53.69306637 | 60.92800363 | 70.15513163 | 77.74911109 | 83.98754779 |
| 191–191.99 months | –1.630227728 | 53.82138422 | 0.168844497 | 41.66906547 | 42.80203238 | 44.71609485 | 48.4827912 | 53.82138422 | 61.04730771 | 70.28243588 | 77.90344707 | 84.18028693 |
| 192–192.99 months | –1.651248208 | 53.94543725 | 0.168124538 | 41.82734048 | 42.95649273 | 44.86430165 | 48.6196779 | 53.94543725 | 61.16240788 | 70.40498554 | 78.05210841 | 84.36638832 |
| 193–193.99 months | –1.67165392 | 54.06543278 | 0.167429179 | 41.98042905 | 43.10590449 | 45.00768175 | 48.7521217 | 54.06543278 | 61.27360245 | 70.52313696 | 78.19542171 | 84.54608137 |
| 194–194.99 months | –1.691380583 | 54.18158486 | 0.166759816 | 42.12835452 | 43.25030973 | 45.14630867 | 48.88025651 | 54.18158486 | 61.38119533 | 70.63725215 | 78.33371911 | 84.71959869 |
| 195–195.99 months | –1.710364557 | 54.29411356 | 0.166117788 | 42.27115134 | 43.38976112 | 45.28026556 | 49.0042242 | 54.29411356 | 61.48549489 | 70.74769732 | 78.46733702 | 84.88717537 |
| 196–196.99 months | –1.728543207 | 54.40324431 | 0.165504365 | 42.40886495 | 43.52432169 | 45.40964499 | 49.12417422 | 54.40324431 | 61.58681291 | 70.85484146 | 78.59661472 | 85.04904822 |
| 197–197.99 months | –1.745855274 | 54.50920717 | 0.164920747 | 42.54155162 | 43.65406467 | 45.5345486 | 49.24026312 | 54.50920717 | 61.68546339 | 70.95905471 | 78.72189292 | 85.205455 |

Table 22. *L*, *M*, and *S* parameters and selected smoothed percentiles for weight (in kilograms) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-----------------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | | |
| 198–198.99 months | -1.762241248 | 54.61223603 | 0.164368054 | 42.66927817 | 43.77907316 | 45.65508683 | 49.35265405 | 54.61223603 | 61.7817614 | 71.06070688 | 78.84351231 | 85.35663368 |
| 199–199.99 months | -1.777643747 | 54.71256787 | 0.16384732 | 42.79212167 | 43.89943983 | 45.77137845 | 49.46151622 | 54.71256787 | 61.87602186 | 71.16016568 | 78.96181194 | 85.50282159 |
| 200–200.99 months | -1.792007891 | 54.81044184 | 0.163359491 | 42.91016914 | 44.01526649 | 45.88355015 | 49.5670243 | 54.81044184 | 61.96855832 | 71.25779513 | 79.07712765 | 85.64425466 |
| 201–201.99 months | -1.805281675 | 54.90609842 | 0.162905415 | 43.02351704 | 44.12666366 | 45.99173597 | 49.66935776 | 54.90609842 | 62.05968162 | 71.35395381 | 79.18979044 | 85.78116658 |
| 202–202.99 months | -1.817416335 | 54.99977846 | 0.162485839 | 43.13227083 | 44.23375003 | 46.09607679 | 49.76870017 | 54.99977846 | 62.14969862 | 71.44899305 | 79.30012477 | 85.91378798 |
| 203–203.99 months | -1.828366707 | 55.09172217 | 0.162101402 | 43.23654442 | 44.33665192 | 46.19671962 | 49.86523842 | 55.09172217 | 62.23891075 | 71.54325519 | 79.40844685 | 86.04234557 |
| 204–204.99 months | -1.838091576 | 55.18216811 | 0.161752634 | 43.33645956 | 44.43550259 | 46.29381699 | 49.95916191 | 55.18216811 | 62.32761268 | 71.63707172 | 79.51506292 | 86.16706131 |
| 205–205.99 months | -1.846554015 | 55.271352 | 0.161439944 | 43.43214518 | 44.53044156 | 46.38752609 | 50.05066163 | 55.271352 | 62.41609075 | 71.73076142 | 79.62026752 | 86.28815157 |
| 206–206.99 months | -1.853721704 | 55.35950558 | 0.161163623 | 43.52373663 | 44.62161386 | 46.47800802 | 50.13992923 | 55.35950558 | 62.50462147 | 71.82462845 | 79.72434173 | 86.40582627 |
| 207–207.99 months | -1.859567242 | 55.44685531 | 0.160923833 | 43.61137495 | 44.70916923 | 46.56542689 | 50.22715595 | 55.44685531 | 62.59346994 | 71.91896047 | 79.82755144 | 86.52028803 |
| 208–208.99 months | -1.864068443 | 55.53362107 | 0.160720609 | 43.69520604 | 44.79326117 | 46.64994883 | 50.31253151 | 55.53362107 | 62.68288814 | 72.01402668 | 79.9301456 | 86.63173131 |
| 209–209.99 months | -1.86720861 | 55.62001464 | 0.16055385 | 43.77537971 | 44.8740461 | 46.73174101 | 50.39624297 | 55.62001464 | 62.77311319 | 72.11007585 | 80.03235456 | 86.74034162 |
| 210–210.99 months | -1.8689768 | 55.70623826 | 0.160423319 | 43.85204883 | 44.95168231 | 46.81097052 | 50.47847336 | 55.70623826 | 62.86436555 | 72.20733438 | 80.13438837 | 86.84629466 |
| 211–211.99 months | -1.869371157 | 55.79247939 | 0.160328578 | 43.9253721 | 45.02633189 | 46.88780489 | 50.55939966 | 55.79247939 | 62.95684135 | 72.3059993 | 80.23643485 | 86.9497625 |
| 212–212.99 months | -1.868386498 | 55.87892356 | 0.160269232 | 43.99549743 | 45.09814744 | 46.96240411 | 50.6391944 | 55.87892356 | 63.05073398 | 72.40625667 | 80.33865934 | 87.05088422 |
| 213–213.99 months | -1.866033924 | 55.96573022 | 0.160244549 | 44.06258481 | 45.16728964 | 47.03492965 | 50.71801935 | 55.96573022 | 63.14619584 | 72.50824833 | 80.44120111 | 87.14980899 |
| 214–214.99 months | -1.862327775 | 56.05304601 | 0.160253714 | 44.12678882 | 45.23391322 | 47.10553608 | 50.79602716 | 56.05304601 | 63.24336091 | 72.61209121 | 80.54417335 | 87.24666536 |
| 215–215.99 months | -1.857289195 | 56.14099882 | 0.160295765 | 44.18826162 | 45.29816896 | 47.17437139 | 50.87335876 | 56.14099882 | 63.34233618 | 72.71786996 | 80.64766146 | 87.34156823 |
| 216–216.99 months | -1.850946286 | 56.22969564 | 0.16036959 | 44.24715174 | 45.36020233 | 47.24157543 | 50.95014153 | 56.22969564 | 63.44319934 | 72.82563495 | 80.75172168 | 87.43461808 |
| 217–217.99 months | -1.843334325 | 56.3192203 | 0.16047393 | 44.30360275 | 45.42015206 | 47.30727836 | 51.02648735 | 56.3192203 | 63.54599643 | 72.93540037 | 80.85638 | 87.52590032 |
| 218–218.99 months | -1.834495505 | 56.40963105 | 0.160607377 | 44.35775192 | 45.47814866 | 47.37159889 | 51.10249055 | 56.40963105 | 63.65073939 | 73.04714239 | 80.96163098 | 87.61548453 |
| 219–219.99 months | -1.824479785 | 56.50095811 | 0.16076838 | 44.40972877 | 45.53431283 | 47.43464251 | 51.17822572 | 56.50095811 | 63.75740358 | 73.16079731 | 81.06743678 | 87.70342388 |
| 220–220.99 months | -1.813344222 | 56.59320107 | 0.160955249 | 44.45965358 | 45.58875384 | 47.49649958 | 51.25374544 | 56.59320107 | 63.86592525 | 73.27625982 | 81.17372627 | 87.78975439 |
| 221–221.99 months | -1.801153404 | 56.68632619 | 0.161166157 | 44.50763581 | 45.64156773 | 47.55724333 | 51.32907793 | 56.68632619 | 63.97619897 | 73.39338138 | 81.28039424 | 87.87449436 |
| 222–222.99 months | -1.787979408 | 56.78026364 | 0.161399151 | 44.5537724 | 45.69283549 | 47.61692775 | 51.40422448 | 56.78026364 | 64.08807505 | 73.51196857 | 81.38730069 | 87.95764367 |
| 223–223.99 months | -1.773901816 | 56.87490465 | 0.161652158 | 44.598146 | 45.74262109 | 47.6755854 | 51.47915686 | 56.87490465 | 64.20135697 | 73.63178167 | 81.49427023 | 88.03918325 |
| 224–224.99 months | -1.759007704 | 56.97009856 | 0.161922998 | 44.64082307 | 45.79096943 | 47.733225 | 51.55381463 | 56.97009856 | 64.31579883 | 73.75253327 | 81.60109165 | 88.11907438 |
| 225–225.99 months | -1.743391606 | 57.06564989 | 0.162209399 | 44.68185184 | 45.83790409 | 47.78982906 | 51.62810228 | 57.06564989 | 64.43110284 | 73.87388701 | 81.70751748 | 88.19725823 |
| 226–226.99 months | -1.72715546 | 57.16131528 | 0.162509006 | 44.72126019 | 45.88342504 | 47.84535121 | 51.70188628 | 57.16131528 | 64.54691678 | 73.99545642 | 81.8132637 | 88.27365525 |
| 227–227.99 months | -1.710410733 | 57.25679821 | 0.162819353 | 44.75905693 | 45.92750914 | 47.89971542 | 51.7749921 | 57.25679821 | 64.66282755 | 74.11679995 | 81.91800816 | 88.34816753 |
| 228–228.99 months | -1.693267093 | 57.35175792 | 0.163138124 | 44.79521204 | 45.97009344 | 47.9528045 | 51.84720202 | 57.35175792 | 64.77837954 | 74.23743894 | 82.02139464 | 88.42066003 |
| 229–229.99 months | -1.67585442 | 57.44578172 | 0.163462715 | 44.82968627 | 46.01109826 | 48.00447244 | 51.91824859 | 57.44578172 | 64.89303137 | 74.35682105 | 82.12302792 | 88.49100174 |
| 230–230.99 months | -1.658302847 | 57.53840429 | 0.163790683 | 44.86239882 | 46.05040055 | 48.05452712 | 51.98781418 | 57.53840429 | 65.00619161 | 74.47435424 | 82.22248225 | 88.55903385 |
| 231–231.99 months | -1.640747464 | 57.62910094 | 0.164119574 | 44.89323794 | 46.08784264 | 48.10273611 | 52.05553129 | 57.62910094 | 65.11720439 | 74.58938617 | 82.3192791 | 88.62454872 |
| 232–232.99 months | -1.623332891 | 57.7172758 | 0.164446997 | 44.92205384 | 46.12322421 | 48.14881709 | 52.12097097 | 57.7172758 | 65.22534243 | 74.70121281 | 82.41291688 | 88.68734305 |
| 233–233.99 months | -1.606209374 | 57.80226553 | 0.164770638 | 44.94865678 | 46.15630107 | 48.1924379 | 52.1836449 | 57.80226553 | 65.32980994 | 74.80907365 | 82.50285304 | 88.74718402 |
| 234–234.99 months | -1.589533346 | 57.88333502 | 0.165088289 | 44.97281279 | 46.18678082 | 48.23321202 | 52.24300075 | 57.88333502 | 65.42973979 | 74.91215216 | 82.58850833 | 88.80381758 |
| 235–235.99 months | -1.573467222 | 57.95967458 | 0.165397881 | 44.99423978 | 46.21431895 | 48.27069475 | 52.2984187 | 57.95967458 | 65.52419173 | 75.00957518 | 82.66926695 | 88.85696942 |
| 236–236.99 months | -1.558179166 | 58.0303973 | 0.165697507 | 45.01260329 | 46.23851477 | 48.3043794 | 52.34920805 | 58.0303973 | 65.61215061 | 75.10041216 | 82.74447678 | 88.90634626 |
| 237–237.99 months | -1.543846192 | 58.09453209 | 0.165985386 | 45.02751676 | 46.2589107 | 48.33369518 | 52.39460282 | 58.09453209 | 65.69251821 | 75.18366937 | 82.81344962 | 88.95164479 |
| 238–238.99 months | -1.530642461 | 58.15103575 | 0.166260109 | 45.03852094 | 46.27497563 | 48.35799667 | 52.4337619 | 58.15103575 | 65.76413346 | 75.25830602 | 82.87546122 | 88.99252982 |
| 239–239.99 months | -1.518754013 | 58.1987714 | 0.16652037 | 45.04509979 | 46.28611635 | 48.37656825 | 52.46576117 | 58.1987714 | 65.8257417 | 75.32321054 | 82.92975179 | 89.02866893 |

Table 23. L, M, and S parameters and selected smoothed percentiles for stature (in centimeters) by sex and age: 2 to 20 years

| Sex and age | Percentile | | | | | | | | | | | |
|-----------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|
| | L | M | S | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys | | | | | | | | | | | | |
| 24–24.99 months | 1.00720807 | 86.86160934 | 0.040395626 | 80.26037074 | 81.08868489 | 82.36400989 | 84.49470553 | 86.86160934 | 89.22804829 | 91.35753004 | 92.63176749 | 93.45923029 |
| 25–25.99 months | 0.837251351 | 87.65247282 | 0.040577525 | 81.0052937 | 81.83445202 | 83.11387064 | 85.25887745 | 87.65247282 | 90.05675457 | 92.22966054 | 93.53406648 | 94.38278047 |
| 26–26.99 months | 0.681492975 | 88.42326434 | 0.040723122 | 81.7341574 | 82.56406112 | 83.84716151 | 86.0051731 | 88.42326434 | 90.8626041 | 93.07608163 | 94.40884914 | 95.27761711 |
| 27–27.99 months | 0.538779654 | 89.17549228 | 0.040833194 | 82.44845648 | 83.27898582 | 84.56534433 | 86.73506945 | 89.17549228 | 91.64711353 | 93.89827114 | 95.25754106 | 96.14511823 |
| 28–28.99 months | 0.407697153 | 89.91040853 | 0.040909059 | 83.14944982 | 83.98045262 | 85.26961974 | 87.44977223 | 89.91040853 | 92.41159029 | 94.69757027 | 96.08148848 | 96.98662531 |
| 29–29.99 months | 0.286762453 | 90.62907762 | 0.040952433 | 83.83819399 | 84.66948449 | 85.96098331 | 88.15028421 | 90.62907762 | 93.15718995 | 95.47522083 | 96.88197981 | 97.8034532 |
| 30–30.99 months | 0.174489485 | 91.33242379 | 0.04096533 | 84.51558277 | 85.3469433 | 86.64027154 | 88.83745411 | 91.33242379 | 93.88495599 | 96.23239427 | 97.66026663 | 98.59690538 |
| 31–31.99 months | 0.069444521 | 92.02127167 | 0.040949976 | 85.18238019 | 86.01356554 | 87.30820085 | 89.5120186 | 92.02127167 | 94.59585394 | 96.97021533 | 98.4175791 | 99.36828331 |
| 32–32.99 months | -0.029720564 | 92.69637946 | 0.040908737 | 85.83925011 | 86.66999332 | 87.96540055 | 90.17463683 | 92.69637946 | 95.29079906 | 97.68978097 | 99.15513792 | 100.1188932 |
| 33–33.99 months | -0.124251789 | 93.35846546 | 0.040844062 | 86.48678276 | 87.31680155 | 88.61244073 | 90.82591867 | 93.35846546 | 95.97067824 | 98.39217521 | 99.87416352 | 100.8500508 |
| 34–34.99 months | -0.215288396 | 94.00822923 | 0.040758431 | 87.12551862 | 87.95452162 | 89.24985581 | 91.46644774 | 94.00822923 | 96.63636727 | 99.0784807 | 100.5758831 | 101.5630853 |
| 35–35.99 months | -0.30385434 | 94.64636981 | 0.040654312 | 87.75596799 | 88.58366128 | 89.87816458 | 92.09680119 | 94.64636981 | 97.28874542 | 99.74978771 | 101.2615351 | 102.2593402 |
| 36–36.99 months | -0.390918369 | 95.27359106 | 0.04053412 | 88.37863651 | 89.20472611 | 90.49788649 | 92.71755946 | 95.27359106 | 97.92869928 | 100.4071992 | 101.9323762 | 102.940182 |
| 37–37.99 months | -0.254801167 | 95.91474929 | 0.040572876 | 88.93297086 | 89.77301106 | 91.08607735 | 93.33440049 | 95.91474929 | 98.58524582 | 101.0690065 | 102.5930445 | 103.5982668 |
| 38–38.99 months | -0.125654535 | 96.54734328 | 0.04061691 | 89.47916294 | 90.33305814 | 91.66588835 | 93.94268367 | 96.54734328 | 99.23357783 | 101.7233762 | 103.2470198 | 104.2502776 |
| 39–39.99 months | -0.00316735 | 97.17191309 | 0.040666414 | 90.01765704 | 90.88532031 | 92.23778882 | 94.54291151 | 97.17191309 | 99.87425862 | 102.37088617 | 103.8948257 | 104.8967054 |
| 40–40.99 months | 0.11291221 | 97.78897727 | 0.040721467 | 90.54890623 | 91.43025486 | 92.80224597 | 95.1355744 | 97.78897727 | 100.5078239 | 103.011988 | 104.5369608 | 105.5380208 |
| 41–41.99 months | 0.222754969 | 98.3990283 | 0.040782045 | 91.07337426 | 91.96832362 | 93.35972283 | 95.72114636 | 98.3990283 | 101.1347788 | 103.6472524 | 105.1739016 | 106.1746779 |
| 42–42.99 months | 0.326530126 | 99.00254338 | 0.040848042 | 91.59152368 | 92.4999858 | 93.91067749 | 96.30009195 | 99.00254338 | 101.7556073 | 104.2771267 | 105.8060983 | 106.8071048 |
| 43–43.99 months | 0.42436156 | 99.599977 | 0.040919281 | 92.10382052 | 93.02569976 | 94.45556109 | 96.87286014 | 99.599977 | 102.370767 | 104.9020571 | 106.4339786 | 107.4357106 |
| 44–44.99 months | 0.516353108 | 100.191764 | 0.040995524 | 92.6107295 | 93.54591978 | 94.99481672 | 97.43988586 | 100.191764 | 102.9806917 | 105.5224653 | 107.0579468 | 108.0608826 |
| 45–45.99 months | 0.602595306 | 100.7783198 | 0.041076485 | 93.11271174 | 94.06109422 | 95.52887815 | 98.00158958 | 100.7783198 | 103.5857927 | 106.1387493 | 107.6783842 | 108.6829866 |
| 46–46.99 months | 0.683170764 | 101.3600411 | 0.041161838 | 93.61022262 | 94.57166376 | 96.05816868 | 98.55837705 | 101.3600411 | 104.186459 | 106.7512837 | 108.2956497 | 109.3023669 |
| 47–47.99 months | 0.758158406 | 101.9373058 | 0.041251224 | 94.10370972 | 95.07805975 | 96.58310008 | 99.11063889 | 101.9373058 | 104.7830584 | 107.3604207 | 108.9100797 | 109.9193463 |
| 48–48.99 months | 0.827636736 | 102.5104735 | 0.041344257 | 94.59361093 | 95.58070273 | 97.1040715 | 99.65875031 | 102.5104735 | 105.3759377 | 107.9664906 | 109.5219891 | 110.5342263 |
| 49–49.99 months | 0.891686306 | 103.0798852 | 0.041440534 | 95.08035263 | 96.08000091 | 97.62146857 | 100.2030707 | 103.0798852 | 105.9654232 | 108.569802 | 110.1316713 | 111.1472879 |
| 50–50.99 months | 0.95039153 | 103.645864 | 0.041539635 | 95.56434805 | 96.57634888 | 98.13566246 | 100.7439435 | 103.645864 | 106.5518212 | 109.1706428 | 110.7393989 | 111.7587911 |
| 51–51.99 months | 1.003830006 | 104.208713 | 0.041641136 | 96.04599748 | 97.07012724 | 98.64700876 | 101.281694 | 104.208713 | 107.1354171 | 109.76928 | 111.3454248 | 112.3689778 |
| 52–52.99 months | 1.05213569 | 104.7687256 | 0.041744602 | 96.52567713 | 97.56169654 | 99.15584797 | 101.8166373 | 104.7687256 | 107.7164829 | 110.3659614 | 111.9499779 | 112.9780622 |
| 53–53.99 months | 1.0953669 | 105.3261638 | 0.041849607 | 97.00375833 | 98.05140652 | 99.66250203 | 102.3490611 | 105.3261638 | 108.2952617 | 110.9609139 | 112.5532737 | 113.5862516 |
| 54–54.99 months | 1.133652119 | 105.8812823 | 0.041955723 | 97.48058355 | 98.53958366 | 100.1672766 | 102.8792439 | 105.8812823 | 108.8719858 | 111.5543461 | 113.1555037 | 114.1937245 |
| 55–55.99 months | 1.167104213 | 106.4343146 | 0.042062532 | 97.95647862 | 99.026537 | 100.6704587 | 103.4074438 | 106.4343146 | 109.4468665 | 112.1464475 | 113.7568423 | 114.800644 |
| 56–56.99 months | 1.195845353 | 106.9854769 | 0.042169628 | 98.43174768 | 99.51255522 | 101.1723164 | 103.9339016 | 106.9854769 | 110.0200973 | 112.7373894 | 114.3574452 | 115.4071549 |
| 57–57.99 months | 1.220004233 | 107.534968 | 0.042276619 | 98.90667254 | 99.99790605 | 101.6730987 | 104.4588401 | 107.534968 | 110.5918541 | 113.327325 | 114.9574502 | 116.0133837 |
| 58–58.99 months | 1.239715856 | 108.0829695 | 0.042383129 | 99.3815118 | 100.4828356 | 102.1730346 | 104.9824642 | 108.0829695 | 111.1622955 | 113.9163901 | 115.5569776 | 116.6194398 |
| 59–59.99 months | 1.255121285 | 108.6296457 | 0.042488804 | 99.85650001 | 100.9675675 | 102.6723326 | 105.5049607 | 108.6296457 | 111.731563 | 114.5047033 | 116.1561304 | 117.2254154 |
| 60–60.99 months | 1.266367398 | 109.1751441 | 0.042593311 | 100.331847 | 101.4523027 | 103.171181 | 106.026498 | 109.1751441 | 112.2997816 | 115.0923665 | 116.7549954 | 117.831386 |
| 61–61.99 months | 1.273606657 | 109.7195954 | 0.042696342 | 100.8077371 | 101.9372185 | 103.6697469 | 106.5472265 | 109.7195954 | 112.86706 | 115.6794655 | 117.3536426 | 118.4374113 |
| 62–62.99 months | 1.276996893 | 110.2631136 | 0.042797615 | 101.2843288 | 102.4224687 | 104.1681762 | 107.0672782 | 110.2631136 | 113.4334909 | 116.2660704 | 117.9521268 | 119.0435349 |
| 63–63.99 months | 1.276701119 | 110.8057967 | 0.042896877 | 101.7617545 | 102.908183 | 104.6665937 | 107.5867669 | 110.8057967 | 113.9991516 | 116.8522359 | 118.5504872 | 119.6497853 |
| 64–64.99 months | 1.272887366 | 111.3477265 | 0.042993904 | 102.2401199 | 103.3944666 | 105.1651027 | 108.1057886 | 111.3477265 | 114.5641044 | 117.4380018 | 119.1487482 | 120.2561762 |
| 65–65.99 months | 1.265728536 | 111.8889694 | 0.043088503 | 102.719504 | 103.8814006 | 105.6637849 | 108.6244211 | 111.8889694 | 115.128397 | 118.0233939 | 119.7469201 | 120.8627069 |
| 66–66.99 months | 1.255402281 | 112.4295761 | 0.043180513 | 103.1999595 | 104.3690418 | 106.1627011 | 109.1427246 | 112.4295761 | 115.6920629 | 118.6084238 | 120.3449993 | 121.4693629 |
| 67–67.99 months | 1.242090871 | 112.9695827 | 0.043269806 | 103.6815122 | 104.8574227 | 106.6618905 | 109.6607418 | 112.9695827 | 116.2551221 | 119.1930903 | 120.9429688 | 122.0761162 |
| 68–68.99 months | 1.225981067 | 113.5090108 | 0.043356287 | 104.164162 | 105.3465519 | 107.1613717 | 110.1784984 | 113.5090108 | 116.8175812 | 119.777379 | 121.540799 | 122.682926 |
| 69–69.99 months | 1.207263978 | 114.0478678 | 0.043439893 | 104.6478827 | 105.8364145 | 107.6611426 | 110.6960031 | 114.0478678 | 117.3794345 | 120.3612638 | 122.1384479 | 123.2897392 |
| 70–70.99 months | 1.186140222 | 114.5861486 | 0.043520597 | 105.1326221 | 106.3269721 | 108.1611811 | 111.2132492 | 114.5861486 | 117.9406648 | 120.9447067 | 122.7358617 | 123.8964899 |
| 71–71.99 months | 1.162796198 | 115.1238315 | 0.043598407 | 105.6183068 | 106.8181654 | 108.6614449 | 111.7302112 | 115.1238315 | 118.5012409 | 121.5276587 | 123.3329768 | 124.5031042 |
| 72–72.99 months | 1.137442868 | 115.6608862 | 0.043673359 | 106.1048359 | 107.3099116 | 109.1618735 | 112.2468516 | 115.6608862 | 119.0611237 | 122.1100607 | 123.9297176 | 125.1094938 |

Table 23. *L*, *M*, and *S* parameters and selected smoothed percentiles for stature (in centimeters) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys—Con. | | | | | | | | | | | | |
| 73–73.99 months | 1.110286487 | 116.1972691 | 0.043745523 | 106.592087 | 107.8021076 | 109.6623876 | 112.7631168 | 116.1972691 | 119.6202624 | 122.6918435 | 124.5259991 | 125.7155618 |
| 74–74.99 months | 1.081536236 | 116.732925 | 0.043815003 | 107.0799166 | 108.2946307 | 110.1628906 | 113.2789389 | 116.732925 | 120.1785968 | 123.272929 | 125.1217272 | 126.3212019 |
| 75–75.99 months | 1.05140374 | 117.2677879 | 0.043881929 | 107.5681606 | 108.7873391 | 110.6632694 | 113.7942368 | 117.2677879 | 120.7360574 | 123.8532304 | 125.7167992 | 126.926299 |
| 76–76.99 months | 1.020102497 | 117.8017819 | 0.043946461 | 108.0566359 | 109.2800738 | 111.1633949 | 114.3089166 | 117.8017819 | 121.2925663 | 124.4326533 | 126.3111047 | 127.5307299 |
| 77–77.99 months | 0.987847213 | 118.3348215 | 0.044008785 | 108.5451423 | 109.7726591 | 111.6631239 | 114.8228726 | 118.3348215 | 121.8480376 | 125.0110959 | 126.9045258 | 128.134364 |
| 78–78.99 months | 0.954853043 | 118.8668123 | 0.044069112 | 109.0334636 | 110.2649049 | 112.1622995 | 115.335988 | 118.8668123 | 122.4023786 | 125.5884499 | 127.4969382 | 128.737064 |
| 79–79.99 months | 0.921334742 | 119.397652 | 0.044127675 | 109.5213695 | 110.7566073 | 112.6607528 | 115.8481358 | 119.397652 | 122.9554895 | 126.1646012 | 128.0882119 | 129.3386866 |
| 80–80.99 months | 0.887505723 | 119.9272309 | 0.044184725 | 110.0086174 | 111.247551 | 113.158304 | 116.3591802 | 119.9272309 | 123.5072652 | 126.7394306 | 128.6782115 | 129.9390834 |
| 81–81.99 months | 0.85357703 | 120.455433 | 0.044240532 | 110.4949545 | 111.7375104 | 113.654764 | 116.8689769 | 120.455433 | 124.057595 | 127.3128143 | 129.2667977 | 130.5381015 |
| 82–82.99 months | 0.819756239 | 120.9821362 | 0.044295379 | 110.9801192 | 112.2262515 | 114.1499353 | 117.3773747 | 120.9821362 | 124.6063638 | 127.8846249 | 129.8538272 | 131.1355844 |
| 83–83.99 months | 0.786246296 | 121.5072136 | 0.044349559 | 111.4638437 | 112.7135338 | 114.6436141 | 117.8842164 | 121.5072136 | 125.1534527 | 128.4547316 | 130.4391542 | 131.7313729 |
| 84–84.99 months | 0.753244292 | 122.0305342 | 0.044403374 | 111.9458554 | 113.1991118 | 115.1355915 | 118.3893397 | 122.0305342 | 125.6987395 | 129.0230015 | 131.0226304 | 132.3253057 |
| 85–85.99 months | 0.720940222 | 122.5519634 | 0.04445713 | 112.4258796 | 113.6827373 | 115.625655 | 118.8925788 | 122.5519634 | 126.2420996 | 129.5892999 | 131.6041067 | 132.9172205 |
| 86–86.99 months | 0.689515708 | 123.0713645 | 0.044511335 | 112.9036412 | 114.1641607 | 116.1135904 | 119.3937653 | 123.0713645 | 126.7834065 | 130.153491 | 132.183433 | 133.5069548 |
| 87–87.99 months | 0.659142731 | 123.588599 | 0.044565693 | 113.3788664 | 114.6431334 | 116.5991827 | 119.8927292 | 123.588599 | 127.3225327 | 130.7154389 | 132.7604599 | 134.0943467 |
| 88–88.99 months | 0.629997853 | 124.1035312 | 0.044621104 | 113.8512827 | 115.1194078 | 117.0822191 | 120.3893032 | 124.1035312 | 127.8593529 | 131.2750083 | 133.335037 | 134.6792321 |
| 89–89.99 months | 0.602203984 | 124.6160161 | 0.044677662 | 114.3206308 | 115.5927447 | 117.562488 | 120.8833137 | 124.6160161 | 128.393735 | 131.8320643 | 133.9070206 | 135.2614591 |
| 90–90.99 months | 0.575908038 | 125.1259182 | 0.044735646 | 114.7866522 | 116.0629074 | 118.0397834 | 121.3745956 | 125.1259182 | 128.9255543 | 132.3864745 | 134.4762655 | 135.8408704 |
| 91–91.99 months | 0.55123134 | 125.6331012 | 0.044795322 | 115.2491001 | 116.5296686 | 118.5139049 | 121.8629855 | 125.6331012 | 129.4546858 | 132.9381089 | 135.0426312 | 136.4173156 |
| 92–92.99 months | 0.528279901 | 126.1374319 | 0.044856941 | 115.7077388 | 116.9928104 | 118.9846594 | 122.3483243 | 126.1374319 | 129.9810071 | 133.4868407 | 135.6059815 | 136.9906494 |
| 93–93.99 months | 0.507143576 | 126.6387804 | 0.04492073 | 116.1623461 | 117.4521263 | 119.4518627 | 122.8304588 | 126.6387804 | 130.504399 | 134.0325473 | 136.1661852 | 137.5607324 |
| 94–94.99 months | 0.487895344 | 127.1370217 | 0.044986899 | 116.6127146 | 117.9074226 | 119.9153408 | 123.3092425 | 127.1370217 | 131.024746 | 134.5751108 | 136.7231173 | 138.1274323 |
| 95–95.99 months | 0.470590753 | 127.6320362 | 0.045055632 | 117.0586529 | 118.3585201 | 120.3749315 | 123.784537 | 127.6320362 | 131.5419375 | 135.1144188 | 137.2766592 | 138.6906245 |
| 96–96.99 months | 0.455267507 | 128.1237104 | 0.045127088 | 117.4999879 | 118.8052553 | 120.830485 | 124.2562127 | 128.1237104 | 132.0558684 | 135.6503652 | 137.8267001 | 139.2501934 |
| 97–97.99 months | 0.441945241 | 128.6119383 | 0.045201399 | 117.9365657 | 119.2474816 | 121.281866 | 124.7241502 | 128.6119383 | 132.5664397 | 136.1828511 | 138.3731376 | 139.8060325 |
| 98–98.99 months | 0.430625458 | 129.096622 | 0.045278671 | 118.3682526 | 119.6850711 | 121.7289543 | 125.1882412 | 129.096622 | 133.0735595 | 136.7117853 | 138.9158785 | 140.3580462 |
| 99–99.99 months | 0.421291648 | 129.5776723 | 0.045358979 | 118.794937 | 120.1179149 | 122.1716458 | 125.6483893 | 129.5776723 | 133.5771438 | 137.2370854 | 139.4548395 | 140.9061502 |
| 100–100.99 months | 0.413909588 | 130.0550101 | 0.045442372 | 119.2165297 | 120.5459248 | 122.6098539 | 126.1045113 | 130.0550101 | 134.0771172 | 137.7586784 | 139.9899485 | 141.4502723 |
| 101–101.99 months | 0.408427813 | 130.5285669 | 0.045528869 | 119.6329654 | 120.9690339 | 123.04351 | 126.5565377 | 130.5285669 | 134.5734138 | 138.2765017 | 140.5211451 | 141.9903534 |
| 102–102.99 months | 0.404778262 | 130.9982857 | 0.045618459 | 120.0442031 | 121.3871973 | 123.4725646 | 127.0044134 | 130.9982857 | 135.065978 | 138.7905039 | 141.0483813 | 142.5263486 |
| 103–103.99 months | 0.402877077 | 131.4641218 | 0.045711105 | 120.450227 | 121.8003934 | 123.896988 | 127.4480994 | 131.4641218 | 135.5547656 | 139.3006456 | 141.5716229 | 143.0582274 |
| 104–104.99 months | 0.402625561 | 131.9260439 | 0.045806742 | 120.8510473 | 122.2086239 | 124.3167709 | 127.8875724 | 131.9260439 | 136.0397444 | 139.8069003 | 142.0908498 | 143.5859753 |
| 105–105.99 months | 0.40391127 | 132.3840348 | 0.045905281 | 121.2467001 | 122.6119145 | 124.7319249 | 128.3228265 | 132.3840348 | 136.5208952 | 140.3092555 | 142.6060571 | 144.109594 |
| 106–106.99 months | 0.406609232 | 132.838092 | 0.046006604 | 121.6372483 | 123.0103156 | 125.1424835 | 128.7538732 | 132.838092 | 136.9982129 | 140.8077133 | 143.1172562 | 144.6291028 |
| 107–107.99 months | 0.410583274 | 133.2882291 | 0.046110573 | 122.0227817 | 123.4039024 | 125.5485022 | 129.1807426 | 133.2882291 | 137.4717069 | 141.3022916 | 143.6244753 | 145.1445387 |
| 108–108.99 months | 0.415687443 | 133.7344759 | 0.046217028 | 122.4034171 | 123.7927752 | 125.9500588 | 129.6034839 | 133.7344759 | 137.9414029 | 141.793025 | 144.1277605 | 145.6559581 |
| 109–109.99 months | 0.421767514 | 134.1768801 | 0.04632579 | 122.7792983 | 124.1770596 | 126.3472542 | 130.0221657 | 134.1768801 | 138.4073433 | 142.2799654 | 144.6271767 | 146.1634368 |
| 110–110.99 months | 0.428662551 | 134.6155076 | 0.046436662 | 123.1505962 | 124.5569064 | 126.7402123 | 130.436877 | 134.6155076 | 138.8695881 | 142.7631838 | 145.1228083 | 146.6670713 |
| 111–111.99 months | 0.436206531 | 135.0504433 | 0.04654943 | 123.5175084 | 124.9324922 | 127.1298005 | 130.8477278 | 135.0504433 | 139.3282163 | 143.2427702 | 145.6147602 | 147.1669794 |
| 112–112.99 months | 0.44423 | 135.4817925 | 0.046663871 | 123.8802592 | 125.3040185 | 127.5140299 | 131.2548494 | 135.4817925 | 139.7833266 | 143.7188356 | 146.103159 | 147.6633011 |
| 113–113.99 months | 0.45256176 | 135.9096813 | 0.046779748 | 124.2390993 | 125.6717122 | 127.8952551 | 131.6583952 | 135.9096813 | 140.2350389 | 144.1915122 | 146.5881531 | 148.1561991 |
| 114–114.99 months | 0.461030578 | 136.3342577 | 0.046896817 | 124.5943049 | 126.035825 | 128.2729746 | 132.0585409 | 136.3342577 | 140.6834944 | 144.6609548 | 147.0699143 | 148.6458598 |
| 115–115.99 months | 0.469466904 | 136.7556923 | 0.047014827 | 124.9461775 | 126.3966334 | 128.6474311 | 132.4554857 | 136.7556923 | 141.1288576 | 145.1273417 | 147.5486382 | 149.132494 |
| 116–116.99 months | 0.477704608 | 137.1741794 | 0.047133525 | 125.2950444 | 126.7544381 | 129.0188908 | 132.8494521 | 137.1741794 | 141.5713168 | 145.5908755 | 148.0245452 | 149.6163372 |
| 117–117.99 months | 0.48558272 | 137.5899378 | 0.047252654 | 125.6412524 | 127.1095636 | 129.3876441 | 133.2406866 | 137.5899378 | 142.011085 | 146.0517839 | 148.4978811 | 150.0976507 |
| 118–118.99 months | 0.492947182 | 138.0032114 | 0.047371961 | 125.9851773 | 127.4623576 | 129.7540048 | 133.6294604 | 138.0032114 | 142.4484014 | 146.510321 | 148.9689178 | 150.5767217 |
| 119–119.99 months | 0.499652617 | 138.4142703 | 0.047491194 | 126.3272131 | 127.8131904 | 130.1183106 | 134.0160697 | 138.4142703 | 142.8835317 | 146.9667676 | 149.4379538 | 151.0538639 |
| 120–120.99 months | 0.505564115 | 138.8234114 | 0.047610108 | 126.6677753 | 128.1624542 | 130.4809221 | 134.4008357 | 138.8234114 | 143.3167691 | 147.421432 | 149.9053151 | 151.5294179 |
| 121–121.99 months | 0.510559047 | 139.2309592 | 0.047728463 | 127.0072991 | 128.5105623 | 130.8422234 | 134.7841054 | 139.2309592 | 143.7484354 | 147.8746507 | 150.3713549 | 152.0037511 |

Table 23. L, M, and S parameters and selected smoothed percentiles for stature (in centimeters) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | L | M | S | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys—Con. | | | | | | | | | | | | |
| 122–122.99 months | 0.514528903 | 139.6372663 | 0.04784603 | 127.3462381 | 128.857948 | 131.2026207 | 135.1662516 | 139.6372663 | 144.1788815 | 148.326789 | 150.8364543 | 152.4772579 |
| 123–123.99 months | 0.517381177 | 140.042714 | 0.047962592 | 127.6850624 | 129.2050634 | 131.5625423 | 135.5476732 | 140.042714 | 144.6084877 | 148.7782409 | 151.3010223 | 152.9503596 |
| 124–124.99 months | 0.519041285 | 140.4477127 | 0.048077942 | 128.0242572 | 129.5523785 | 131.9224379 | 135.9287948 | 140.4477127 | 145.0376645 | 149.2294296 | 151.7654951 | 153.4235035 |
| 125–125.99 months | 0.519454524 | 140.8527022 | 0.048191889 | 128.3643208 | 129.9003795 | 132.2827776 | 136.3100669 | 140.8527022 | 145.4668527 | 149.6808068 | 152.2303363 | 153.8971624 |
| 126–126.99 months | 0.518588072 | 141.2581515 | 0.048304259 | 128.7057627 | 130.2495672 | 132.6440511 | 136.6919657 | 141.2581515 | 145.8965233 | 150.1328531 | 152.6960355 | 154.3718335 |
| 127–127.99 months | 0.516433004 | 141.6645592 | 0.048414893 | 129.0491015 | 130.6004555 | 133.0067661 | 137.0749922 | 141.6645592 | 146.3271773 | 150.5860767 | 153.1631074 | 154.8480367 |
| 128–128.99 months | 0.513006312 | 142.072452 | 0.048523648 | 129.394862 | 130.9535693 | 133.3714475 | 137.4596717 | 142.072452 | 146.7593449 | 151.0410123 | 153.6320904 | 155.3263129 |
| 129–129.99 months | 0.508352901 | 142.4823852 | 0.048630402 | 129.7435732 | 131.309442 | 133.738635 | 137.8465525 | 142.4823852 | 147.1935849 | 151.4982199 | 154.103544 | 155.8072211 |
| 130–130.99 months | 0.502547502 | 142.8949403 | 0.04873505 | 130.095765 | 131.6686134 | 134.1088817 | 138.2362048 | 142.8949403 | 147.630483 | 151.9582822 | 154.5780465 | 156.2913356 |
| 131–131.99 months | 0.495696454 | 143.3107241 | 0.048837504 | 130.4519655 | 132.031627 | 134.4827517 | 138.6292185 | 143.3107241 | 148.07065 | 152.4218027 | 155.0561919 | 156.7792423 |
| 132–132.99 months | 0.487939275 | 143.7303663 | 0.048937694 | 130.8126976 | 132.3990267 | 134.8608171 | 139.0262015 | 143.7303663 | 148.5147188 | 152.8894016 | 155.5385858 | 157.2715342 |
| 133–133.99 months | 0.479449924 | 144.1545167 | 0.049035564 | 131.1784756 | 132.771354 | 135.2436555 | 139.4277761 | 144.1545167 | 148.9633421 | 153.3617127 | 156.0258407 | 157.7688063 |
| 134–134.99 months | 0.470437652 | 144.5838414 | 0.049131073 | 131.5498015 | 133.1491442 | 135.6318463 | 139.8345767 | 144.5838414 | 149.4171874 | 153.839378 | 156.5185711 | 158.27165 |
| 135–135.99 months | 0.461147305 | 145.0190192 | 0.049224189 | 131.9271616 | 133.5329226 | 136.0259671 | 140.2472448 | 145.0190192 | 149.876933 | 154.3230425 | 157.0173867 | 158.7806462 |
| 136–136.99 months | 0.451858946 | 145.4607359 | 0.049314887 | 132.311022 | 133.9232006 | 136.4265892 | 140.6664253 | 145.4607359 | 150.3432618 | 154.8133474 | 157.522886 | 159.2963578 |
| 137–137.99 months | 0.442886661 | 145.9096784 | 0.049403145 | 132.7018251 | 134.3204714 | 136.8342729 | 141.0927603 | 145.9096784 | 150.8168546 | 155.3109233 | 158.0356481 | 159.8193221 |
| 138–138.99 months | 0.434576385 | 146.3665278 | 0.049488934 | 133.0999854 | 134.7252055 | 137.2495627 | 141.5268837 | 146.3665278 | 151.2983826 | 155.8163811 | 158.5562242 | 160.3500415 |
| 139–139.99 months | 0.427302633 | 146.8319513 | 0.049572216 | 133.5058853 | 135.1378458 | 137.6729811 | 141.9694138 | 146.8319513 | 151.7884983 | 156.3303034 | 159.085128 | 160.8889743 |
| 140–140.99 months | 0.421464027 | 147.3065929 | 0.049652935 | 133.9198714 | 135.5588028 | 138.1050231 | 142.4209457 | 147.3065929 | 152.2878255 | 156.8532337 | 159.622826 | 161.4365245 |
| 141–141.99 months | 0.417477538 | 147.7910635 | 0.049731004 | 134.34225 | 135.9884501 | 138.5461496 | 142.8820429 | 147.7910635 | 152.7969484 | 157.3856659 | 160.1697263 | 161.993032 |
| 142–142.99 months | 0.415771438 | 148.2859294 | 0.0498063 | 134.732284 | 136.4271185 | 138.9967803 | 143.353228 | 148.2859294 | 153.3163996 | 157.9280318 | 160.7261679 | 162.5587616 |
| 143–143.99 months | 0.416777012 | 148.7917006 | 0.04987865 | 135.2131887 | 136.8750919 | 139.4572873 | 143.8349727 | 148.7917006 | 153.8466466 | 158.4806894 | 161.2924091 | 163.133893 |
| 144–144.99 months | 0.420919142 | 149.3088178 | 0.049947823 | 135.6621289 | 137.3326017 | 139.9279871 | 144.3276874 | 149.3088178 | 154.3880792 | 159.0439098 | 161.8686162 | 163.7185106 |
| 145–145.99 months | 0.428606007 | 149.8376391 | 0.050013518 | 136.1202156 | 137.7998222 | 140.409134 | 144.8317108 | 149.8376391 | 154.9409947 | 159.6178646 | 162.4548526 | 164.3125939 |
| 146–146.99 months | 0.440218167 | 150.3784267 | 0.050075353 | 136.5875035 | 138.2768661 | 140.9009122 | 145.3472981 | 150.3784267 | 155.505584 | 160.2026132 | 163.0510679 | 164.9160089 |
| 147–147.99 months | 0.456097443 | 150.9313331 | 0.050132858 | 137.0639883 | 138.7637799 | 141.403429 | 145.8746111 | 150.9313331 | 156.0819181 | 160.7980913 | 163.657089 | 165.5285004 |
| 148–148.99 months | 0.476536014 | 151.4963887 | 0.050185471 | 137.5496052 | 139.2605402 | 141.9167079 | 146.4137069 | 151.4963887 | 156.6699351 | 161.4041 | 164.2726114 | 166.1496863 |
| 149–149.99 months | 0.501766234 | 152.0734897 | 0.050232532 | 138.0442266 | 139.7670498 | 142.4406823 | 146.9645285 | 152.0734897 | 157.2694285 | 162.0202967 | 164.897193 | 166.7790531 |
| 150–150.99 months | 0.531951655 | 152.6623878 | 0.050273285 | 138.5476617 | 140.2831346 | 142.9751899 | 147.5268957 | 152.6623878 | 157.8800378 | 162.6461885 | 165.5302497 | 167.4159536 |
| 151–151.99 months | 0.567179725 | 153.2626819 | 0.050306885 | 139.0596548 | 140.8085414 | 143.5199675 | 148.1004983 | 153.2626819 | 158.5012409 | 163.2811271 | 166.1710534 | 168.0590609 |
| 152–152.99 months | 0.607456565 | 153.8738124 | 0.050332406 | 139.5798855 | 141.3429356 | 144.0746481 | 148.6848902 | 153.8738124 | 159.1323501 | 163.9243081 | 166.8187329 | 168.7091009 |
| 153–153.99 months | 0.652704121 | 154.495058 | 0.05034886 | 140.1079685 | 141.8859002 | 144.6387576 | 149.2794857 | 154.495058 | 159.7725112 | 164.5747721 | 167.4722776 | 169.3633976 |
| 154–154.99 months | 0.702759868 | 155.1255365 | 0.050355216 | 140.6434536 | 142.4369354 | 145.2117144 | 149.8835591 | 155.1255365 | 160.4207062 | 165.2314109 | 168.1305444 | 170.0213408 |
| 155–155.99 months | 0.757379106 | 155.7642086 | 0.050350423 | 141.1858268 | 142.9954591 | 145.7928297 | 150.4962462 | 155.7642086 | 161.0757603 | 165.892976 | 168.7922641 | 170.6816665 |
| 156–156.99 months | 0.816239713 | 156.4098858 | 0.050333444 | 141.7345116 | 143.5608087 | 146.3813098 | 151.1165487 | 156.4098858 | 161.7363527 | 166.5580917 | 169.4560742 | 171.3430163 |
| 157–157.99 months | 0.878947416 | 157.0612415 | 0.050303283 | 142.2888712 | 144.1322433 | 146.9762604 | 151.7433416 | 157.0612415 | 162.4010311 | 167.2252714 | 170.1204959 | 172.0039535 |
| 158–158.99 months | 0.945053486 | 157.7168289 | 0.050259018 | 142.8482077 | 144.7089466 | 147.576693 | 152.3753859 | 157.7168289 | 163.0682321 | 167.8929368 | 170.7839909 | 172.662978 |
| 159–159.99 months | 1.014046108 | 158.3750929 | 0.050199837 | 143.4117718 | 145.2900346 | 148.1815319 | 153.0113368 | 158.3750929 | 163.7362982 | 168.5594402 | 171.444966 | 173.3185527 |
| 160–160.99 months | 1.085383319 | 159.034399 | 0.050125062 | 143.9787585 | 145.8745579 | 148.7896253 | 153.6497654 | 159.034399 | 164.4035075 | 169.2230883 | 172.1017957 | 173.9691164 |
| 161–161.99 months | 1.158487278 | 159.6930501 | 0.05003418 | 144.5483179 | 146.4615117 | 149.3997554 | 154.2891719 | 159.6930501 | 165.0680948 | 169.8821678 | 172.7528491 | 174.6131123 |
| 162–162.99 months | 1.232768816 | 160.3493168 | 0.049926861 | 145.1195552 | 147.0498421 | 150.0106525 | 154.9280091 | 160.3493168 | 165.7282823 | 170.5349712 | 173.3965112 | 175.2490052 |
| 163–163.99 months | 1.307628899 | 161.0014586 | 0.049802977 | 145.6915401 | 147.6384567 | 150.6210083 | 155.5647003 | 161.0014586 | 166.3823042 | 171.1798224 | 174.0312083 | 175.8753066 |
| 164–164.99 months | 1.382473225 | 161.6477515 | 0.04966261 | 146.2633119 | 148.226234 | 151.2294913 | 156.1976616 | 161.6477515 | 167.0284338 | 171.8151013 | 174.6554295 | 176.490594 |
| 165–165.99 months | 1.456720479 | 162.2865119 | 0.049506051 | 146.8338868 | 148.8120346 | 151.8347622 | 156.8253238 | 162.2865119 | 167.6650085 | 172.4392666 | 175.2677481 | 177.0935299 |
| 166–166.99 months | 1.529810247 | 162.9161202 | 0.049333801 | 147.4022657 | 149.394712 | 152.4354895 | 157.4461523 | 162.9161202 | 168.2904522 | 173.0508762 | 175.8668393 | 177.6828795 |
| 167–167.99 months | 1.601219573 | 163.535045 | 0.049146553 | 147.9674393 | 149.9731226 | 153.0303654 | 158.0586697 | 163.535045 | 168.9032981 | 173.6486051 | 176.4514947 | 178.2575211 |
| 168–168.99 months | 1.670433444 | 164.1418486 | 0.04894519 | 148.5284089 | 150.5461431 | 153.6181187 | 158.6614636 | 164.1418486 | 169.5021963 | 174.2312589 | 177.0206409 | 178.8164693 |
| 169–169.99 months | 1.736995571 | 164.7352199 | 0.048730749 | 149.0841789 | 151.1126739 | 154.1975312 | 159.2532157 | 164.7352199 | 170.0859388 | 174.7977852 | 177.5733406 | 179.3588685 |
| 170–170.99 months | 1.800483802 | 165.3139755 | 0.048504404 | 149.6337753 | 151.6716544 | 154.7674484 | 159.8327068 | 165.3139755 | 170.6534628 | 175.347281 | 178.1088034 | 179.8840066 |

Table 23. *L, M, and S* parameters and selected smoothed percentiles for stature (in centimeters) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys—Con. | | | | | | | | | | | | |
| 171–171.99 months | 1.860518777 | 165.8770715 | 0.048267442 | 150.1762526 | 152.2220718 | 155.3267913 | 160.3988301 | 165.8770715 | 171.2038574 | 175.8789961 | 178.6263873 | 180.3913154 |
| 172–172.99 months | 1.916765525 | 166.4236087 | 0.04802123 | 150.7107013 | 152.7629701 | 155.874565 | 160.9505985 | 166.4236087 | 171.7363673 | 176.392334 | 179.1255987 | 180.8803698 |
| 173–173.99 months | 1.968934444 | 166.9528354 | 0.047767192 | 151.2362566 | 153.2934582 | 156.4098665 | 161.4871507 | 166.9528354 | 172.2503918 | 176.8868489 | 179.6060885 | 181.3508837 |
| 174–174.99 months | 2.016781776 | 167.4641466 | 0.047506783 | 151.7521046 | 153.8127163 | 156.9318906 | 162.0077536 | 167.4641466 | 172.7454817 | 177.3622413 | 180.0676464 | 181.8027041 |
| 175–175.99 months | 2.060109658 | 167.9570814 | 0.047241456 | 152.2574887 | 154.3200013 | 157.4399327 | 162.5118031 | 167.9570814 | 173.2213335 | 177.8183499 | 180.5101936 | 182.2358034 |
| 176–176.99 months | 2.098765817 | 168.4313175 | 0.04697265 | 152.7517151 | 154.814651 | 157.9333914 | 162.9988222 | 168.4313175 | 173.6777819 | 178.2551431 | 180.9337725 | 182.6502694 |
| 177–177.99 months | 2.132642948 | 168.8866644 | 0.046701759 | 153.2341567 | 155.2960861 | 158.4117685 | 163.4684575 | 168.8866644 | 174.1147899 | 178.6727081 | 181.3385364 | 183.0462946 |
| 178–178.99 months | 2.16167779 | 169.3230548 | 0.046430122 | 153.7042563 | 155.7638123 | 158.8746672 | 163.9204738 | 169.3230548 | 174.5324388 | 179.0712394 | 181.7247376 | 183.4241646 |
| 179–179.99 months | 2.185849904 | 169.7405351 | 0.046159004 | 154.1615288 | 156.2174196 | 159.3217901 | 164.3547479 | 169.7405351 | 174.9309165 | 179.4510272 | 182.0927156 | 183.7842466 |
| 180–180.99 months | 2.205180153 | 170.139255 | 0.045889585 | 154.6055622 | 156.6565818 | 159.7529343 | 164.7712603 | 170.139255 | 175.310506 | 179.8124447 | 182.4428851 | 184.1269767 |
| 181–181.99 months | 2.219728869 | 170.5194567 | 0.045622955 | 155.0360175 | 157.0810539 | 160.1679874 | 165.1700873 | 170.5194567 | 175.6715733 | 180.1559363 | 182.7757235 | 184.4528488 |
| 182–182.99 months | 2.2295937 | 170.881464 | 0.045360101 | 155.452628 | 157.4906696 | 160.5669211 | 165.5513919 | 170.881464 | 176.0145556 | 180.4820061 | 183.09176 | 184.7624031 |
| 183–183.99 months | 2.234907144 | 171.2256717 | 0.045101913 | 155.8551976 | 157.8853369 | 160.9497852 | 165.9154147 | 171.2256717 | 176.3399504 | 180.791206 | 183.3915648 | 185.0562159 |
| 184–184.99 months | 2.235833767 | 171.5525345 | 0.044849174 | 156.243598 | 158.2650343 | 161.3167006 | 166.2624644 | 171.5525345 | 176.648304 | 181.0841263 | 183.6757386 | 185.3348893 |
| 185–185.99 months | 2.232567138 | 171.8625576 | 0.044602566 | 156.6177662 | 158.6298055 | 161.6678528 | 166.5929092 | 171.8625576 | 176.9402021 | 181.3613851 | 183.9449038 | 185.5990431 |
| 186–186.99 months | 2.2253265 | 172.1562865 | 0.044362674 | 156.9777005 | 158.9797544 | 162.0034846 | 166.9071674 | 172.1562865 | 177.2162598 | 181.6236202 | 184.1996965 | 185.8493063 |
| 187–187.99 months | 2.214353232 | 172.4342983 | 0.044129985 | 157.3234565 | 159.31504 | 162.3238889 | 167.2056993 | 172.4342983 | 177.4771134 | 181.871481 | 184.4407585 | 186.0863109 |
| 188–188.99 months | 2.199905902 | 172.6971935 | 0.043904897 | 157.6551432 | 159.6358703 | 162.6294022 | 167.4889986 | 172.6971935 | 177.7234122 | 182.1056218 | 184.6687321 | 186.3106859 |
| 189–189.99 months | 2.182262864 | 172.9455898 | 0.043687723 | 157.9729166 | 159.9424968 | 162.9203983 | 167.7575872 | 172.9455898 | 177.9558135 | 182.3266957 | 184.8842531 | 186.5230505 |
| 190–190.99 months | 2.161704969 | 173.180112 | 0.043478698 | 158.2769793 | 160.2352102 | 163.1972811 | 168.012004 | 173.180112 | 178.174973 | 182.5353493 | 185.0879485 | 186.7240141 |
| 191–191.99 months | 2.138524662 | 173.4013896 | 0.043277987 | 158.5675712 | 160.5143338 | 163.4604795 | 168.2528029 | 173.4013896 | 178.381543 | 182.7322187 | 185.2804307 | 186.914169 |
| 192–192.99 months | 2.113023423 | 173.6100518 | 0.043085685 | 158.8449655 | 160.7802183 | 163.7104424 | 168.4805469 | 173.6100518 | 178.5761676 | 182.9179257 | 185.4622948 | 187.0940877 |
| 193–193.99 months | 2.085490286 | 173.8067179 | 0.042901835 | 159.1094689 | 161.0332391 | 163.9476322 | 168.6957988 | 173.8067179 | 178.7594756 | 183.093075 | 185.6341183 | 187.2643258 |
| 194–194.99 months | 2.0562195 | 173.9919998 | 0.042726424 | 159.3614112 | 161.2737794 | 164.1725219 | 168.8991222 | 173.9919998 | 178.9320817 | 183.2582518 | 185.7964565 | 187.4254148 |
| 195–195.99 months | 2.025496648 | 174.1664951 | 0.042559396 | 159.6011441 | 161.5022782 | 164.3855897 | 169.0910747 | 174.1664951 | 179.0945815 | 183.4140202 | 185.949843 | 187.5778643 |
| 196–196.99 months | 1.993598182 | 174.3307855 | 0.042400652 | 159.8290369 | 161.7191211 | 164.5873165 | 169.2722058 | 174.3307855 | 179.2475503 | 183.5609217 | 186.0947883 | 187.7221607 |
| 197–197.99 months | 1.960789092 | 174.4854344 | 0.042250063 | 160.0454725 | 161.9247473 | 164.7781818 | 169.4430536 | 174.4854344 | 179.3915415 | 183.6994748 | 186.2317794 | 187.8587671 |
| 198–198.99 months | 1.927320937 | 174.6309856 | 0.042107465 | 160.2508441 | 162.1195857 | 164.9586613 | 169.6041427 | 174.6309856 | 179.5270853 | 183.8301738 | 186.3612801 | 187.9881233 |
| 199–199.99 months | 1.89343024 | 174.7679617 | 0.041972676 | 160.4455519 | 162.3040676 | 165.1292444 | 169.7559826 | 174.7679617 | 179.6546885 | 183.9534894 | 186.4837302 | 188.1106465 |
| 200–200.99 months | 1.859337259 | 174.8968634 | 0.041845488 | 160.6300005 | 162.4786229 | 165.2903324 | 169.8990665 | 174.8968634 | 179.7748338 | 184.0698683 | 186.5995468 | 188.2267311 |
| 201–201.99 months | 1.825245107 | 175.0181691 | 0.041725679 | 160.8045956 | 162.643678 | 165.4424364 | 170.0338694 | 175.0181691 | 179.8879797 | 184.1797333 | 186.7091242 | 188.3367503 |
| 202–202.99 months | 1.791339209 | 175.1323345 | 0.041613015 | 160.9697424 | 162.7996536 | 165.5859761 | 170.1608483 | 175.1323345 | 179.9945609 | 184.2834844 | 186.8128348 | 188.4410559 |
| 203–203.99 months | 1.757787065 | 175.2397926 | 0.041507249 | 161.1258433 | 162.9469636 | 165.7213786 | 170.280441 | 175.2397926 | 180.0949883 | 184.3814989 | 186.9110296 | 188.5399798 |
| 204–204.99 months | 1.724738292 | 175.340954 | 0.041408129 | 161.2732955 | 163.0860132 | 165.8490577 | 170.3930664 | 175.340954 | 180.1896498 | 184.4741322 | 187.0040394 | 188.6338345 |
| 205–205.99 months | 1.692324905 | 175.4362071 | 0.041315398 | 161.4124903 | 163.2171976 | 165.9694129 | 170.4991239 | 175.4362071 | 180.278911 | 184.5617185 | 187.0921753 | 188.7229142 |
| 206–206.99 months | 1.660661815 | 175.5259191 | 0.041228796 | 161.5438112 | 163.3409016 | 166.0828291 | 170.5989941 | 175.5259191 | 180.3631154 | 184.644572 | 187.1757295 | 188.8074955 |
| 207–207.99 months | 1.629847495 | 175.6104358 | 0.04114806 | 161.6676329 | 163.4574984 | 166.1896765 | 170.6930385 | 175.6104358 | 180.4425858 | 184.7229873 | 187.2549767 | 188.8878386 |
| 208–208.99 months | 1.599964788 | 175.690083 | 0.041072931 | 161.7843202 | 163.5673489 | 166.29031 | 170.7816002 | 175.690083 | 180.5176249 | 184.7972407 | 187.3301745 | 188.9641878 |
| 209–209.99 months | 1.571081817 | 175.7651671 | 0.04100315 | 161.8942273 | 163.6708019 | 166.3850695 | 170.8650043 | 175.7651671 | 180.5885165 | 184.867591 | 187.4015645 | 189.0367727 |
| 210–210.99 months | 1.543252982 | 175.8359757 | 0.040938463 | 161.9976976 | 163.7681929 | 166.4742799 | 170.9435584 | 175.8359757 | 180.6555257 | 184.9342803 | 187.4693732 | 189.1058089 |
| 211–211.99 months | 1.516519998 | 175.9027788 | 0.040878617 | 162.0950624 | 163.8598446 | 166.5582511 | 171.0175531 | 175.9027788 | 180.7189006 | 184.9975349 | 187.5338128 | 189.1714988 |
| 212–212.99 months | 1.490912963 | 175.9658293 | 0.040823368 | 162.1866414 | 163.9460665 | 166.6372787 | 171.0872629 | 175.9658293 | 180.7788732 | 185.0575666 | 187.5950821 | 189.2340323 |
| 213–213.99 months | 1.466451429 | 176.0253641 | 0.040772475 | 162.272742 | 164.027155 | 166.7116437 | 171.1529465 | 176.0253641 | 180.8356596 | 185.114573 | 187.6533672 | 189.2935878 |
| 214–214.99 months | 1.44314546 | 176.081605 | 0.040725706 | 162.3536592 | 164.1033935 | 166.7816133 | 171.2148477 | 176.081605 | 180.8894616 | 185.1687386 | 187.7088422 | 189.3503326 |
| 215–215.99 months | 1.420996665 | 176.1347593 | 0.040682834 | 162.429676 | 164.1750527 | 166.8474411 | 171.2731962 | 176.1347593 | 180.9404676 | 185.2202359 | 187.7616702 | 189.4044237 |
| 216–216.99 months | 1.399999187 | 176.1850208 | 0.04064364 | 162.501063 | 164.2423904 | 166.9093676 | 171.3282079 | 176.1850208 | 180.9888527 | 185.2692255 | 187.8120038 | 189.4560086 |
| 217–217.99 months | 1.380140651 | 176.2325707 | 0.040607913 | 162.5680787 | 164.3056523 | 166.9676208 | 171.3800858 | 176.2325707 | 181.0347806 | 185.3158575 | 187.8599859 | 189.5052256 |
| 218–218.99 months | 1.361403047 | 176.2775781 | 0.040575448 | 162.6309697 | 164.365072 | 167.0224162 | 171.4290208 | 176.2775781 | 181.0784033 | 185.3602719 | 187.9057499 | 189.5522044 |
| 219–219.99 months | 1.343763564 | 176.3202008 | 0.040546051 | 162.689971 | 164.4208714 | 167.0739579 | 171.4751921 | 176.3202008 | 181.1198626 | 185.4025992 | 187.9494211 | 189.5970671 |

Table 23. L, M, and S parameters and selected smoothed percentiles for stature (in centimeters) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | L | M | S | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Boys—Con. | | | | | | | | | | | | |
| 220–220.99 months | 1.327195355 | 176.3605864 | 0.040519532 | 162.7453061 | 164.473261 | 167.1224387 | 171.5187679 | 176.3605864 | 181.1592906 | 185.4429613 | 187.9911165 | 189.6399279 |
| 221–221.99 months | 1.311668242 | 176.3988725 | 0.040495713 | 162.7971876 | 164.5224406 | 167.1680405 | 171.5599062 | 176.3988725 | 181.1968103 | 185.4814718 | 188.0309455 | 189.6808943 |
| 222–222.99 months | 1.297149359 | 176.4351874 | 0.040474421 | 162.8458172 | 164.5685992 | 167.2109353 | 171.598755 | 176.4351874 | 181.232536 | 185.5182368 | 188.0690108 | 189.7200672 |
| 223–223.99 months | 1.283603728 | 176.469651 | 0.040455493 | 162.8913862 | 164.6119158 | 167.251285 | 171.6354533 | 176.469651 | 181.2665744 | 185.5533551 | 188.1054085 | 189.7575413 |
| 224–224.99 months | 1.270994782 | 176.5023751 | 0.040438773 | 162.9340759 | 164.6525596 | 167.2892424 | 171.6701314 | 176.5023751 | 181.2990249 | 185.5869193 | 188.1402284 | 189.7934056 |
| 225–225.99 months | 1.25928483 | 176.533464 | 0.040424111 | 162.9740581 | 164.6906907 | 167.3249515 | 171.7029114 | 176.533464 | 181.3299799 | 185.6190155 | 188.1735549 | 189.8277438 |
| 226–226.99 months | 1.248435461 | 176.5630153 | 0.040411366 | 163.0141951 | 164.72646 | 167.3585477 | 171.7339076 | 176.5630153 | 181.3595256 | 185.6497244 | 188.2054669 | 189.8606344 |
| 227–227.99 months | 1.23840791 | 176.5911197 | 0.040400405 | 163.0465405 | 164.7600102 | 167.3901586 | 171.7632274 | 176.5911197 | 181.3877426 | 185.6791212 | 188.2360386 | 189.8921514 |
| 228–228.99 months | 1.229163362 | 176.6178621 | 0.040391101 | 163.0793392 | 164.7914756 | 167.4199044 | 171.7909712 | 176.6178621 | 181.4147056 | 185.7072763 | 188.2653392 | 189.9223642 |
| 229–229.99 months | 1.220663228 | 176.6433219 | 0.040383334 | 163.1100283 | 164.8209832 | 167.4478978 | 171.8172333 | 176.6433219 | 181.4404846 | 185.7342556 | 188.293434 | 189.9513383 |
| 230–230.99 months | 1.212869374 | 176.6675729 | 0.04037699 | 163.1387368 | 164.8486523 | 167.4742452 | 171.8421019 | 176.6675729 | 181.4651449 | 185.7601205 | 188.3203841 | 189.9791351 |
| 231–231.99 months | 1.20574431 | 176.6906844 | 0.040371962 | 163.1655866 | 164.8745955 | 167.4990462 | 171.8656596 | 176.6906844 | 181.4887473 | 185.7849287 | 188.3462469 | 190.0058126 |
| 232–232.99 months | 1.199251356 | 176.712721 | 0.040368149 | 163.1906925 | 164.8989187 | 167.5223947 | 171.8879838 | 176.712721 | 181.5113488 | 185.8087343 | 188.3710763 | 190.0314253 |
| 233–233.99 months | 1.19335477 | 176.733743 | 0.040365456 | 163.2141625 | 164.9217215 | 167.5443789 | 171.9091473 | 176.733743 | 181.5330026 | 185.8315877 | 188.394923 | 190.0560245 |
| 234–234.99 months | 1.188019859 | 176.753807 | 0.040363795 | 163.2360985 | 164.9430978 | 167.5650814 | 171.9292179 | 176.753807 | 181.5537583 | 185.8535364 | 188.4178347 | 190.0796588 |
| 235–235.99 months | 1.183213059 | 176.7729657 | 0.04036308 | 163.2565964 | 164.9631357 | 167.5845802 | 171.9482593 | 176.7729657 | 181.5736625 | 185.874625 | 188.4398562 | 190.1023738 |
| 236–236.99 months | 1.178901998 | 176.7912687 | 0.040363233 | 163.2757461 | 164.9819181 | 167.602948 | 171.9663314 | 176.7912687 | 181.5927588 | 185.8948951 | 188.4610297 | 190.1242124 |
| 237–237.99 months | 1.175055543 | 176.8087622 | 0.040364179 | 163.2936325 | 164.9995229 | 167.6202536 | 171.9834901 | 176.8087622 | 181.6110879 | 185.914386 | 188.481395 | 190.1452154 |
| 238–238.99 months | 1.171643828 | 176.8254895 | 0.04036585 | 163.3103353 | 165.0160233 | 167.6365611 | 171.9997878 | 176.8254895 | 181.6286882 | 185.9331347 | 188.5009894 | 190.1654212 |
| 239–239.99 months | 1.16863827 | 176.8414914 | 0.04036818 | 163.3259293 | 165.031488 | 167.6519311 | 172.0152737 | 176.8414914 | 181.6455954 | 185.9511757 | 188.5198484 | 190.1848658 |
| Girls | | | | | | | | | | | | |
| 24–24.99 months | 1.051272912 | 85.3973169 | 0.040859727 | 78.82133263 | 79.64776859 | 80.91946302 | 83.04213246 | 85.3973169 | 87.74917522 | 89.86315834 | 91.12706971 | 91.94741225 |
| 25–25.99 months | 1.041951175 | 86.29026318 | 0.041142161 | 79.60197647 | 80.44225735 | 81.73540957 | 83.89430336 | 86.29026318 | 88.683435 | 90.83504785 | 92.12167631 | 92.95684975 |
| 26–26.99 months | 1.012592236 | 87.15714182 | 0.041349399 | 80.37554759 | 81.22666181 | 82.5369944 | 84.72592034 | 87.15714182 | 89.5875095 | 91.77420584 | 93.08254082 | 93.9320912 |
| 27–27.99 months | 0.970541909 | 87.9960184 | 0.041500428 | 81.1356948 | 81.99539596 | 83.31968453 | 85.53389245 | 87.9960184 | 90.46017565 | 92.67968776 | 94.00872819 | 94.87214661 |
| 28–28.99 months | 0.921129988 | 88.8055115 | 0.041610508 | 81.87746051 | 82.74410888 | 84.07997909 | 86.31588888 | 88.8055115 | 91.30065173 | 93.55096822 | 94.88974364 | 95.77649339 |
| 29–29.99 months | 0.868221392 | 89.58476689 | 0.041691761 | 82.59711819 | 83.46956585 | 84.81531679 | 87.07028387 | 89.58476689 | 92.10858598 | 94.38792816 | 95.75551171 | 96.64504712 |
| 30–30.99 months | 0.814544413 | 90.33341722 | 0.04175368 | 83.29206184 | 84.16952943 | 85.52398013 | 87.7960919 | 90.33341722 | 92.88403041 | 95.19083262 | 96.57635253 | 97.47813528 |
| 31–31.99 months | 0.761957977 | 91.0515436 | 0.041803562 | 83.96065415 | 84.84263937 | 86.20500071 | 88.49290603 | 91.0515436 | 93.62741325 | 95.96030359 | 97.36295103 | 98.27646264 |
| 32–32.99 months | 0.711660228 | 91.7396352 | 0.041846882 | 84.60209562 | 85.48829708 | 86.85806752 | 89.16083624 | 91.7396352 | 94.33950841 | 96.69728978 | 98.11632342 | 99.04107435 |
| 33–33.99 months | 0.664323379 | 92.39854429 | 0.041887626 | 85.21630353 | 86.10655881 | 87.48343922 | 89.80044644 | 92.39854429 | 95.02140026 | 97.40303421 | 98.83778417 | 99.77332166 |
| 34–34.99 months | 0.620285102 | 93.02945392 | 0.041928568 | 85.80378996 | 86.69803144 | 88.08186325 | 90.41270297 | 93.02945392 | 95.67445723 | 98.07904266 | 99.52890698 | 100.4748164 |
| 35–35.99 months | 0.579556631 | 93.63382278 | 0.041971514 | 86.36557262 | 87.26378819 | 88.6544988 | 90.99890839 | 93.63382278 | 96.30028751 | 98.72704954 | 100.191497 | 101.1474075 |
| 36–36.99 months | 0.54198094 | 94.21335709 | 0.042017509 | 86.90307328 | 87.80528157 | 89.20284893 | 91.56065781 | 94.21335709 | 96.9007148 | 99.34898744 | 100.8275527 | 101.7931359 |
| 37–37.99 months | 0.511429832 | 94.79643239 | 0.042104522 | 87.43482018 | 88.34236213 | 89.74875322 | 92.12298263 | 94.79643239 | 97.50723533 | 99.97896123 | 101.4726459 | 102.448488 |
| 38–38.99 months | 0.482799937 | 95.37391918 | 0.042199507 | 87.95945137 | 88.87255864 | 90.28810699 | 92.67925322 | 95.37391918 | 98.10854769 | 100.6040005 | 102.112939 | 103.0991159 |
| 39–39.99 months | 0.455521041 | 95.94692677 | 0.042300333 | 88.47849954 | 89.39733426 | 90.82227549 | 93.23069622 | 95.94692677 | 98.70568284 | 101.2250993 | 102.7494191 | 103.7460086 |
| 40–40.99 months | 0.429150288 | 96.51644912 | 0.042405225 | 88.99330218 | 89.91797078 | 91.35246174 | 93.77840211 | 96.51644912 | 99.2995686 | 101.8431523 | 103.3829734 | 104.3900531 |
| 41–41.99 months | 0.403351725 | 97.08337211 | 0.042512706 | 89.50502066 | 90.43558554 | 91.87972051 | 94.3233355 | 97.08337211 | 99.89103539 | 102.4589604 | 104.0143944 | 105.0320405 |
| 42–42.99 months | 0.377878239 | 97.6484807 | 0.042621565 | 90.01465759 | 90.95114701 | 92.40497144 | 94.86634477 | 97.6484807 | 100.4808219 | 103.0732359 | 104.6443859 | 105.6726719 |
| 43–43.99 months | 0.352555862 | 98.21246579 | 0.042730809 | 90.52307278 | 91.4654891 | 92.92901112 | 95.40817129 | 98.21246579 | 101.0695807 | 103.6866076 | 105.2735676 | 106.3125633 |
| 44–44.99 months | 0.327270297 | 98.77593069 | 0.042839638 | 91.03099757 | 91.97932415 | 93.45252422 | 95.94945793 | 98.77593069 | 101.6578832 | 104.2996257 | 105.9024803 | 106.9522508 |
| 45–45.99 months | 0.301955463 | 99.33939735 | 0.042947412 | 91.5390479 | 92.49325483 | 93.97609374 | 96.49075704 | 99.33939735 | 102.2462253 | 104.9127666 | 106.5315907 | 107.5921959 |
| 46–46.99 months | 0.276583851 | 99.9033122 | 0.043053626 | 92.04773605 | 93.00778484 | 94.50021028 | 97.03253788 | 99.9033122 | 102.8350319 | 105.5264371 | 107.161296 | 108.2327896 |
| 47–47.99 months | 0.251158446 | 100.4680516 | 0.043157889 | 92.55748123 | 93.52332863 | 95.02528063 | 97.57519341 | 100.4680516 | 103.4246616 | 106.1409795 | 107.7919282 | 108.8743573 |
| 48–48.99 months | 0.225705996 | 101.033927 | 0.043259907 | 93.06861913 | 94.04022021 | 95.55163545 | 98.11904662 | 101.033927 | 104.0154114 | 106.7566748 | 108.4237579 | 109.5171624 |
| 49–49.99 months | 0.20027145 | 101.6011898 | 0.043359463 | 93.58141046 | 94.55872109 | 96.07953634 | 98.66435637 | 101.6011898 | 104.6075204 | 107.3737475 | 109.0569988 | 110.1614111 |
| 50–50.99 months | 0.174913356 | 102.1700358 | 0.043456406 | 94.09604867 | 95.07902737 | 96.60918226 | 99.2113227 | 102.1700358 | 105.2011743 | 107.9923687 | 109.6918111 | 110.8072554 |

Table 23. *L*, *M*, and *S* parameters and selected smoothed percentiles for stature (in centimeters) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-----------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | | |
| 51–51.99 months | 0.149700081 | 102.7406094 | 0.043550638 | 94.61266684 | 95.60127628 | 97.14071535 | 99.76009185 | 102.7406094 | 105.7965086 | 108.6126601 | 110.3283052 | 111.4547971 |
| 52–52.99 months | 0.12470671 | 103.3130077 | 0.043642107 | 95.13134395 | 96.12555202 | 97.67422621 | 100.3107608 | 103.3130077 | 106.3936129 | 109.2346972 | 110.9665451 | 112.1040915 |
| 53–53.99 months | 0.100012514 | 103.8872839 | 0.043730791 | 95.65211042 | 96.65189097 | 98.20975881 | 100.8633813 | 103.8872839 | 106.9925336 | 109.8585126 | 111.6065515 | 112.7551501 |
| 54–54.99 months | 0.075698881 | 104.4634511 | 0.043816701 | 96.17495324 | 97.18028656 | 98.74731484 | 101.4179641 | 104.4634511 | 107.5932772 | 110.4840992 | 112.2483051 | 113.4079442 |
| 55–55.99 months | 0.051847635 | 105.0414853 | 0.043899867 | 96.69982047 | 97.7106936 | 99.28685775 | 101.9744822 | 105.0414853 | 108.1958137 | 111.1114131 | 112.8917498 | 114.0624076 |
| 56–56.99 months | 0.02853967 | 105.6213287 | 0.043980337 | 97.2266254 | 98.24303219 | 99.82831652 | 102.5328747 | 105.6213287 | 108.8000793 | 111.7403765 | 113.536795 | 114.7184401 |
| 57–57.99 months | 0.005853853 | 106.2028921 | 0.044058171 | 97.75525036 | 98.77719141 | 100.371589 | 103.0930492 | 106.2028921 | 109.405979 | 112.3708801 | 114.1833188 | 115.3759096 |
| 58–58.99 months | -0.016133871 | 106.7860583 | 0.04413344 | 98.28555005 | 99.31303257 | 100.9165451 | 103.6548853 | 106.7860583 | 110.0133894 | 113.0027865 | 114.8311708 | 116.0346553 |
| 59–59.99 months | -0.037351181 | 107.3706841 | 0.044206218 | 98.81735475 | 99.85039229 | 101.4630296 | 104.2182371 | 107.3706841 | 110.6221611 | 113.6359317 | 115.4801741 | 116.6944901 |
| 60–60.99 months | -0.057729947 | 107.9566031 | 0.044276588 | 99.35047319 | 100.3890853 | 102.0108651 | 104.7829358 | 107.9566031 | 111.2321213 | 114.2701285 | 116.1301284 | 117.3552032 |
| 61–61.99 months | -0.077206672 | 108.5436278 | 0.044344632 | 99.88469514 | 100.9289069 | 102.5598541 | 105.348792 | 108.5436278 | 111.8430758 | 114.9051683 | 116.780812 | 118.0165629 |
| 62–62.99 months | -0.09572283 | 109.1315521 | 0.044410436 | 100.4197939 | 101.4696357 | 103.1097819 | 105.9155982 | 109.1315521 | 112.4548114 | 115.5408235 | 117.4319846 | 118.6783183 |
| 63–63.99 months | -0.113225128 | 109.7201531 | 0.044474084 | 100.9555286 | 102.0110354 | 103.6604184 | 106.4831306 | 109.7201531 | 113.0670984 | 116.1768496 | 118.0833889 | 119.3402023 |
| 64–64.99 months | -0.129665689 | 110.3091934 | 0.044535662 | 101.4916463 | 102.5528574 | 104.2115203 | 107.0511517 | 110.3091934 | 113.6796918 | 116.8129879 | 118.7347537 | 120.0019338 |
| 65–65.99 months | -0.145002179 | 110.8984228 | 0.044595254 | 102.0278838 | 103.0948423 | 104.762833 | 107.6194116 | 110.8984228 | 114.2923342 | 117.4489667 | 119.3857953 | 120.6632194 |
| 66–66.99 months | -0.159197885 | 111.4875806 | 0.044652942 | 102.5639698 | 103.6367221 | 105.3140925 | 108.1876502 | 111.4875806 | 114.9047572 | 118.0845041 | 120.03622 | 121.3237564 |
| 67–67.99 months | -0.172221748 | 112.0763967 | 0.044708809 | 103.0996264 | 104.1782217 | 105.8650274 | 108.7555991 | 112.0763967 | 115.5166834 | 118.7193096 | 120.685726 | 121.9832342 |
| 68–68.99 months | -0.184048358 | 112.6645943 | 0.044762936 | 103.6345709 | 104.7190606 | 106.4153599 | 109.3229831 | 112.6645943 | 116.1278283 | 119.3530862 | 121.3340057 | 122.6413368 |
| 69–69.99 months | -0.194660215 | 113.2518902 | 0.044815402 | 104.1685175 | 105.258955 | 106.9648081 | 109.8895213 | 113.2518902 | 116.7379017 | 119.9855318 | 121.9807474 | 123.297745 |
| 70–70.99 months | -0.204030559 | 113.8380006 | 0.044866288 | 104.7011761 | 105.797617 | 107.5130874 | 110.4549317 | 113.8380006 | 117.3466121 | 120.6163423 | 122.6256361 | 123.9521353 |
| 71–71.99 months | -0.212174408 | 114.4226317 | 0.044915672 | 105.2322625 | 106.3347618 | 108.0599112 | 111.0189247 | 114.4226317 | 117.9536599 | 121.2452109 | 123.2683596 | 124.6041916 |
| 72–72.99 months | -0.219069129 | 115.0054978 | 0.044963636 | 105.7614857 | 106.8701003 | 108.6049935 | 111.5812164 | 115.0054978 | 118.5587525 | 121.8718331 | 123.9086035 | 125.2535916 |
| 73–73.99 months | -0.224722166 | 115.5863089 | 0.045010259 | 106.2885612 | 107.4033481 | 109.148049 | 112.1415202 | 115.5863089 | 119.1615941 | 122.4959057 | 124.5460585 | 125.9000218 |
| 74–74.99 months | -0.229140412 | 116.1647782 | 0.045055624 | 106.8132066 | 107.9342229 | 109.6887954 | 112.6995522 | 116.1647782 | 119.7618926 | 123.1171295 | 125.1804203 | 126.5431735 |
| 75–75.99 months | -0.232335686 | 116.7406221 | 0.045099817 | 107.3351443 | 108.4624465 | 110.2269537 | 113.2550319 | 116.7406221 | 120.3593603 | 123.7352109 | 125.8113907 | 127.1827453 |
| 76–76.99 months | -0.234324563 | 117.3135622 | 0.045142924 | 107.8541019 | 108.987746 | 110.7822502 | 113.8076835 | 117.3135622 | 120.9537147 | 124.3498634 | 126.4386798 | 127.8184451 |
| 77–77.99 months | -0.235128195 | 117.8833259 | 0.045185036 | 108.3698135 | 109.5098548 | 111.2944168 | 114.3572371 | 117.8833259 | 121.5446807 | 124.9608087 | 127.0620077 | 128.4499914 |
| 78–78.99 months | -0.234772114 | 118.4496481 | 0.045226249 | 108.8820206 | 110.0285133 | 111.8231928 | 114.9034294 | 118.4496481 | 122.1319914 | 125.5677788 | 127.6811055 | 129.0771148 |
| 79–79.99 months | -0.233286033 | 119.0122722 | 0.045266662 | 109.3904733 | 110.5434704 | 112.3483251 | 115.4460056 | 119.0122722 | 122.7153896 | 126.1705167 | 128.2957169 | 129.69956 |
| 80–80.99 months | -0.230703633 | 119.5709513 | 0.045306383 | 109.8949308 | 111.0544841 | 112.8695701 | 115.9847196 | 119.5709513 | 123.2946291 | 126.7687784 | 128.9056 | 130.3170863 |
| 81–81.99 months | -0.227062344 | 120.1254495 | 0.045345524 | 110.3951624 | 111.5613221 | 113.3866939 | 116.5193358 | 120.1254495 | 123.8694758 | 127.3623338 | 129.5105281 | 130.9294701 |
| 82–82.99 months | -0.222403111 | 120.6755427 | 0.045384203 | 110.890948 | 112.0637632 | 113.8994733 | 117.0496296 | 120.6755427 | 124.4397092 | 127.9509681 | 130.1102914 | 131.5365053 |
| 83–83.99 months | -0.216770161 | 121.22102 | 0.045422551 | 111.3820796 | 112.5615976 | 114.407697 | 117.5753884 | 121.22102 | 125.0051231 | 128.5344832 | 130.7046982 | 132.1380052 |
| 84–84.99 months | -0.210210748 | 121.7616844 | 0.045460702 | 111.868361 | 113.054628 | 114.9111662 | 118.0964128 | 121.7616844 | 126.5655273 | 129.1126986 | 131.2935761 | 132.7338033 |
| 85–85.99 months | -0.202774891 | 122.2973542 | 0.045498803 | 112.3496093 | 113.54267 | 115.4096953 | 118.6125173 | 122.2973542 | 126.1207484 | 129.6854529 | 131.876773 | 133.323755 |
| 86–86.99 months | -0.194515104 | 122.827864 | 0.045537012 | 112.825655 | 114.0255532 | 115.9031127 | 119.1235313 | 122.827864 | 126.6706308 | 130.2526047 | 132.4541587 | 133.9077383 |
| 87–87.99 months | -0.185486099 | 123.3530652 | 0.045575495 | 113.2963432 | 114.5031216 | 116.391262 | 119.6293 | 123.3530652 | 127.2150383 | 130.8140342 | 133.025626 | 134.4856552 |
| 88–88.99 months | -0.175744476 | 123.8728276 | 0.045614432 | 113.7615336 | 114.9752341 | 116.874002 | 120.1296849 | 123.8728276 | 127.7538545 | 131.3696436 | 133.5910912 | 135.0574328 |
| 89–89.99 months | -0.165348396 | 124.38704 | 0.045654016 | 114.2211014 | 115.4417656 | 117.351208 | 120.6245654 | 124.38704 | 128.2869845 | 131.9193587 | 134.150496 | 135.6230245 |
| 90–90.99 months | -0.15435722 | 124.8956114 | 0.04569445 | 114.674938 | 115.9026074 | 117.8227724 | 121.113839 | 124.8956114 | 128.8143555 | 132.4631302 | 134.7038082 | 136.1824107 |
| 91–91.99 months | -0.142831123 | 125.398472 | 0.045735953 | 115.1229513 | 116.3576679 | 118.2886054 | 121.5974226 | 125.398472 | 129.3359181 | 133.000934 | 135.2510227 | 136.7356 |
| 92–92.99 months | -0.130830669 | 125.895574 | 0.045778759 | 115.5650666 | 116.8068731 | 118.7486357 | 122.0752529 | 125.895574 | 129.8516474 | 133.5327731 | 135.7921628 | 137.2826306 |
| 93–93.99 months | -0.118416354 | 126.3868929 | 0.045823114 | 116.001227 | 117.2501678 | 119.2028114 | 122.5472882 | 126.3868929 | 130.3615441 | 134.0586782 | 136.3272809 | 137.8235707 |
| 94–94.99 months | -0.105648092 | 126.8724284 | 0.04586928 | 116.4313942 | 117.6875155 | 119.651101 | 123.0135084 | 126.8724284 | 130.8656354 | 134.5787089 | 136.8564598 | 138.3585197 |
| 95–95.99 months | -0.092584657 | 127.3522056 | 0.045917535 | 116.8555488 | 118.1188998 | 120.0934937 | 123.4739166 | 127.3522056 | 131.3639763 | 135.0929548 | 137.3798137 | 138.8876092 |
| 96–96.99 months | -0.079283065 | 127.8262759 | 0.045968169 | 117.2736916 | 118.5443251 | 120.5300007 | 123.92854 | 127.8262759 | 131.8566506 | 135.6015364 | 137.8974887 | 139.411004 |
| 97–97.99 months | -0.065797888 | 128.2947187 | 0.04602149 | 117.6858437 | 118.9638171 | 120.9606563 | 124.3774309 | 128.2947187 | 132.3437724 | 136.1046066 | 138.4096645 | 139.9289024 |
| 98–98.99 months | -0.0521805 | 128.757642 | 0.046077818 | 118.092048 | 119.3774239 | 121.3855185 | 124.8206679 | 128.757642 | 132.8254867 | 136.602351 | 138.9165546 | 140.4415378 |
| 99–99.99 months | -0.03847825 | 129.2151839 | 0.046137487 | 118.4923693 | 119.7852171 | 121.8046703 | 125.2583572 | 129.2151839 | 133.3019713 | 137.0949894 | 139.4184075 | 140.9491785 |

Table 23. L, M, and S parameters and selected smoothed percentiles for stature (in centimeters) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | L | M | S | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | | |
| 100–100.99 months | -0.024733545 | 129.6675143 | 0.046200842 | 118.8868959 | 120.1872927 | 122.2182208 | 125.6906338 | 129.6675143 | 133.7734371 | 137.5827768 | 139.9155075 | 141.4521292 |
| 101–101.99 months | -0.010982868 | 130.1148354 | 0.04626824 | 119.2757403 | 120.5837721 | 122.6263066 | 126.1176628 | 130.1148354 | 134.2401302 | 138.0660041 | 140.4081749 | 141.9507308 |
| 102–102.99 months | 0.002744306 | 130.5573839 | 0.046340046 | 119.6590402 | 120.9748035 | 123.029093 | 126.5396411 | 130.5573839 | 134.7023324 | 138.5449986 | 140.8967672 | 142.4453609 |
| 103–103.99 months | 0.016426655 | 130.995432 | 0.046416629 | 120.0369603 | 121.3605632 | 123.4267753 | 126.9567984 | 130.995432 | 135.1603626 | 139.0201256 | 141.3816789 | 142.936434 |
| 104–104.99 months | 0.030052231 | 131.4292887 | 0.046498361 | 120.4096928 | 121.7412571 | 123.8195805 | 127.3693994 | 131.4292887 | 135.6145777 | 139.4917879 | 141.8633417 | 143.4244013 |
| 105–105.99 months | 0.043619747 | 131.8593015 | 0.046585611 | 120.7774598 | 122.1171219 | 124.2077692 | 127.7777448 | 131.8593015 | 136.0653737 | 139.9604267 | 142.3422248 | 143.9097502 |
| 106–106.99 months | 0.05713988 | 132.2858574 | 0.046678741 | 121.140514 | 122.4884272 | 124.5916364 | 128.1821733 | 132.2858574 | 136.5131864 | 140.4265216 | 142.818834 | 144.3930034 |
| 107–107.99 months | 0.070636605 | 132.7093845 | 0.046778099 | 121.4991408 | 122.8554769 | 124.9715143 | 128.5830629 | 132.7093845 | 136.9584917 | 140.8905903 | 143.2937108 | 144.8747179 |
| 108–108.99 months | 0.08414848 | 133.1303527 | 0.04688401 | 121.8536605 | 123.2186111 | 125.3477734 | 128.9808329 | 133.1303527 | 137.4018066 | 141.3531879 | 143.7674316 | 145.3554829 |
| 109–109.99 months | 0.097729873 | 133.5492749 | 0.046996769 | 122.2044292 | 123.5782083 | 125.7208245 | 129.3759451 | 133.5492749 | 137.8436884 | 141.8149059 | 144.2406053 | 145.8359173 |
| 110–110.99 months | 0.111452039 | 133.9667073 | 0.047116633 | 122.551842 | 123.9346869 | 126.0911208 | 129.7689053 | 133.9667073 | 138.2847346 | 142.2763706 | 144.7138712 | 146.3166671 |
| 111–111.99 months | 0.125404005 | 134.3832499 | 0.047243801 | 122.8963342 | 124.2885075 | 126.4591593 | 130.1602643 | 134.3832499 | 138.7255822 | 142.7382405 | 145.1878952 | 146.798401 |
| 112–112.99 months | 0.13969316 | 134.7995463 | 0.047378413 | 123.2383839 | 124.6401749 | 126.8254825 | 130.5506193 | 134.7995463 | 139.1669053 | 143.2012034 | 145.6633664 | 147.2818057 |
| 113–113.99 months | 0.154445482 | 135.2162826 | 0.047520521 | 123.5785142 | 124.9902397 | 127.1906801 | 130.9406135 | 135.2162826 | 139.6094137 | 143.6659721 | 146.1409913 | 147.7675803 |
| 114–114.99 months | 0.169805275 | 135.634186 | 0.047670085 | 123.9172948 | 125.3393004 | 127.5553896 | 131.3303937 | 135.634186 | 140.0538485 | 144.1332799 | 146.6214882 | 148.2564292 |
| 115–115.99 months | 0.185934346 | 136.0540223 | 0.047826946 | 124.2553446 | 125.6880049 | 127.9202978 | 131.7223254 | 136.0540223 | 140.5009788 | 144.6038739 | 147.1055797 | 148.7490543 |
| 116–116.99 months | 0.203010488 | 136.4765925 | 0.04799081 | 124.5933332 | 126.0370512 | 128.2861404 | 132.1155587 | 136.4765925 | 140.9515953 | 145.0785079 | 147.5939843 | 149.2461456 |
| 117–117.99 months | 0.2212252 | 136.9027281 | 0.048161228 | 124.9319822 | 126.3871885 | 128.6537014 | 132.5114586 | 136.9027281 | 141.406504 | 145.5579335 | 148.0874065 | 149.7483713 |
| 118–118.99 months | 0.240780542 | 137.3332846 | 0.04833757 | 125.2720662 | 126.7392174 | 129.0238124 | 132.9108849 | 137.3332846 | 141.8665172 | 146.0428902 | 148.586526 | 150.2563656 |
| 119–119.99 months | 0.261885086 | 137.7691339 | 0.048519011 | 125.6144133 | 127.0939883 | 129.3973496 | 133.3147302 | 137.7691339 | 142.3324443 | 146.5340936 | 149.0919854 | 150.7707169 |
| 120–120.99 months | 0.284748919 | 138.2111552 | 0.048704503 | 125.9599043 | 127.4524005 | 129.7552299 | 133.7239135 | 138.2111552 | 142.8050794 | 147.0322225 | 149.6043767 | 151.2919534 |
| 121–121.99 months | 0.309577733 | 138.6602228 | 0.048892759 | 126.3094709 | 127.8153983 | 130.1584061 | 134.1393714 | 138.6602228 | 143.2851879 | 147.5379045 | 150.1242269 | 151.8205297 |
| 122–122.99 months | 0.336566048 | 139.1171933 | 0.049082239 | 126.6640931 | 128.1839668 | 130.5478595 | 134.5620476 | 139.1171933 | 143.7734919 | 148.0517004 | 150.6519828 | 152.3568114 |
| 123–123.99 months | 0.365889711 | 139.5828898 | 0.049271137 | 127.0247941 | 128.5591249 | 130.9445907 | 134.9928804 | 139.5828898 | 144.2706527 | 148.5740881 | 151.1879951 | 152.9010603 |
| 124–124.99 months | 0.397699038 | 140.0580848 | 0.049457371 | 127.3926332 | 128.9419168 | 131.3496084 | 135.4327874 | 140.0580848 | 144.7772534 | 149.1054445 | 151.7325029 | 153.4534201 |
| 125–125.99 months | 0.432104409 | 140.5434787 | 0.049638596 | 127.7686986 | 129.3334014 | 131.7639151 | 135.8826474 | 140.5434787 | 145.2937779 | 149.6460289 | 152.2856189 | 154.0139039 |
| 126–126.99 months | 0.46917993 | 141.0396832 | 0.049812203 | 128.1540923 | 129.7346372 | 132.1884911 | 136.3432832 | 141.0396832 | 145.8205935 | 150.1959657 | 152.8473131 | 154.5823786 |
| 127–127.99 months | 0.508943272 | 141.5471945 | 0.049975355 | 128.5499184 | 130.1466666 | 132.6242751 | 136.8154369 | 141.5471945 | 146.3579283 | 150.7552278 | 153.4174019 | 155.1585578 |
| 128–128.99 months | 0.551354277 | 142.0663731 | 0.050125012 | 128.9572634 | 130.5704957 | 133.072142 | 137.299748 | 142.0663731 | 146.9058529 | 151.3236226 | 153.9955367 | 155.741993 |
| 129–129.99 months | 0.596307363 | 142.59742 | 0.050257992 | 129.3771753 | 131.0070717 | 133.5328789 | 137.7967284 | 142.59742 | 147.4642617 | 151.9007796 | 154.581196 | 156.3320686 |
| 130–130.99 months | 0.643626542 | 143.1403553 | 0.050371024 | 129.8106385 | 131.4572565 | 134.0071586 | 138.3067365 | 143.1403553 | 148.0328573 | 152.4861414 | 155.1736815 | 156.9280012 |
| 131–131.99 months | 0.693062173 | 143.6949981 | 0.050460835 | 130.2585454 | 131.9217986 | 134.4955119 | 138.8299523 | 143.6949981 | 148.6111378 | 153.0789588 | 155.7721177 | 157.5288429 |
| 132–132.99 months | 0.744289752 | 144.2609497 | 0.050524236 | 130.7216652 | 132.4013028 | 134.9982982 | 139.3663536 | 144.2609497 | 149.1983881 | 153.6782905 | 156.3754566 | 158.1334886 |
| 133–133.99 months | 0.79691098 | 144.8375809 | 0.050558224 | 131.2006102 | 132.8961927 | 135.5156778 | 139.9156938 | 144.8375809 | 149.7936767 | 154.2830074 | 156.9824866 | 158.740688 |
| 134–134.99 months | 0.85045728 | 145.4240246 | 0.050560083 | 131.6958014 | 133.4067049 | 136.0475846 | 140.4774845 | 145.4240246 | 150.3958583 | 154.8918033 | 157.591847 | 159.3490618 |
| 135–135.99 months | 0.904395871 | 146.0191748 | 0.050527494 | 132.2074327 | 133.9328066 | 136.5937022 | 141.0509836 | 146.0191748 | 151.0035823 | 155.5032105 | 158.2020466 | 159.9571223 |
| 136–136.99 months | 0.958138449 | 146.621692 | 0.050458634 | 132.7354383 | 134.4742195 | 137.1534445 | 141.6351863 | 146.621692 | 151.6153083 | 156.1156207 | 158.8114866 | 160.5632969 |
| 137–137.99 months | 1.011054559 | 147.2300177 | 0.050352269 | 133.2794613 | 135.0303699 | 137.7259419 | 142.228829 | 147.2300177 | 152.2293288 | 156.7273114 | 159.4184879 | 161.1659545 |
| 138–138.99 months | 1.062474568 | 147.8423918 | 0.050207825 | 133.8388331 | 135.6003795 | 138.3100351 | 142.8303943 | 147.8423918 | 152.8437944 | 157.336476 | 160.0213216 | 161.7634371 |
| 139–139.99 months | 1.111727029 | 148.4568879 | 0.050025434 | 134.4125492 | 136.1830524 | 138.9042785 | 143.4381342 | 148.4568879 | 153.4567526 | 157.9412574 | 160.6182378 | 162.3540831 |
| 140–140.99 months | 1.158135105 | 149.0714413 | 0.049805967 | 134.9992687 | 136.7768804 | 139.5069517 | 144.0500909 | 149.0714413 | 154.0661803 | 158.5397832 | 161.2075007 | 162.9362629 |
| 141–141.99 months | 1.201050821 | 149.6838943 | 0.049551023 | 135.5973139 | 137.3800519 | 140.1160824 | 144.6641345 | 149.6838943 | 154.6700274 | 159.1302018 | 161.7874182 | 163.5084028 |
| 142–142.99 months | 1.239852328 | 150.2920328 | 0.049262895 | 136.2046931 | 137.9904798 | 140.7294775 | 145.2779986 | 150.2920328 | 155.2662534 | 159.710717 | 162.3563754 | 164.0690181 |
| 143–143.99 months | 1.274006058 | 150.8936469 | 0.048944504 | 136.8191174 | 138.6058289 | 141.3447662 | 145.8893375 | 150.8936469 | 155.8528786 | 160.2796226 | 162.9128551 | 164.6167234 |
| 144–144.99 months | 1.303044695 | 151.4865636 | 0.048599314 | 137.4380555 | 139.2235689 | 141.9594471 | 146.4957662 | 151.4865636 | 156.4280126 | 160.8353311 | 163.4554684 | 165.1502647 |
| 145–145.99 months | 1.326605954 | 152.0686985 | 0.048231224 | 138.0587804 | 139.8410247 | 142.5709442 | 147.0949169 | 152.0686985 | 156.9898953 | 161.3763995 | 163.9829705 | 165.6685285 |
| 146–146.99 months | 1.344443447 | 152.6380955 | 0.047844442 | 138.6784334 | 140.4554388 | 143.1766639 | 147.6844892 | 152.6380955 | 157.5369262 | 161.9015501 | 164.4942764 | 166.1705539 |
| 147–147.99 months | 1.356437773 | 153.1929631 | 0.047443362 | 139.2940935 | 141.064036 | 143.7740547 | 148.2622979 | 153.1929631 | 158.0676887 | 162.4096857 | 164.9884705 | 166.6555396 |
| 148–148.99 months | 1.362602695 | 153.7317031 | 0.04703243 | 139.902849 | 141.6640898 | 144.3606631 | 148.8263158 | 153.7317031 | 158.5809683 | 162.8998985 | 165.4648118 | 167.1228459 |

Table 23. L, M, and S parameters and selected smoothed percentiles for stature (in centimeters) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | L | M | S | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | | |
| 149–149.99 months | 1.363085725 | 154.2529332 | 0.046616026 | 140.5018697 | 142.2529855 | 144.9341866 | 149.3747099 | 154.2529332 | 159.0757636 | 163.3714746 | 165.9227345 | 167.5719943 |
| 150–150.99 months | 1.358162799 | 154.755501 | 0.046198356 | 141.0884738 | 142.8282787 | 145.4925187 | 149.9058698 | 154.755501 | 159.5512908 | 163.8238923 | 166.3618445 | 168.0026622 |
| 151–151.99 months | 1.348227142 | 155.2384904 | 0.04578335 | 141.6601883 | 143.3877452 | 146.0337866 | 150.4184277 | 155.2384904 | 160.006982 | 164.2568163 | 166.7819123 | 168.4146759 |
| 152–152.99 months | 1.333772923 | 155.7012216 | 0.045374597 | 142.2147984 | 143.9294218 | 146.5563788 | 150.9112703 | 155.7012216 | 160.4424774 | 164.6700879 | 167.1828627 | 168.8080012 |
| 153–153.99 months | 1.315374704 | 156.1432438 | 0.044975281 | 142.7503859 | 144.4516354 | 147.0589626 | 151.3835413 | 156.1432438 | 160.8576139 | 165.0637118 | 167.5647631 | 169.1827317 |
| 154–154.99 months | 1.293664024 | 156.564323 | 0.044588148 | 143.2653544 | 144.9530205 | 147.5404925 | 151.8346381 | 156.564323 | 161.252409 | 165.4378408 | 167.9278093 | 169.5390766 |
| 155–155.99 months | 1.269304678 | 156.9644258 | 0.044215488 | 143.7584411 | 145.4325259 | 148.0002085 | 152.2642007 | 156.9644258 | 161.6270427 | 165.7927589 | 168.2723104 | 169.8773471 |
| 156–156.99 months | 1.242968236 | 157.3436995 | 0.043859135 | 144.2287179 | 145.8894106 | 148.437627 | 152.6720956 | 157.3436995 | 161.9818377 | 166.1288638 | 168.5986736 | 170.1979436 |
| 157–157.99 months | 1.21531127 | 157.7024507 | 0.04352048 | 144.6755805 | 146.3232308 | 148.8525242 | 153.0583966 | 157.7024507 | 162.317239 | 166.4466488 | 168.9073892 | 170.5013414 |
| 158–158.99 months | 1.186955477 | 158.0411233 | 0.043200497 | 145.0987292 | 146.7338197 | 149.2449147 | 153.4233611 | 158.0411233 | 162.633793 | 166.7466859 | 169.1990151 | 170.7880784 |
| 159–159.99 months | 1.158471522 | 158.3602756 | 0.042899776 | 145.4981426 | 147.1212613 | 149.6150259 | 153.7674066 | 158.3602756 | 162.9321282 | 167.0296087 | 169.474163 | 171.0587419 |
| 160–160.99 months | 1.130367088 | 158.6605588 | 0.042618565 | 145.8740473 | 147.4858611 | 149.9632704 | 154.0910856 | 158.6605588 | 163.2129368 | 167.2960978 | 169.7334849 | 171.3139575 |
| 161–161.99 months | 1.103079209 | 158.9426964 | 0.042356812 | 146.2268836 | 147.8281145 | 150.2902174 | 154.3950608 | 158.9426964 | 163.476957 | 167.5468664 | 169.9776618 | 171.5543778 |
| 162–162.99 months | 1.076970655 | 159.2074654 | 0.042114211 | 146.5572714 | 148.148675 | 150.5965645 | 154.6800825 | 159.2074654 | 163.7249588 | 167.7826481 | 170.207392 | 171.780673 |
| 163–163.99 months | 1.052329922 | 159.455679 | 0.041890247 | 146.8659759 | 148.4483225 | 150.8831097 | 154.9469659 | 159.455679 | 163.9577297 | 168.0041861 | 170.4233822 | 171.9935219 |
| 164–164.99 months | 1.029374161 | 159.688172 | 0.04168424 | 147.1538752 | 148.7279342 | 151.1507267 | 155.1965718 | 159.688172 | 164.1760637 | 168.2122241 | 170.6263392 | 172.1936047 |
| 165–165.99 months | 1.008254396 | 159.9057871 | 0.041495379 | 147.4219304 | 148.9884574 | 151.4003414 | 155.4297888 | 159.9057871 | 164.3807514 | 168.4074983 | 170.8169629 | 172.3815959 |
| 166–166.99 months | 0.989062282 | 160.1093647 | 0.041322765 | 147.6711585 | 149.2308852 | 151.6329115 | 155.6475179 | 160.1093647 | 164.572572 | 168.5907313 | 170.9959407 | 172.5581591 |
| 167–167.99 months | 0.971837799 | 160.299733 | 0.041165437 | 147.902609 | 149.4562355 | 151.8494087 | 155.8506598 | 160.299733 | 164.7522868 | 168.7626268 | 171.1639423 | 172.7239426 |
| 168–168.99 months | 0.95657215 | 160.4776996 | 0.041022401 | 148.1173446 | 149.6655332 | 152.0508033 | 156.0401024 | 160.4776996 | 164.920633 | 168.9238654 | 171.3216174 | 172.8795764 |
| 169–169.99 months | 0.94324228 | 160.6440526 | 0.040892651 | 148.3164186 | 149.8597926 | 152.238053 | 156.2167175 | 160.6440526 | 165.0783248 | 169.0751026 | 171.469589 | 173.0256638 |
| 170–170.99 months | 0.931767062 | 160.7995428 | 0.040775193 | 148.5008727 | 150.0400107 | 152.4120911 | 156.3813442 | 160.7995428 | 165.2260411 | 169.2169651 | 171.6084579 | 173.1627906 |
| 171–171.99 months | 0.922058291 | 160.9448916 | 0.040669052 | 148.6717163 | 150.2071532 | 152.5738202 | 156.5347914 | 160.9448916 | 165.3644316 | 169.3500504 | 171.7387957 | 173.2915138 |
| 172–172.99 months | 0.914012643 | 161.0807857 | 0.040573288 | 148.8299213 | 150.3621482 | 152.7241057 | 156.6778321 | 161.0807857 | 165.4941133 | 169.4749261 | 171.8611461 | 173.4123635 |
| 173–173.99 months | 0.907516917 | 161.2078755 | 0.040487005 | 148.976416 | 150.5058813 | 152.8637721 | 156.8112003 | 161.2078755 | 165.6156697 | 169.5921291 | 171.9760242 | 173.5258431 |
| 174–174.99 months | 0.902452436 | 161.3267744 | 0.040409354 | 149.1120814 | 150.6391923 | 152.9936001 | 156.9355896 | 161.3267744 | 165.7296508 | 169.7021662 | 171.0839168 | 173.6324287 |
| 175–175.99 months | 0.898698641 | 161.4380593 | 0.040339537 | 149.2377485 | 150.7628729 | 153.1143251 | 157.0516529 | 161.4380593 | 165.8365737 | 169.8055142 | 172.1852824 | 173.7325694 |
| 176–176.99 months | 0.896143482 | 161.5422726 | 0.040276811 | 149.3541954 | 150.877665 | 153.2266371 | 157.1600033 | 161.5422726 | 165.9369248 | 169.9026209 | 172.2805514 | 173.8266863 |
| 177–177.99 months | 0.894659668 | 161.639917 | 0.040220488 | 149.4621532 | 150.9842639 | 153.3311804 | 157.2612106 | 161.639917 | 166.0311556 | 169.9939056 | 172.3701297 | 173.9151788 |
| 178–178.99 months | 0.89413892 | 161.7314645 | 0.040169932 | 149.5622993 | 151.0833153 | 153.4285552 | 157.3558081 | 161.7314645 | 166.1196904 | 170.0797608 | 172.4543957 | 173.9984185 |
| 179–179.99 months | 0.894475371 | 161.8173534 | 0.040124562 | 149.6552628 | 151.1754186 | 153.5193185 | 157.4442908 | 161.8173534 | 166.202924 | 170.160553 | 172.5337038 | 174.0767538 |
| 180–180.99 months | 0.895569834 | 161.8979913 | 0.040083845 | 149.7416255 | 151.2611287 | 153.6039864 | 157.5271178 | 161.8979913 | 166.281224 | 170.236624 | 172.6083849 | 174.1505102 |
| 181–181.99 months | 0.897330209 | 161.9737558 | 0.040047295 | 149.8219242 | 151.3409575 | 153.6830356 | 157.6047139 | 161.9737558 | 166.3549321 | 170.3082921 | 172.6787478 | 174.2199918 |
| 182–182.99 months | 0.899671635 | 162.0449969 | 0.040014473 | 149.8966533 | 151.415377 | 153.7569057 | 157.6774719 | 162.0449969 | 166.4243655 | 170.3758539 | 172.7450799 | 174.2854819 |
| 183–183.99 months | 0.902516442 | 162.1120386 | 0.03998498 | 149.9662668 | 151.4848208 | 153.8260015 | 157.7457539 | 162.1120386 | 166.4898188 | 170.4395847 | 172.8076491 | 174.3472447 |
| 184–184.99 months | 0.905793969 | 162.17518 | 0.039958458 | 150.0311812 | 151.5496874 | 153.8906954 | 157.809894 | 162.17518 | 166.5515647 | 170.4997408 | 172.8667045 | 174.405526 |
| 185–185.99 months | 0.909440266 | 162.2346979 | 0.039934584 | 150.0917784 | 151.610342 | 153.951329 | 157.8701998 | 162.2346979 | 166.6098562 | 170.5565599 | 172.9224777 | 174.4605545 |
| 186–186.99 months | 0.913397733 | 162.2908474 | 0.039913066 | 150.1484074 | 151.6671193 | 154.0082162 | 157.9269542 | 162.2908474 | 166.6649274 | 170.6102627 | 172.9751838 | 174.5125428 |
| 187–187.99 months | 0.91761471 | 162.343864 | 0.039893644 | 150.2013879 | 151.7203255 | 154.0616446 | 157.9804176 | 162.343864 | 166.7169951 | 170.6610542 | 173.025023 | 174.5616886 |
| 188–188.99 months | 0.922045055 | 162.3939652 | 0.039876087 | 150.2510113 | 151.7702407 | 154.1118775 | 158.0308292 | 162.3939652 | 166.7662599 | 170.7091243 | 173.0721808 | 174.6081757 |
| 189–189.99 months | 0.926647697 | 162.4413513 | 0.039860185 | 150.2975443 | 151.8171212 | 154.1591564 | 158.0784088 | 162.4413513 | 166.8129074 | 170.7546494 | 173.1168298 | 174.6521747 |
| 190–190.99 months | 0.931386217 | 162.4862071 | 0.039845754 | 150.3412298 | 151.8612008 | 154.2037023 | 158.1233583 | 162.4862071 | 166.8571093 | 170.7977929 | 173.1591301 | 174.6938442 |
| 191–191.99 months | 0.93622842 | 162.5287029 | 0.039832629 | 150.3822898 | 151.9026934 | 154.2457175 | 158.1658633 | 162.5287029 | 166.8990246 | 170.8387064 | 173.1992303 | 174.7333314 |
| 192–192.99 months | 0.941145943 | 162.5689958 | 0.039820663 | 150.4209266 | 151.9417942 | 154.2853872 | 158.2060942 | 162.5689958 | 166.9388003 | 170.8775306 | 173.2372685 | 174.7707732 |
| 193–193.99 months | 0.94611388 | 162.6072309 | 0.039809725 | 150.4573249 | 151.9786817 | 154.3228809 | 158.2442076 | 162.6072309 | 166.9765723 | 170.914396 | 173.2733728 | 174.8062967 |
| 194–194.99 months | 0.95111043 | 162.6435418 | 0.0397997 | 150.4916531 | 152.013519 | 154.3583538 | 158.2803474 | 162.6435418 | 167.0124668 | 170.9494236 | 173.3076624 | 174.8400201 |
| 195–195.99 months | 0.956116576 | 162.6780519 | 0.039790485 | 150.524065 | 152.0464549 | 154.3919483 | 158.3146459 | 162.6780519 | 167.0466004 | 170.9827258 | 173.3402478 | 174.8720532 |
| 196–196.99 months | 0.961115792 | 162.7108751 | 0.039781991 | 150.5547008 | 152.0776257 | 154.4237944 | 158.3472249 | 162.7108751 | 167.0790811 | 171.014407 | 173.3712319 | 174.902498 |
| 197–197.99 months | 0.966093766 | 162.7421168 | 0.039774136 | 150.5836887 | 152.1071558 | 154.4540118 | 158.3781962 | 162.7421168 | 167.110009 | 171.0445641 | 173.4007102 | 174.9314494 |

Table 23. L, M, and S parameters and selected smoothed percentiles for stature (in centimeters) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | L | M | S | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
| Girls—Con. | | | | | | | | | | | | |
| 198–198.99 months | 0.971038162 | 162.7718741 | 0.03976685 | 150.6111457 | 152.1351593 | 154.4827098 | 158.407663 | 162.7718741 | 167.1394771 | 171.0732871 | 173.4287717 | 174.9589959 |
| 199–199.99 months | 0.975938391 | 162.8002371 | 0.03976007 | 150.6371789 | 152.1617405 | 154.509989 | 158.4357202 | 162.8002371 | 167.1675715 | 171.1006598 | 173.455499 | 174.9852197 |
| 200–200.99 months | 0.980785418 | 162.8272889 | 0.039753741 | 150.661886 | 152.1869949 | 154.5359417 | 158.4624554 | 162.8272889 | 167.1943721 | 171.1267599 | 173.4809691 | 175.0101973 |
| 201–201.99 months | 0.985571579 | 162.8531067 | 0.039747815 | 150.6853568 | 152.2110102 | 154.5606528 | 158.4879492 | 162.8531067 | 167.2199532 | 171.1516601 | 173.5052538 | 175.034 |
| 202–202.99 months | 0.99029042 | 162.8777619 | 0.039742249 | 150.7076733 | 152.2338667 | 154.5842002 | 158.5122763 | 162.8777619 | 167.244384 | 171.1754277 | 173.5284198 | 175.0566944 |
| 203–203.99 months | 0.994936555 | 162.9013208 | 0.039737004 | 150.7289106 | 152.2556383 | 154.6066558 | 158.5355056 | 162.9013208 | 167.2677286 | 171.1981258 | 173.5505296 | 175.0783424 |
| 204–204.99 months | 0.999505539 | 162.9238449 | 0.039732048 | 150.749138 | 152.2763929 | 154.6280858 | 158.5577008 | 162.9238449 | 167.2900467 | 171.2198128 | 173.5716411 | 175.099002 |
| 205–205.99 months | 1.003993753 | 162.9453912 | 0.039727352 | 150.7684187 | 152.296193 | 154.6485512 | 158.578921 | 162.9453912 | 167.3113942 | 171.2405436 | 173.5918087 | 175.1187272 |
| 206–206.99 months | 1.0083983 | 162.9660131 | 0.03972289 | 150.7868111 | 152.3150959 | 154.6681084 | 158.5992207 | 162.9660131 | 167.3318229 | 171.2603693 | 173.6110831 | 175.1375685 |
| 207–207.99 months | 1.012716921 | 162.9857599 | 0.03971864 | 150.8043689 | 152.3331548 | 154.6868095 | 158.6186507 | 162.9857599 | 167.3513812 | 171.2793375 | 173.6295117 | 175.155573 |
| 208–208.99 months | 1.016947912 | 163.0046776 | 0.039714581 | 150.8211416 | 152.3504187 | 154.7047027 | 158.6372582 | 163.0046776 | 167.3701145 | 171.2974929 | 173.6471389 | 175.1727851 |
| 209–209.99 months | 1.021090055 | 163.0228094 | 0.039710697 | 150.8371748 | 152.3669327 | 154.7218327 | 158.6550869 | 163.0228094 | 167.388065 | 171.3148774 | 173.6640061 | 175.1892459 |
| 210–210.99 months | 1.025142554 | 163.0401953 | 0.039706971 | 150.8525106 | 152.3827387 | 154.7382408 | 158.6721776 | 163.0401953 | 167.4052723 | 171.33153 | 173.6801522 | 175.2049944 |
| 211–211.99 months | 1.029104983 | 163.0568727 | 0.039703391 | 150.8671882 | 152.3978755 | 154.7539655 | 158.6885682 | 163.0568727 | 167.4217734 | 171.3474874 | 173.6956138 | 175.2200667 |
| 212–212.99 months | 1.032977233 | 163.0728768 | 0.039699945 | 150.8812435 | 152.412379 | 154.7690427 | 158.7042942 | 163.0728768 | 167.437603 | 171.362784 | 173.710425 | 175.2344971 |
| 213–213.99 months | 1.036759475 | 163.0882404 | 0.039696623 | 150.8947102 | 152.4262827 | 154.7835054 | 158.7193886 | 163.0882404 | 167.4527938 | 171.3774521 | 173.7246179 | 175.2483174 |
| 214–214.99 months | 1.040452117 | 163.1029943 | 0.039693415 | 150.9076191 | 152.4396177 | 154.7973849 | 158.7338824 | 163.1029943 | 167.4673763 | 171.3915221 | 173.7382228 | 175.2615577 |
| 215–215.99 months | 1.044055774 | 163.1171673 | 0.039690313 | 150.9199994 | 152.4524128 | 154.81071 | 158.7478045 | 163.1171673 | 167.4813792 | 171.4050225 | 173.751268 | 175.2742464 |
| 216–216.99 months | 1.047571238 | 163.1307866 | 0.039687311 | 150.9318778 | 152.464695 | 154.8235077 | 158.7611821 | 163.1307866 | 167.4948296 | 171.4179802 | 173.7637802 | 175.2864101 |
| 217–217.99 months | 1.050999451 | 163.1438776 | 0.039684402 | 150.9432795 | 152.4764895 | 154.8358035 | 158.7740404 | 163.1438776 | 167.5077529 | 171.4304205 | 173.7757847 | 175.2980736 |
| 218–218.99 months | 1.054341482 | 163.1564644 | 0.039681581 | 150.9542279 | 152.4878198 | 154.8476208 | 158.7864036 | 163.1564644 | 167.520173 | 171.4423671 | 173.787305 | 175.3092608 |
| 219–219.99 months | 1.057598512 | 163.1685697 | 0.039678842 | 150.9647448 | 152.498708 | 154.8589821 | 158.798294 | 163.1685697 | 167.5321128 | 171.4538427 | 173.7983636 | 175.3199938 |
| 220–220.99 months | 1.060771808 | 163.1802146 | 0.039676182 | 150.9748507 | 152.5091747 | 154.8699082 | 158.8097328 | 163.1802146 | 167.5435933 | 171.4648684 | 173.8089816 | 175.3302936 |
| 221–221.99 months | 1.063862715 | 163.1914194 | 0.039673596 | 150.9845649 | 152.5192393 | 154.8804186 | 158.8207399 | 163.1914194 | 167.554635 | 171.4754644 | 173.8191789 | 175.3401801 |
| 222–222.99 months | 1.066872639 | 163.202203 | 0.039671082 | 150.9939053 | 152.52892 | 154.8905318 | 158.8313341 | 163.202203 | 167.5652567 | 171.4856495 | 173.8289744 | 175.349672 |
| 223–223.99 months | 1.069803036 | 163.2125835 | 0.039668635 | 151.0028889 | 152.5382338 | 154.9002654 | 158.8415332 | 163.2125835 | 167.5754766 | 171.4954418 | 173.8383858 | 175.358787 |
| 224–224.99 months | 1.072655401 | 163.2225779 | 0.039666254 | 151.0115315 | 152.5471971 | 154.9096356 | 158.851354 | 163.2225779 | 167.5853118 | 171.5048583 | 173.8474302 | 175.367542 |
| 225–225.99 months | 1.075431258 | 163.2322024 | 0.039663936 | 151.0198482 | 152.5558248 | 154.9186579 | 158.8608124 | 163.2322024 | 167.5947785 | 171.5139151 | 173.8561235 | 175.3759527 |
| 226–226.99 months | 1.078132156 | 163.2414722 | 0.039661679 | 151.0278532 | 152.5641315 | 154.9273472 | 158.8699234 | 163.2414722 | 167.6038921 | 171.5226274 | 173.8644808 | 175.3840343 |
| 227–227.99 months | 1.080759655 | 163.2504019 | 0.039659481 | 151.0355596 | 152.5721307 | 154.9357171 | 158.8787012 | 163.2504019 | 167.6126671 | 171.5310098 | 173.8725166 | 175.391801 |
| 228–228.99 months | 1.083315329 | 163.2590052 | 0.039657339 | 151.0429803 | 152.5798353 | 154.9437809 | 158.8871595 | 163.2590052 | 167.6211174 | 171.5390761 | 173.8802445 | 175.3992664 |
| 229–229.99 months | 1.085800751 | 163.2672954 | 0.039655252 | 151.0501271 | 152.5872574 | 154.9515511 | 158.8953111 | 163.2672954 | 167.6292563 | 171.5468394 | 173.8876774 | 175.4064433 |
| 230–230.99 months | 1.088217496 | 163.2752848 | 0.039653218 | 151.0570114 | 152.5944085 | 154.9590395 | 158.9031682 | 163.2752848 | 167.6370963 | 171.5543121 | 173.8948277 | 175.4133439 |
| 231–231.99 months | 1.090567133 | 163.2829854 | 0.039651237 | 151.0636438 | 152.6012996 | 154.9662574 | 158.9107425 | 163.2829854 | 167.6446494 | 171.561506 | 173.9017071 | 175.4199799 |
| 232–232.99 months | 1.092851222 | 163.2904086 | 0.039649306 | 151.0700346 | 152.6079412 | 154.9732154 | 158.918045 | 163.2904086 | 167.6519269 | 171.5684326 | 173.9083268 | 175.4263623 |
| 233–233.99 months | 1.095071313 | 163.297565 | 0.039647424 | 151.0761934 | 152.6143431 | 154.9799237 | 158.9250863 | 163.297565 | 167.6589397 | 171.5751024 | 173.9146973 | 175.4325015 |
| 234–234.99 months | 1.097228939 | 163.304465 | 0.039645591 | 151.0821295 | 152.6205147 | 154.9863922 | 158.9318765 | 163.304465 | 167.6656981 | 171.5815258 | 173.9208289 | 175.4384076 |
| 235–235.99 months | 1.099325619 | 163.3111185 | 0.039643804 | 151.0878515 | 152.626465 | 154.9926299 | 158.9384252 | 163.3111185 | 167.6722121 | 171.5877126 | 173.9267311 | 175.4440902 |
| 236–236.99 months | 1.101362852 | 163.3175349 | 0.039642063 | 151.0933679 | 152.6322026 | 154.9986458 | 158.9447416 | 163.3175349 | 167.678491 | 171.5936721 | 173.9324132 | 175.4495583 |
| 237–237.99 months | 1.103342119 | 163.3237231 | 0.039640367 | 151.0986866 | 152.6377356 | 155.0044483 | 158.9508345 | 163.3237231 | 167.684544 | 171.5994132 | 173.9378839 | 175.4548206 |
| 238–238.99 months | 1.105264876 | 163.3296918 | 0.039638715 | 151.1038152 | 152.6430718 | 155.0100454 | 158.9567122 | 163.3296918 | 167.6903797 | 171.6049444 | 173.9431517 | 175.4598853 |
| 239–239.99 months | 1.107132561 | 163.3354491 | 0.039637105 | 151.1087609 | 152.6482187 | 155.0154449 | 158.9623829 | 163.3354491 | 167.6960062 | 171.6102738 | 173.9482244 | 175.4647604 |

Table 24. *L, M, and S* parameters and selected smoothed percentiles for body mass index (BMI, kilograms/meters²) by sex and age: 2 to 20 years

| Sex and age | Percentile | | | | | | | | | | | | |
|-----------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 85th | 90th | 95th | 97th |
| Boys | | | | | | | | | | | | | |
| 24–24.99 months | -1.982373595 | 16.54777487 | 0.080127429 | 14.50347667 | 14.71929257 | 15.07117474 | 15.71962876 | 16.54777487 | 17.52129279 | 18.11954923 | 18.56110634 | 19.27889813 | 19.79194014 |
| 25–25.99 months | -1.924100169 | 16.49442763 | 0.079233994 | 14.46882381 | 14.68360841 | 15.03335725 | 15.67634464 | 16.49442763 | 17.45135039 | 18.03668013 | 18.46729593 | 19.16465965 | 19.66102345 |
| 26–26.99 months | -1.86549793 | 16.44259552 | 0.078389356 | 14.43459737 | 14.64843329 | 14.99619505 | 15.634035 | 16.44259552 | 17.38383656 | 17.95700228 | 18.37736191 | 19.05567423 | 19.5365754 |
| 27–27.99 months | -1.807261899 | 16.3922434 | 0.077593501 | 14.40082828 | 14.61378626 | 14.95969047 | 15.5926798 | 16.3922434 | 17.3187102 | 17.88047101 | 18.29125345 | 18.9518675 | 19.41848805 |
| 28–28.99 months | -1.750118905 | 16.34333654 | 0.076846462 | 14.36754718 | 14.57968578 | 14.92384514 | 15.55225853 | 16.34333654 | 17.2559313 | 17.80704259 | 18.20892041 | 18.85316529 | 19.30665411 |
| 29–29.99 months | -1.69481584 | 16.29584097 | 0.076148308 | 14.33478414 | 14.54614966 | 14.88866003 | 15.51275057 | 16.29584097 | 17.19546093 | 17.73667414 | 18.1303131 | 18.75949359 | 19.20096691 |
| 30–30.99 months | -1.642106779 | 16.24972371 | 0.075499126 | 14.30256837 | 14.51319492 | 14.85413557 | 15.47413549 | 16.24972371 | 17.13726129 | 17.66932346 | 18.05538214 | 18.67077841 | 19.10132056 |
| 31–31.99 months | -1.592744414 | 16.20495268 | 0.074898994 | 14.27092833 | 14.48083795 | 14.82027189 | 15.43639319 | 16.20495268 | 17.0812953 | 17.6049486 | 17.98407812 | 18.58694589 | 19.00761051 |
| 32–32.99 months | -1.547442391 | 16.16149871 | 0.074347997 | 14.23988971 | 14.44909329 | 14.7870687 | 15.39950521 | 16.16149871 | 17.02752831 | 17.54350898 | 17.91635198 | 18.50792131 | 18.91973125 |
| 33–33.99 months | -1.506902601 | 16.11933258 | 0.073846139 | 14.2094782 | 14.41797561 | 14.7545259 | 15.36345335 | 16.11933258 | 16.97592485 | 17.48496295 | 17.85215384 | 18.43363072 | 18.83758072 |
| 34–34.99 months | -1.471770047 | 16.07842758 | 0.07339337 | 14.17971698 | 14.38749811 | 14.72264343 | 15.32822125 | 16.07842758 | 16.92645101 | 17.42926933 | 17.79143359 | 18.3639996 | 18.76105711 |
| 35–35.99 months | -1.442628957 | 16.03875896 | 0.072989551 | 14.15062715 | 14.35767293 | 14.69142152 | 15.2937943 | 16.03875896 | 16.87907357 | 17.37638677 | 17.73414053 | 18.29895323 | 18.69005992 |
| 36–36.99 months | -1.419991255 | 16.00030401 | 0.072634432 | 14.12222757 | 14.32851119 | 14.66086088 | 15.26015988 | 16.00030401 | 16.8337599 | 17.32627356 | 17.68022325 | 18.23841666 | 18.62449011 |
| 37–37.99 months | -1.404277619 | 15.96304277 | 0.072327649 | 14.09453413 | 14.30002256 | 14.63096272 | 15.22730791 | 15.96304277 | 16.79047852 | 17.27888795 | 17.62962965 | 18.1823144 | 18.5642493 |
| 38–38.99 months | -1.39586317 | 15.92695418 | 0.07206864 | 14.06756329 | 14.27221761 | 14.60172936 | 15.1952288 | 15.92695418 | 16.74919525 | 17.23418554 | 17.58230587 | 18.13057244 | 18.50924478 |
| 39–39.99 months | -1.394935252 | 15.89202582 | 0.071856805 | 14.04132288 | 14.24510202 | 14.57316316 | 15.16391901 | 15.89202582 | 16.70988247 | 17.19212545 | 17.53819888 | 18.08311311 | 18.45937719 |
| 40–40.99 months | -1.401671596 | 15.85824093 | 0.071691278 | 14.0158243 | 14.21868433 | 14.54526806 | 15.13337382 | 15.85824093 | 16.67250668 | 17.15266201 | 17.49725289 | 18.03986198 | 18.41455697 |
| 41–41.99 months | -1.416100312 | 15.82558822 | 0.071571093 | 13.99107332 | 14.19297011 | 14.51804847 | 15.10359281 | 15.82558822 | 16.63703787 | 17.11575098 | 17.45941207 | 18.00074262 | 18.37469187 |
| 42–42.99 months | -1.438164899 | 15.79405728 | 0.071495113 | 13.96707439 | 14.16796472 | 14.49150978 | 15.07457728 | 15.79405728 | 16.60344521 | 17.08134677 | 17.42461935 | 17.96567903 | 18.33969264 |
| 43–43.99 months | -1.467669032 | 15.76364255 | 0.071462106 | 13.94382698 | 14.14367089 | 14.4656578 | 15.04633235 | 15.76364255 | 16.57170092 | 17.04940504 | 17.39281759 | 17.9345935 | 18.30946785 |
| 44–44.99 months | -1.504376347 | 15.73433668 | 0.071470646 | 13.9213319 | 14.12009269 | 14.44049947 | 15.01886319 | 15.73433668 | 16.54177412 | 17.0198786 | 17.36394785 | 17.90741007 | 18.28393204 |
| 45–45.99 months | -1.547942838 | 15.70613566 | 0.071519218 | 13.8995866 | 14.09723246 | 14.4160421 | 14.99217766 | 15.70613566 | 16.51363577 | 16.99272087 | 17.33795095 | 17.88405183 | 18.26299911 |
| 46–46.99 months | -1.597896397 | 15.67904062 | 0.071606277 | 13.87858352 | 14.07508966 | 14.392293 | 14.96628719 | 15.67904062 | 16.48726082 | 16.96788739 | 17.31476822 | 17.86443983 | 18.24657949 |
| 47–47.99 months | -1.653732283 | 15.65305192 | 0.071730167 | 13.85831582 | 14.05366443 | 14.36926 | 14.94120325 | 15.65305192 | 16.46262258 | 16.94533215 | 17.29433999 | 17.84849622 | 18.2345875 |
| 48–48.99 months | -1.714869347 | 15.62817269 | 0.071889214 | 13.83877404 | 14.03295533 | 14.34695084 | 14.91693911 | 15.62817269 | 16.43969657 | 16.92501028 | 17.27660684 | 17.8361423 | 18.22693633 |
| 49–49.99 months | -1.780673181 | 15.604408 | 0.072081737 | 13.81199471 | 14.01295984 | 14.32537305 | 14.89350913 | 15.604408 | 16.41845985 | 16.90687779 | 17.26150966 | 17.82729891 | 18.22353875 |
| 50–50.99 months | -1.850468473 | 15.58176458 | 0.072306081 | 13.80182253 | 13.99367445 | 14.30453377 | 14.87092845 | 15.58176458 | 16.39889119 | 16.89089179 | 17.24898984 | 17.8218865 | 18.22430691 |
| 51–51.99 months | -1.923551865 | 15.56025067 | 0.072560637 | 13.78438667 | 13.97509464 | 14.2844396 | 14.84921259 | 15.56025067 | 16.38097113 | 16.87701073 | 17.23898952 | 17.81982523 | 18.22915216 |
| 52–52.99 months | -1.999220429 | 15.5398746 | 0.07284384 | 13.76762605 | 13.95721572 | 14.26509665 | 14.82837662 | 15.5398746 | 16.36468088 | 16.86519374 | 17.23145142 | 17.82103559 | 18.23798637 |
| 53–53.99 months | -2.076707178 | 15.52064993 | 0.073154324 | 13.75152248 | 13.94002947 | 14.24650943 | 14.80843749 | 15.52064993 | 16.3500079 | 16.85540483 | 17.22632105 | 17.82543578 | 18.25071444 |
| 54–54.99 months | -2.155348017 | 15.50258427 | 0.073490667 | 13.73606368 | 13.92353116 | 14.22868271 | 14.7894083 | 15.50258427 | 16.33693462 | 16.8476049 | 17.22354286 | 17.83294744 | 18.2624918 |
| 55–55.99 months | -2.234438552 | 15.48568973 | 0.073851672 | 13.72123322 | 13.90771281 | 14.21161954 | 14.77130343 | 15.48568973 | 16.32544946 | 16.84175987 | 17.22306443 | 17.84349028 | 18.28749643 |
| 56–56.99 months | -2.313321723 | 15.46997718 | 0.074236235 | 13.70701599 | 13.89256678 | 14.19532216 | 14.75413556 | 15.46997718 | 16.31554106 | 16.8378366 | 17.22483458 | 17.85698505 | 18.31136265 |
| 57–57.99 months | -2.391381273 | 15.45545692 | 0.074643374 | 13.69339739 | 13.87808525 | 14.1797919 | 14.73791559 | 15.45545692 | 16.30719914 | 16.83580365 | 17.22880383 | 17.87335318 | 18.33875356 |
| 58–58.99 months | -2.468032491 | 15.44213961 | 0.075072264 | 13.68036242 | 13.86425959 | 14.16502885 | 14.72265501 | 15.44213961 | 16.30041561 | 16.83563223 | 17.23492502 | 17.89251642 | 18.36957256 |
| 59–59.99 months | -2.542781541 | 15.43003207 | 0.075522104 | 13.66789962 | 13.85108308 | 14.15103287 | 14.70836004 | 15.43003207 | 16.29517994 | 16.83729272 | 17.24315148 | 17.91439894 | 18.40372671 |
| 60–60.99 months | -2.61516595 | 15.41914163 | 0.07599225 | 13.65599683 | 13.83854804 | 14.13780261 | 14.69503764 | 15.41914163 | 16.29148397 | 16.84075838 | 17.25343909 | 17.93892524 | 18.44112021 |
| 61–61.99 months | -2.684789516 | 15.40947356 | 0.076482128 | 13.64464353 | 13.82664746 | 14.1253362 | 14.68269244 | 15.40947356 | 16.28931904 | 16.84600319 | 17.26574515 | 17.96602144 | 18.48165813 |
| 62–62.99 months | -2.751316949 | 15.40103139 | 0.076991232 | 13.63383056 | 13.81537489 | 14.11363117 | 14.67132735 | 15.40103139 | 16.28867619 | 16.85300198 | 17.28002846 | 17.99561523 | 18.52524599 |
| 63–63.99 months | -2.81445945 | 15.39381785 | 0.077519149 | 13.62354907 | 13.8047237 | 14.10268433 | 14.66094403 | 15.39381785 | 16.28954723 | 16.86173124 | 17.29624981 | 18.02763543 | 18.57178832 |
| 64–64.99 months | -2.87402476 | 15.38783094 | 0.07806539 | 13.61379452 | 13.79469004 | 14.09249299 | 14.65154144 | 15.38783094 | 16.29191982 | 16.87216519 | 17.31436954 | 18.06201396 | 18.62119533 |
| 65–65.99 months | -2.92984048 | 15.38306945 | 0.078629592 | 13.60456106 | 13.78526882 | 14.08305345 | 14.64311821 | 15.38306945 | 16.29578396 | 16.88428085 | 17.33435063 | 18.09868317 | 18.67337395 |
| 66–66.99 months | -2.981796828 | 15.37952958 | 0.079211369 | 13.595845 | 13.77645627 | 14.0743621 | 14.63567131 | 15.37952958 | 16.30112773 | 16.89805459 | 17.35615653 | 18.13757754 | 18.72823379 |
| 67–67.99 months | -3.029831343 | 15.37720582 | 0.079810334 | 13.58764387 | 13.76824936 | 14.06641528 | 14.62919656 | 15.37720582 | 16.30793819 | 16.91346275 | 17.37975148 | 18.17863327 | 18.78568583 |
| 68–68.99 months | -3.073924224 | 15.37609107 | 0.080426086 | 13.57995642 | 13.76064574 | 14.05920932 | 14.62368881 | 15.37609107 | 16.31020135 | 16.93048153 | 17.40510042 | 18.22178824 | 18.84564261 |
| 69–69.99 months | -3.114093476 | 15.37617677 | 0.081058206 | 13.57278245 | 13.75364373 | 14.05274063 | 14.619142 | 15.37617677 | 16.32590217 | 16.94908693 | 17.43216882 | 18.26698191 | 18.90801826 |
| 70–70.99 months | -3.15039004 | 15.37745304 | 0.081706249 | 13.56612272 | 13.7472423 | 14.04700569 | 14.61554938 | 15.37745304 | 16.33702456 | 16.96925461 | 17.46092258 | 18.31415529 | 18.97272855 |
| 71–71.99 months | -3.182893018 | 15.37990886 | 0.082369741 | 13.55997887 | 13.74144099 | 14.04200114 | 14.6129036 | 15.37990886 | 16.34955145 | 16.99095993 | 17.49132795 | 18.36325085 | 19.03969094 |
| 72–72.99 months | -3.21170511 | 15.38353217 | 0.083048178 | 13.55435329 | 13.73623987 | 14.03772376 | 14.61119682 | 15.38353217 | 16.36346484 | 17.01417786 | 17.52335144 | 18.41421242 | 19.10882456 |

Table 24. L, M, and S parameters and selected smoothed percentiles for body mass index (BMI, kilograms/meters²) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | | |
|-------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | L | M | S | 3rd | 5th | 10th | 25th | 50th | 75th | 85th | 90th | 95th | 97th |
| Boys—Con. | | | | | | | | | | | | | |
| 73–73.99 months | -3.23694834 | 15.38831005 | 0.083741021 | 13.54924901 | 13.73163946 | 14.03417051 | 14.61042085 | 15.38831005 | 16.37874588 | 17.03888299 | 17.55695978 | 18.46698511 | 19.18005024 |
| 74–74.99 months | -3.25876011 | 15.39422883 | 0.08444477 | 13.54466964 | 13.72764072 | 14.03133851 | 14.61056719 | 15.39422883 | 16.39537493 | 17.06504953 | 17.59211982 | 18.52151524 | 19.25329044 |
| 75–75.99 months | -3.277281546 | 15.40127496 | 0.085167651 | 13.54061839 | 13.72424433 | 14.02922475 | 14.61162737 | 15.40127496 | 16.41333266 | 17.09265223 | 17.62879914 | 18.57774996 | 19.32846782 |
| 76–76.99 months | -3.292683774 | 15.40943252 | 0.085900184 | 13.53710097 | 13.72145289 | 14.02782718 | 14.61359223 | 15.40943252 | 16.43259653 | 17.12166319 | 17.66696377 | 18.63563816 | 19.4055104 |
| 77–77.99 months | -3.305124073 | 15.41868691 | 0.086644667 | 13.53412147 | 13.71926775 | 14.02714319 | 14.61645307 | 15.41868691 | 16.45314588 | 17.15205629 | 17.70658129 | 18.69512904 | 19.48434431 |
| 78–78.99 months | -3.314768951 | 15.42902273 | 0.087400421 | 13.53168472 | 13.71769094 | 14.0271705 | 14.62020097 | 15.42902273 | 16.47495885 | 17.18380454 | 17.74761885 | 18.75617288 | 19.56489823 |
| 79–79.99 months | -3.321785992 | 15.44042439 | 0.088166744 | 13.52979573 | 13.71672458 | 14.0279707 | 14.62482705 | 15.44042439 | 16.49801329 | 17.21688072 | 17.7900437 | 18.81872078 | 19.64710224 |
| 80–80.99 months | -3.326345795 | 15.45287581 | 0.088942897 | 13.52845994 | 13.71637124 | 14.02935081 | 14.63032238 | 15.45287581 | 16.52228624 | 17.25125697 | 17.83382275 | 18.88272474 | 19.7308886 |
| 81–81.99 months | -3.328602731 | 15.46636218 | 0.089728202 | 13.5276813 | 13.71663233 | 14.03149952 | 14.63667844 | 15.46636218 | 16.54775649 | 17.28690708 | 17.87892434 | 18.948137 | 19.81618799 |
| 82–82.99 months | -3.328725277 | 15.48086704 | 0.090521875 | 13.52746565 | 13.71751078 | 14.03435159 | 14.64388639 | 15.48086704 | 16.57440029 | 17.32380254 | 17.9253152 | 19.01491107 | 19.902936 |
| 83–83.99 months | -3.32687018 | 15.49637465 | 0.091323162 | 13.52781794 | 13.71900887 | 14.03790521 | 14.65193763 | 15.49637465 | 16.6021948 | 17.3619157 | 17.97296286 | 19.08300081 | 19.99106797 |
| 84–84.99 months | -3.323188896 | 15.51286936 | 0.092131305 | 13.52874305 | 13.72112886 | 14.0421586 | 14.66082372 | 15.51286936 | 16.6311172 | 17.40121891 | 18.02183493 | 19.15236073 | 20.08052042 |
| 85–85.99 months | -3.317827016 | 15.53033563 | 0.092945544 | 13.53024568 | 13.72387293 | 14.04710998 | 14.67053629 | 15.53033563 | 16.66114466 | 17.44168456 | 18.07189919 | 19.22294589 | 20.17123104 |
| 86–86.99 months | -3.310923871 | 15.54875807 | 0.093765118 | 13.53233036 | 13.72724315 | 14.05275762 | 14.68106712 | 15.54875807 | 16.69225445 | 17.48328513 | 18.12312353 | 19.29471191 | 20.2631386 |
| 87–87.99 months | -3.302612272 | 15.56812143 | 0.09458927 | 13.53500147 | 13.7312415 | 14.05909975 | 14.69240809 | 15.56812143 | 16.72442396 | 17.52599317 | 18.17547605 | 19.36761493 | 20.35618297 |
| 88–88.99 months | -3.293018361 | 15.58841065 | 0.095417247 | 13.53826314 | 13.73586983 | 14.06613458 | 14.7045512 | 15.58841065 | 16.7576307 | 17.56978138 | 18.22892501 | 19.44161165 | 20.45030507 |
| 89–89.99 months | -3.282260813 | 15.60961101 | 0.096248301 | 13.54211938 | 13.7411299 | 14.0738604 | 14.71748869 | 15.60961101 | 16.79185246 | 17.61462266 | 18.28343882 | 19.51665894 | 20.54544624 |
| 90–90.99 months | -3.270454609 | 15.63170735 | 0.097081694 | 13.54657375 | 13.74702309 | 14.08227508 | 14.73121238 | 15.63170735 | 16.82706672 | 17.66048985 | 18.33898626 | 19.59271539 | 20.64155132 |
| 91–91.99 months | -3.257703616 | 15.65468563 | 0.097916698 | 13.55162988 | 13.753551 | 14.091377 | 14.74571498 | 15.65468563 | 16.86325188 | 17.70735632 | 18.39553611 | 19.6697383 | 20.73856241 |
| 92–92.99 months | -3.244108214 | 15.67853139 | 0.098752593 | 13.55729098 | 13.7607148 | 14.10116411 | 14.76098876 | 15.67853139 | 16.90038609 | 17.75519541 | 18.45305756 | 19.74768666 | 20.83642509 |
| 93–93.99 months | -3.229761713 | 15.70323052 | 0.099588675 | 13.56356006 | 13.76851558 | 14.1116344 | 14.77702622 | 15.70323052 | 16.93844478 | 17.80398077 | 18.51151998 | 19.82651963 | 20.93508525 |
| 94–94.99 months | -3.214751287 | 15.72876911 | 0.100424251 | 13.57043987 | 13.77695423 | 14.12278578 | 14.79381994 | 15.72876911 | 16.97741575 | 17.85368626 | 18.57089304 | 19.90619689 | 21.03448975 |
| 95–95.99 months | -3.199158184 | 15.75513347 | 0.101258643 | 13.57793291 | 13.78603145 | 14.13461608 | 14.81136258 | 15.75513347 | 17.01726889 | 17.90428602 | 18.63114669 | 19.98667859 | 21.13458634 |
| 96–96.99 months | -3.18305795 | 15.78231007 | 0.102091189 | 13.58604144 | 13.79574779 | 14.14712305 | 14.82964685 | 15.78231007 | 17.05798645 | 17.95575444 | 18.69225117 | 20.06792538 | 21.2353237 |
| 97–97.99 months | -3.166520664 | 15.8102856 | 0.102921245 | 13.59476742 | 13.80610355 | 14.16030433 | 14.84866554 | 15.8102856 | 17.09954792 | 18.00806622 | 18.75417705 | 20.1498984 | 21.33665138 |
| 98–98.99 months | -3.1496103 | 15.83904708 | 0.103748189 | 13.60411246 | 13.81709878 | 14.17415743 | 14.86841153 | 15.83904708 | 17.14193325 | 18.06119653 | 18.81689537 | 20.23255928 | 21.4385195 |
| 99–99.99 months | -3.132389637 | 15.86858123 | 0.104571386 | 13.61407844 | 13.82873375 | 14.18867999 | 14.88887764 | 15.86858123 | 17.18512191 | 18.1151201 | 18.8803769 | 20.31587026 | 21.54088032 |
| 100–100.99 months | -3.114911153 | 15.89887562 | 0.105390269 | 13.62466611 | 13.84100784 | 14.20386916 | 14.91005687 | 15.89887562 | 17.22909475 | 18.16981303 | 18.94459357 | 20.39979379 | 21.64368493 |
| 101–101.99 months | -3.097226399 | 15.92991765 | 0.106204258 | 13.63587653 | 13.85392068 | 14.21972223 | 14.93194218 | 15.92991765 | 17.2738323 | 18.22525119 | 19.00951733 | 20.48429323 | 21.74688677 |
| 102–102.99 months | -3.079383079 | 15.96169481 | 0.107012788 | 13.64771054 | 13.8647714 | 14.23623642 | 14.95452659 | 15.96169481 | 17.31931519 | 18.28141055 | 19.07512019 | 20.56933216 | 21.85043987 |
| 103–103.99 months | -3.061423765 | 15.99419489 | 0.107815327 | 13.66016853 | 13.88166013 | 14.25340873 | 14.97780313 | 15.99419489 | 17.36552463 | 18.33826774 | 19.14137485 | 20.6548748 | 21.95429887 |
| 104–104.99 months | -3.043386071 | 16.02740607 | 0.108611374 | 13.67325038 | 13.89648454 | 14.27123591 | 15.00176488 | 16.02740607 | 17.4124424 | 18.39579999 | 19.20825462 | 20.74088584 | 22.05841878 |
| 105–105.99 months | -3.025310003 | 16.0613159 | 0.109400388 | 13.68695684 | 13.91194439 | 14.28971516 | 15.02640489 | 16.0613159 | 17.46004925 | 18.45398355 | 19.27573205 | 20.82733059 | 22.16275742 |
| 106–106.99 months | -3.007225737 | 16.09591292 | 0.110181915 | 13.70128712 | 13.92803786 | 14.30884292 | 15.05171626 | 16.09591292 | 17.50832768 | 18.51279647 | 19.34378135 | 20.9141748 | 22.26727123 |
| 107–107.99 months | -2.989164598 | 16.13118532 | 0.110955478 | 13.71624103 | 13.94476358 | 14.32861592 | 15.07769209 | 16.13118532 | 17.5525951 | 18.57221621 | 19.41237631 | 21.00138483 | 22.37191887 |
| 108–108.99 months | -2.971148225 | 16.16712234 | 0.111720691 | 13.73181676 | 13.9621189 | 14.3490301 | 15.10432556 | 16.16712234 | 17.60682848 | 18.63222223 | 19.48149248 | 21.08892746 | 22.47665729 |
| 109–109.99 months | -2.953208047 | 16.20371168 | 0.112477059 | 13.7480147 | 13.98010297 | 14.37008248 | 15.13160968 | 16.20371168 | 17.65701563 | 18.69279128 | 19.55110329 | 21.17677023 | 22.58144893 |
| 110–110.99 months | -2.935363951 | 16.24094239 | 0.1132242 | 13.76483325 | 13.99871328 | 14.39176909 | 15.15953759 | 16.24094239 | 17.70780444 | 18.75390266 | 19.62118443 | 21.26488107 | 22.68625363 |
| 111–111.99 months | -2.917635157 | 16.27880346 | 0.113961734 | 13.78227084 | 14.01794738 | 14.41408598 | 15.1881024 | 16.27880346 | 17.75917825 | 18.81553565 | 19.69171163 | 21.3532285 | 22.79103265 |
| 112–112.99 months | -2.900039803 | 16.31728385 | 0.114689291 | 13.80032593 | 14.03780282 | 14.43702918 | 15.21279272 | 16.31728385 | 17.81112044 | 18.87766958 | 19.76266083 | 21.44178165 | 22.89574847 |
| 113–113.99 months | -2.882593796 | 16.35637267 | 0.115406523 | 13.81899666 | 14.0582769 | 14.46059456 | 15.2471151 | 16.35637267 | 17.86361469 | 18.94028419 | 19.83400841 | 21.53051015 | 23.00036429 |
| 114–114.99 months | -2.865311266 | 16.39605916 | 0.116113097 | 13.83828098 | 14.07936677 | 14.48477791 | 15.27754914 | 16.39605916 | 17.91664493 | 19.00335954 | 19.90573115 | 21.61938426 | 23.10484416 |
| 115–115.99 months | -2.848204697 | 16.43633265 | 0.116808702 | 13.85817663 | 14.10106937 | 14.50957485 | 15.30859238 | 16.43633265 | 17.97019532 | 19.06687603 | 19.97780623 | 21.70837477 | 23.20915296 |
| 116–116.99 months | -2.831285052 | 16.47718256 | 0.117493042 | 13.87868113 | 14.1233815 | 14.53498094 | 15.34023785 | 16.47718256 | 18.02425026 | 19.13081436 | 20.05021121 | 21.79745308 | 23.31325641 |
| 117–117.99 months | -2.814561189 | 16.51859843 | 0.11816584 | 13.8997918 | 14.14629977 | 14.56099157 | 15.37247856 | 16.51859843 | 18.0787944 | 19.19515554 | 20.12292406 | 21.88659115 | 23.41712109 |
| 118–118.99 months | -2.79804347 | 16.56056987 | 0.118826835 | 13.92150576 | 14.16982063 | 14.58760204 | 15.40530752 | 16.56056987 | 18.13381258 | 19.25988094 | 20.19592313 | 21.97576153 | 23.5207144 |
| 119–119.99 months | -2.781736856 | 16.60308661 | 0.119475785 | 13.94381995 | 14.19394037 | 14.61480754 | 15.43871766 | 16.60308661 | 18.1892899 | 19.3249722 | 20.26918717 | 22.06493737 | 23.62400462 |
| 120–120.99 months | -2.765648008 | 16.64613844 | 0.120112464 | 13.96673109 | 14.21865508 | 14.64260311 | 15.47270195 | 16.64613844 | 18.24521166 | 19.3904113 | 20.34269534 | 22.15409238 | 23.72696086 |
| 121–121.99 months | -2.749782197 | 16.68971518 | 0.120736656 | 13.99023581 | 14.24396081 | 14.67098376 | 15.50725326 | 16.68971518 | 18.3015633 | 19.45618042 | 20.41642709 | 22.24320091 | 23.82955322 |

Table 24. *L*, *M*, and *S* parameters and selected smoothed percentiles for body mass index (BMI, kilograms/meters²) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | | |
|-------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>L</i> | <i>M</i> | <i>S</i> | 3rd | 5th | 10th | 25th | 50th | 75th | 85th | 90th | 95th | 97th |
| Boys—Con. | | | | | | | | | | | | | |
| 122–122.99 months | -2.734142443 | 16.73380695 | 0.121348181 | 14.01433021 | 14.26985313 | 14.6999442 | 15.5423645 | 16.73380695 | 18.35833084 | 19.52226247 | 20.49036263 | 22.33223786 | 23.93175206 |
| 123–123.99 months | -2.718732873 | 16.77840363 | 0.121946849 | 14.0390107 | 14.29632789 | 14.72947925 | 15.57802849 | 16.77840363 | 18.41549995 | 19.58864006 | 20.56448202 | 22.42117875 | 24.0335295 |
| 124–124.99 months | -2.703555506 | 16.82349538 | 0.122532501 | 14.06427317 | 14.32338048 | 14.75958347 | 15.61423805 | 16.82349538 | 18.4730569 | 19.65529649 | 20.63876611 | 22.5099997 | 24.1348579 |
| 125–125.99 months | -2.688611957 | 16.86907238 | 0.123104991 | 14.09011344 | 14.35100623 | 14.79025137 | 15.65098595 | 16.86907238 | 18.53098805 | 19.72221531 | 20.71319602 | 22.59867744 | 24.23571063 |
| 126–126.99 months | -2.673903164 | 16.91512487 | 0.123664186 | 14.11652711 | 14.37920031 | 14.8214773 | 15.68826493 | 16.91512487 | 18.58928 | 19.78938034 | 20.78775327 | 22.68718928 | 24.33606191 |
| 127–127.99 months | -2.659429443 | 16.96164317 | 0.124209969 | 14.14350962 | 14.40795771 | 14.85325552 | 15.72606768 | 16.96164317 | 18.64791953 | 19.85677572 | 20.86241981 | 22.77551316 | 24.43588681 |
| 128–128.99 months | -2.645190534 | 17.00861766 | 0.124742239 | 14.17105623 | 14.43727329 | 14.88558018 | 15.76438688 | 17.00861766 | 18.70689364 | 19.92438591 | 20.93717795 | 22.86362762 | 24.53516127 |
| 129–129.99 months | -2.631185649 | 17.05603879 | 0.125260905 | 14.19916203 | 14.46714175 | 14.91844531 | 15.80321513 | 17.05603879 | 18.76618951 | 19.99219565 | 21.01201043 | 22.95151182 | 24.63386207 |
| 130–130.99 months | -2.617413511 | 17.10389705 | 0.125765895 | 14.22782193 | 14.49755765 | 14.95184482 | 15.84254502 | 17.10389705 | 18.82579454 | 20.06019002 | 21.08690037 | 23.03914551 | 24.73196683 |
| 131–131.99 months | -2.603872392 | 17.15218302 | 0.126257147 | 14.25703066 | 14.52851537 | 14.98577251 | 15.8823691 | 17.15218302 | 18.88569633 | 20.12835437 | 21.1618313 | 23.12650908 | 24.82945404 |
| 132–132.99 months | -2.590560148 | 17.20088732 | 0.126734613 | 14.28678279 | 14.56000917 | 15.02022206 | 15.92267985 | 17.20088732 | 18.94588267 | 20.19667437 | 21.23678716 | 23.21358351 | 24.92630305 |
| 133–133.99 months | -2.577474253 | 17.25000062 | 0.12719826 | 14.31707271 | 14.59203313 | 15.05518706 | 15.96346973 | 17.25000062 | 19.00634155 | 20.265136 | 21.31175226 | 23.30035043 | 25.02249405 |
| 134–134.99 months | -2.564611831 | 17.29951367 | 0.127648067 | 14.34789463 | 14.62458122 | 15.09066095 | 16.00473115 | 17.29951367 | 19.06706116 | 20.33372554 | 21.38671134 | 23.38679204 | 25.11800807 |
| 135–135.99 months | -2.551969684 | 17.34941726 | 0.128084023 | 14.37924262 | 14.65764722 | 15.1266371 | 16.04645648 | 17.34941726 | 19.12802987 | 20.40242956 | 21.46164953 | 23.4728912 | 25.21282703 |
| 136–136.99 months | -2.539539972 | 17.39970308 | 0.128506192 | 14.41110933 | 14.69122381 | 15.16310811 | 16.08863812 | 17.39970308 | 19.18923776 | 20.4712365 | 21.53655365 | 23.55863129 | 25.3069313 |
| 137–137.99 months | -2.527325681 | 17.45036072 | 0.128914497 | 14.44349038 | 14.72530601 | 15.20006805 | 16.13126821 | 17.45036072 | 19.25067129 | 20.54013114 | 21.61140764 | 23.64399652 | 25.40030815 |
| 138–138.99 months | -2.515320235 | 17.50138161 | 0.129309001 | 14.47637861 | 14.75988661 | 15.23750958 | 16.17433905 | 17.50138161 | 19.31232029 | 20.60910189 | 21.6861986 | 23.72897155 | 25.49294066 |
| 139–139.99 months | -2.503519447 | 17.55275674 | 0.129689741 | 14.50976741 | 14.79495883 | 15.27542561 | 16.21784281 | 17.55275674 | 19.37417388 | 20.6781365 | 21.76091323 | 23.81354171 | 25.58481418 |
| 140–140.99 months | -2.491918934 | 17.60447714 | 0.130056765 | 14.54365005 | 14.83051578 | 15.31380892 | 16.26177162 | 17.60447714 | 19.43622137 | 20.74722303 | 21.83553865 | 23.89769296 | 25.67591492 |
| 141–141.99 months | -2.480514136 | 17.6565339 | 0.130410133 | 14.57801961 | 14.86655039 | 15.3526522 | 16.30611758 | 17.6565339 | 19.49845226 | 20.81634983 | 21.91006237 | 23.98141187 | 25.76622996 |
| 142–142.99 months | -2.469300331 | 17.70891811 | 0.130749913 | 14.61286903 | 14.90305549 | 15.39194804 | 16.35087272 | 17.70891811 | 19.5608562 | 20.88550554 | 21.98447229 | 24.06468566 | 25.85574725 |
| 143–143.99 months | -2.458272656 | 17.76162094 | 0.131076187 | 14.6481911 | 14.94002374 | 15.43168891 | 16.39602903 | 17.76162094 | 19.62342306 | 20.95467909 | 22.05875672 | 24.14750216 | 25.94445561 |
| 144–144.99 months | -2.447426113 | 17.81463359 | 0.131389042 | 14.68397844 | 14.97744768 | 15.47186716 | 16.44157847 | 17.81463359 | 19.68614286 | 21.02385969 | 22.13290433 | 24.22984982 | 26.0323447 |
| 145–145.99 months | -2.436755595 | 17.86794729 | 0.131688579 | 14.72022354 | 15.01531973 | 15.51247506 | 16.48751291 | 17.86794729 | 19.74900579 | 21.09303687 | 22.20690421 | 24.31171774 | 26.11940509 |
| 146–146.99 months | -2.426255887 | 17.92155332 | 0.131974905 | 14.75691872 | 15.05363215 | 15.55350476 | 16.53382421 | 17.92155332 | 19.81200224 | 21.1622004 | 22.28074585 | 24.39309562 | 26.20562819 |
| 147–147.99 months | -2.415921689 | 17.97544299 | 0.132248138 | 14.79405616 | 15.09327707 | 15.5949483 | 16.58050415 | 17.97544299 | 19.87512275 | 21.23134038 | 22.35441912 | 24.47397382 | 26.2910063 |
| 148–148.99 months | -2.405747619 | 18.02960765 | 0.132508403 | 14.83162791 | 15.13154651 | 15.63679762 | 16.62754449 | 18.02960765 | 19.93835804 | 21.30044717 | 22.42791427 | 24.55434332 | 26.37553258 |
| 149–149.99 months | -2.395728233 | 18.08403868 | 0.132755834 | 14.86962583 | 15.17113234 | 15.67904455 | 16.67493692 | 18.08403868 | 20.001699 | 21.36951141 | 22.50122197 | 24.63419572 | 26.45920106 |
| 150–150.99 months | -2.385585029 | 18.1387275 | 0.132990575 | 14.90804168 | 15.2111263 | 15.72168083 | 16.72267307 | 18.1387275 | 20.06513669 | 21.43852405 | 22.57433325 | 24.71352325 | 26.54200665 |
| 151–151.99 months | -2.376131459 | 18.19366555 | 0.133212776 | 14.94686707 | 15.25152001 | 15.76469808 | 16.77074454 | 18.19366555 | 20.12866232 | 21.5074763 | 22.64723955 | 24.79231881 | 26.62394515 |
| 152–152.99 months | -2.366542942 | 18.24884431 | 0.133422595 | 14.98609343 | 15.29230496 | 15.80808782 | 16.81914286 | 18.24884431 | 20.1922673 | 21.57635964 | 22.7199327 | 24.87057587 | 26.7050132 |
| 153–153.99 months | -2.357086871 | 18.3042553 | 0.133620197 | 15.0257121 | 15.33347251 | 15.85184148 | 16.86785954 | 18.3042553 | 20.25594317 | 21.64516586 | 22.79240491 | 24.9482886 | 26.78520835 |
| 154–154.99 months | -2.347757625 | 18.35989003 | 0.133805756 | 15.06571426 | 15.37501389 | 15.89595038 | 16.91688599 | 18.35989003 | 20.31968165 | 21.71388701 | 22.86464879 | 25.02545175 | 26.86452902 |
| 155–155.99 months | -2.338549576 | 18.41574009 | 0.133979452 | 15.10609095 | 15.41692023 | 15.94040572 | 16.96621369 | 18.41574009 | 20.38347161 | 21.78251541 | 22.93665733 | 25.10206705 | 26.94297451 |
| 156–156.99 months | -2.3294571 | 18.47179706 | 0.13414147 | 15.14683307 | 15.4591825 | 15.98519864 | 17.01583373 | 18.47179706 | 20.44731409 | 21.85104367 | 23.0084239 | 25.17811163 | 27.02054498 |
| 157–157.99 months | -2.320474586 | 18.52805255 | 0.134292005 | 15.1879314 | 15.50179159 | 16.03032014 | 17.06573761 | 18.52805255 | 20.51119228 | 21.91946467 | 23.07994228 | 25.25360108 | 27.09724149 |
| 158–158.99 months | -2.311596446 | 18.5844982 | 0.134431256 | 15.22937658 | 15.54473823 | 16.07576115 | 17.11591649 | 18.5844982 | 20.57510153 | 21.98777156 | 23.15120662 | 25.32852641 | 27.173066 |
| 159–159.99 months | -2.302817124 | 18.64112567 | 0.134559427 | 15.27115913 | 15.58801305 | 16.12151248 | 17.16636153 | 18.64112567 | 20.63903434 | 22.05595776 | 23.22221145 | 25.4028856 | 27.24802132 |
| 160–160.99 months | -2.294131107 | 18.69792663 | 0.134676731 | 15.31326943 | 15.63160658 | 16.16756484 | 17.21706384 | 18.69792663 | 20.70298336 | 22.12401698 | 23.2929517 | 25.47667722 | 27.32211115 |
| 161–161.99 months | -2.285532933 | 18.75489278 | 0.134783385 | 15.35569774 | 15.67550919 | 16.21390888 | 17.26801449 | 18.75489278 | 20.76694139 | 22.19194317 | 23.36342268 | 25.54990054 | 27.39534011 |
| 162–162.99 months | -2.277017201 | 18.81201584 | 0.134879611 | 15.39843418 | 15.71971118 | 16.2605351 | 17.31920447 | 18.81201584 | 20.83090139 | 22.25973057 | 23.43362008 | 25.62255542 | 27.46771366 |
| 163–163.99 months | -2.268578584 | 18.86928753 | 0.134965637 | 15.44146877 | 15.7642027 | 16.30743394 | 17.37062472 | 18.86928753 | 20.89485646 | 22.32737368 | 23.50353999 | 25.6946424 | 27.53923819 |
| 164–164.99 months | -2.260211837 | 18.92669959 | 0.135041695 | 15.48479139 | 15.80897382 | 16.35459573 | 17.42226614 | 18.92669959 | 20.95879983 | 22.39486727 | 23.57317887 | 25.76616263 | 27.60992094 |
| 165–165.99 months | -2.251911809 | 18.98424378 | 0.135108024 | 15.52839182 | 15.85401448 | 16.40201071 | 17.47411956 | 18.98424378 | 21.02272489 | 22.46220636 | 23.64253356 | 25.83711794 | 27.67977007 |
| 166–166.99 months | -2.243673453 | 19.04191185 | 0.135164867 | 15.57225971 | 15.89931451 | 16.44966902 | 17.52617573 | 19.04191185 | 21.08662518 | 22.52938625 | 23.71160129 | 25.90751079 | 27.74879463 |
| 167–167.99 months | -2.235491842 | 19.09969557 | 0.135212469 | 15.6163846 | 15.94486363 | 16.49756071 | 17.57842539 | 19.09969557 | 21.15049434 | 22.5964025 | 23.78037969 | 25.97734428 | 27.81700453 |
| 168–168.99 months | -2.227362173 | 19.15758672 | 0.135251083 | 15.66075591 | 15.99065148 | 16.54567574 | 17.63085916 | 19.15758672 | 21.21432619 | 22.66325092 | 23.84886673 | 26.04662217 | 27.88441062 |
| 169–169.99 months | -2.21927979 | 19.21557707 | 0.135280963 | 15.70536296 | 16.03666757 | 16.59400398 | 17.68346764 | 19.21557707 | 21.27811465 | 22.7299276 | 23.91706081 | 26.11534887 | 27.95102462 |
| 170–170.99 months | -2.211240187 | 19.27365839 | 0.135302371 | 15.75019496 | 16.0829013 | 16.64253518 | 17.73624136 | 19.27365839 | 21.34185379 | 22.79642886 | 23.98496068 | 26.18352944 | 28.01685913 |

Table 24. L, M, and S parameters and selected smoothed percentiles for body mass index (BMI, kilograms/meters²) by sex and age: 2 to 20 years—Con.

| Sex and age | Percentile | | | | | | | | | | | | |
|-------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | L | M | S | 3rd | 5th | 10th | 25th | 50th | 75th | 85th | 90th | 95th | 97th |
| Boys—Con. | | | | | | | | | | | | | |
| 171–171.99 months | -2.203239029 | 19.33182247 | 0.135315568 | 15.79524102 | 16.129342 | 16.69125904 | 17.78917078 | 19.33182247 | 21.40553781 | 22.86275131 | 24.05256549 | 26.25116959 | 28.08192768 |
| 172–172.99 months | -2.195272161 | 19.39006106 | 0.135320824 | 15.84049013 | 16.17597888 | 16.74016514 | 17.84224628 | 19.39006106 | 21.46916104 | 22.92889179 | 24.11987476 | 26.31827569 | 28.14624467 |
| 173–173.99 months | -2.187335625 | 19.44836594 | 0.135318407 | 15.8859312 | 16.22280106 | 16.78924297 | 17.8954582 | 19.44836594 | 21.53271791 | 22.99484741 | 24.18688841 | 26.38485476 | 28.20982542 |
| 174–174.99 months | -2.179425674 | 19.50672885 | 0.135308594 | 15.93155303 | 16.26979755 | 16.83848195 | 17.9487968 | 19.50672885 | 21.596203 | 23.06061552 | 24.25360674 | 26.45091448 | 28.27268613 |
| 175–175.99 months | -2.171538789 | 19.56514153 | 0.135291662 | 15.97734432 | 16.31695728 | 16.8878714 | 18.00225228 | 19.56514153 | 21.659611 | 23.12619375 | 24.3200304 | 26.51646321 | 28.33484391 |
| 176–176.99 months | -2.163671689 | 19.62359571 | 0.135267891 | 16.02329371 | 16.3642691 | 16.93740054 | 18.05581474 | 19.62359571 | 21.72293673 | 23.19157996 | 24.38616048 | 26.58150994 | 28.39631678 |
| 177–177.99 months | -2.155821357 | 19.6820831 | 0.135237567 | 16.0693897 | 16.41172173 | 16.98705851 | 18.10947424 | 19.6820831 | 21.78617511 | 23.25677226 | 24.4519984 | 26.64606434 | 28.45712363 |
| 178–178.99 months | -2.147985046 | 19.74059538 | 0.135200976 | 16.11562074 | 16.45930384 | 17.03683437 | 18.16322076 | 19.74059538 | 21.84932117 | 23.32176902 | 24.517546 | 26.71013675 | 28.51728428 |
| 179–179.99 months | -2.140160305 | 19.7991242 | 0.135158409 | 16.1619752 | 16.50700399 | 17.08671707 | 18.21704418 | 19.7991242 | 21.91237008 | 23.38656886 | 24.5828055 | 26.77373817 | 28.57681946 |
| 180–180.99 months | -2.132344989 | 19.85766121 | 0.135110159 | 16.20844134 | 16.55481067 | 17.13669551 | 18.27093434 | 19.85766121 | 21.97531708 | 23.45117065 | 24.64777949 | 26.83688026 | 28.63575076 |
| 181–181.99 months | -2.124537282 | 19.916198 | 0.135056522 | 16.25500735 | 16.60271228 | 17.18675845 | 18.32488097 | 19.916198 | 22.03815755 | 23.5155735 | 24.71247097 | 26.89957537 | 28.69410072 |
| 182–182.99 months | -2.116735712 | 19.97472615 | 0.134997797 | 16.30166137 | 16.65069714 | 17.23689462 | 18.37887373 | 19.97472615 | 22.10088696 | 23.57977678 | 24.77688329 | 26.96183652 | 28.75189275 |
| 183–183.99 months | -2.108939167 | 20.03323719 | 0.134934285 | 16.34839144 | 16.69875348 | 17.28709261 | 18.4329022 | 20.03323719 | 22.16350089 | 23.6437801 | 24.84102024 | 27.02367739 | 28.80915118 |
| 184–184.99 months | -2.10114692 | 20.09172262 | 0.134866291 | 16.39518554 | 16.74686947 | 17.33734097 | 18.48695587 | 20.09172262 | 22.22599501 | 23.70758332 | 24.90488595 | 27.08511234 | 28.86590125 |
| 185–185.99 months | -2.093358637 | 20.15017387 | 0.134794121 | 16.44203157 | 16.79503318 | 17.38762812 | 18.54102414 | 20.15017387 | 22.2883651 | 23.77118654 | 24.96848498 | 27.14615643 | 28.92216908 |
| 186–186.99 months | -2.085574403 | 20.20858236 | 0.134718085 | 16.4889174 | 16.84323264 | 17.43794242 | 18.59509632 | 20.20858236 | 22.35060703 | 23.83459013 | 25.03182226 | 27.20682538 | 28.97798172 |
| 187–187.99 months | -2.077794735 | 20.26693944 | 0.134638494 | 16.53583079 | 16.89145577 | 17.48827215 | 18.64916164 | 20.26693944 | 22.41271676 | 23.89779468 | 25.09490311 | 27.2671356 | 29.03336709 |
| 188–188.99 months | -2.070020599 | 20.32523642 | 0.134555663 | 16.58275947 | 16.93969043 | 17.53860547 | 18.70320922 | 20.32523642 | 22.47469037 | 23.96080104 | 25.15773327 | 27.32710417 | 29.08835404 |
| 189–189.99 months | -2.062253431 | 20.38346455 | 0.13446991 | 16.62969112 | 16.98792443 | 17.58893048 | 18.7572281 | 20.38346455 | 22.53652401 | 24.02361032 | 25.22031884 | 27.38674888 | 29.14297232 |
| 190–190.99 months | -2.054495145 | 20.44161501 | 0.134381553 | 16.67661334 | 17.03614547 | 17.63923518 | 18.8112072 | 20.44161501 | 22.59821392 | 24.08622386 | 25.28266636 | 27.4460882 | 29.19725256 |
| 191–191.99 months | -2.046748156 | 20.49967894 | 0.134290916 | 16.72351369 | 17.08434122 | 17.68950749 | 18.86513537 | 20.49967894 | 22.65975645 | 24.14864327 | 25.34478272 | 27.50514126 | 29.25122631 |
| 192–192.99 months | -2.039015385 | 20.5576474 | 0.134198323 | 16.77037969 | 17.13249925 | 17.73973524 | 18.91900132 | 20.5576474 | 22.72114803 | 24.21087038 | 25.40667527 | 27.56392793 | 29.30492601 |
| 193–193.99 months | -2.031300282 | 20.6155114 | 0.134104101 | 16.81719878 | 17.18060709 | 17.78990616 | 18.97279368 | 20.6155114 | 22.78238517 | 24.2729073 | 25.46835171 | 27.62246873 | 29.35838499 |
| 194–194.99 months | -2.023606828 | 20.67326189 | 0.134008581 | 16.86395838 | 17.22865219 | 17.8400079 | 19.02650098 | 20.67326189 | 22.84346448 | 24.33475639 | 25.52982017 | 27.68078489 | 29.41163748 |
| 195–195.99 months | -2.015942013 | 20.73088905 | 0.133912066 | 16.91064668 | 17.27662259 | 17.89002837 | 19.08011149 | 20.73088905 | 22.90438167 | 24.39641931 | 25.59108848 | 27.73889854 | 29.46472007 |
| 196–196.99 months | -2.008305745 | 20.7893851 | 0.133814954 | 16.95724926 | 17.32450423 | 17.93995429 | 19.13361379 | 20.7893851 | 22.96513563 | 24.45799009 | 25.65216707 | 27.79683185 | 29.51766572 |
| 197–197.99 months | -2.000706389 | 20.84574003 | 0.133717552 | 17.0037543 | 17.37228509 | 17.98977343 | 19.18699593 | 20.84574003 | 23.02572213 | 24.51920324 | 25.71306451 | 27.85460837 | 29.57051295 |
| 198–198.99 months | -1.993150137 | 20.90294449 | 0.1336202 | 17.05014902 | 17.41995236 | 18.03947307 | 19.24024598 | 20.90294449 | 23.08613815 | 24.58032971 | 25.77379055 | 27.91225209 | 29.62329955 |
| 199–199.99 months | -1.985643741 | 20.95998909 | 0.133523244 | 17.09642062 | 17.46749315 | 18.0890404 | 19.29335192 | 20.95998909 | 23.14638076 | 24.64128395 | 25.83435539 | 27.96978771 | 29.67606419 |
| 200–200.99 months | -1.97819451 | 21.01686433 | 0.133427032 | 17.1425562 | 17.51489451 | 18.1384625 | 19.34630158 | 21.01686433 | 23.20644712 | 24.70206989 | 25.89476963 | 28.02724061 | 29.72884644 |
| 201–201.99 months | -1.970810308 | 21.07356067 | 0.133331914 | 17.18854287 | 17.56214342 | 18.18772638 | 19.39908272 | 21.07356067 | 23.26633451 | 24.76269168 | 25.95504426 | 28.08463689 | 29.78168674 |
| 202–202.99 months | -1.96349954 | 21.1300685 | 0.133238245 | 17.23436764 | 17.60922679 | 18.23681892 | 19.45168294 | 21.1300685 | 23.3260403 | 24.82315378 | 26.01519074 | 28.1420033 | 29.83462638 |
| 203–203.99 months | -1.956271141 | 21.18637813 | 0.133146383 | 17.2800175 | 17.65613146 | 18.28572693 | 19.50408975 | 21.18637813 | 23.38556196 | 24.88346091 | 26.07522093 | 28.19936732 | 29.88770757 |
| 204–204.99 months | -1.949134561 | 21.24247982 | 0.13305669 | 17.32547937 | 17.70284417 | 18.3344371 | 19.55629056 | 21.24247982 | 23.44489706 | 24.94361805 | 26.13514709 | 28.25675709 | 29.94097335 |
| 205–205.99 months | -1.942099744 | 21.29836376 | 0.132969531 | 17.37074012 | 17.74935161 | 18.38293604 | 19.60827264 | 21.29836376 | 23.50404332 | 25.00363048 | 26.19498193 | 28.31420146 | 29.99446764 |
| 206–206.99 months | -1.935177101 | 21.35402009 | 0.132885274 | 17.41578654 | 17.79564039 | 18.43121023 | 19.66002316 | 21.35402009 | 23.56299853 | 25.06350375 | 26.2547386 | 28.37172995 | 30.04823522 |
| 207–207.99 months | -1.928377748 | 21.40943891 | 0.132804292 | 17.46060537 | 17.84169701 | 18.47924607 | 19.71152919 | 21.40943891 | 23.62176064 | 25.1232437 | 26.31443063 | 28.42937274 | 30.10232173 |
| 208–208.99 months | -1.921712136 | 21.46461026 | 0.132726962 | 17.50518327 | 17.8875079 | 18.52702984 | 19.76277767 | 21.46461026 | 23.68032771 | 25.18285645 | 26.37407203 | 28.48716074 | 30.15677367 |
| 209–209.99 months | -1.915192685 | 21.51952414 | 0.132653664 | 17.54950683 | 17.9330594 | 18.57454772 | 19.81375546 | 21.51952414 | 23.73869794 | 25.24234842 | 26.4336772 | 28.54512548 | 30.21163837 |
| 210–210.99 months | -1.908831065 | 21.57417053 | 0.132584784 | 17.59356252 | 17.97833773 | 18.62178578 | 19.8644493 | 21.57417053 | 23.79686967 | 25.30172632 | 26.49326098 | 28.60329919 | 30.26696403 |
| 211–211.99 months | -1.902639482 | 21.62853937 | 0.132520711 | 17.63733676 | 18.02332903 | 18.66872998 | 19.91484586 | 21.62853937 | 23.85484139 | 25.36099716 | 26.55283865 | 28.66171476 | 30.32279966 |
| 212–212.99 months | -1.896630358 | 21.68262062 | 0.132461838 | 17.68081585 | 18.06801933 | 18.71536617 | 19.96493169 | 21.68262062 | 23.91261174 | 25.42016826 | 26.61242559 | 28.72040572 | 30.37919514 |
| 213–213.99 months | -1.890816268 | 21.73640419 | 0.132408563 | 17.72398595 | 18.11239453 | 18.76168008 | 20.01469327 | 21.73640419 | 23.97017953 | 25.47924723 | 26.67203887 | 28.77940629 | 30.43620115 |
| 214–214.99 months | -1.885209876 | 21.78988003 | 0.132361289 | 17.76683315 | 18.15644042 | 18.80765734 | 20.06411699 | 21.78988003 | 24.02754374 | 25.538242 | 26.73169411 | 28.8387513 | 30.49386923 |
| 215–215.99 months | -1.879823505 | 21.84303819 | 0.132320427 | 17.80934323 | 18.20014256 | 18.8532834 | 20.11318921 | 21.84303819 | 24.08470367 | 25.59716095 | 26.79140871 | 28.89847621 | 30.55225152 |
| 216–216.99 months | -1.874670324 | 21.8958685 | 0.132286382 | 17.85150219 | 18.24348662 | 18.89854373 | 20.16189615 | 21.8958685 | 24.14165845 | 25.65601244 | 26.85119991 | 28.9586172 | 30.61140148 |
| 217–217.99 months | -1.869760299 | 21.94836168 | 0.1322596 | 17.89329472 | 18.28645727 | 18.94342321 | 20.21022414 | 21.94836168 | 24.19840866 | 25.71480629 | 26.91108626 | 29.0192108 | 30.67137176 |
| 218–218.99 months | -1.865113245 | 22.00050569 | 0.132240418 | 17.93470899 | 18.32904183 | 18.98790813 | 20.25815885 | 22.00050569 | 24.25495098 | 25.77354888 | 26.97108394 | 29.08029503 | 30.73222122 |
| 219–219.99 months | -1.860734944 | 22.05229242 | 0.13222933 | 17.97572809 | 18.37122369 | 19.03198262 | 20.3056868 | 22.05229242 | 24.31128792 | 25.83225207 | 27.03121333 | 29.14190734 | 30.79400211 |

Table 24. L, M, and S parameters and selected smoothed percentiles for body mass index (BMI, kilograms/meters²) by sex and age: 2 to 20 years—Con.

Table with columns for Sex and age, L, M, S, 3rd, 5th, 10th, 25th, 50th, 75th, 85th, 90th, 95th, and 97th percentiles. The data is categorized under 'Girls—Con.' and lists values for 5-year age intervals from 51–51.99 months to 99–99.99 months.

Appendix I.

Description of Growth Chart Workshops

A series of four workshops that dealt with topics germane to the growth chart revision were sponsored by the Division of Health Examination Statistics at National Center for Health Statistics. Selected highlights of these workshops are described below. Workshops 1, 3, and 4 were co-chaired by Dr. Robert Kuczumarski and Dr. Alexander Roche. Workshop 2 was chaired by Dr. John Himes.

Workshop 1

In December 1992, NCHS sponsored the first workshop to address a number of concerns that had been identified about the 1977 NCHS Growth Charts and to solicit recommendations on approaches that could be taken in the revision process. A group of experts from various Federal agencies and academic institutions (table I) addressed the following questions:

- How and when should the 1977 NCHS Growth Charts be updated with NHANES II and NHANES III data?
- Should ethnic-specific charts be created, perhaps at least for white non-Hispanic and black non-Hispanic populations and Mexican Americans, if adequate sample sizes were available?
- Should growth patterns and sexual maturity data be incorporated in the revised growth charts?
- What data should be used to develop charts for the age range birth to 3 months where NHANES III data were insufficient?
- What curve smoothing procedures should be considered and used?
- Should the curves be constructed only for the measures in the 1977 charts or should different measures be considered?

Table I. Participants in the NCHS growth chart workshops

| Name and affiliation at time of the workshop | Workshop attended (See notes) |
|--|-------------------------------|
| Ronette R. Briefel, Dr.P.H. National Center for Health Statistics Centers for Disease Control and Prevention Hyattsville, MD | 1, 3, 4 |
| Nancy F. Butte, Ph.D. Pediatrics Department Baylor College of Medicine Houston, TX | 1, 3, 4 |
| Patrick H. Casey, M.D. Arkansas Children's Hospital University of Arkansas for Medical Sciences Little Rock, AK | 3 |
| Lester R. Curtin, Ph.D. National Center for Health Statistics Centers for Disease Control and Prevention Hyattsville, MD | 1, 2, 4 |
| Robert Earl, M.P.H. Institute of Medicine National Academy of Sciences Washington, D.C. | 3 |
| Frank Falkner, M.D. Department of Pediatrics University of California, Berkeley Berkeley, CA | 4 |
| Katherine M. Flegal, Ph.D. National Center for Health Statistics Centers for Disease Control and Prevention Hyattsville, MD | 3, 4 |
| Samuel J. Fomon, M.D. Department of Pediatrics University of Iowa Iowa City, IA | 1, 3 |
| Deborah A. Frank, M.D. Child Development Unit Boston City Hospital Boston, MA | 3 |
| Debra A. Galuska, Ph.D. National Center for Chronic Disease Prevention and Health Promotion Centers for Disease Control and Prevention Atlanta, GA | 4 |
| Gilman Grave, M.D. National Institute of Child Health and Human Development National Institutes of Health Bethesda, MD | 1 |
| Lawrence Grummer-Strawn, Ph.D. National Center for Chronic Disease Prevention and Health Promotion Centers for Disease Control and Prevention Atlanta, GA | 4 |
| Shumei Guo, Ph.D. Division of Human Biology Wright State University Yellow Springs, OH | 1, 4 |
| Maureen Hack, M.D. Rainbow Babies and Children's Hospital University Hospitals of Cleveland Cleveland, OH | 3 |
| James Hansen, M.D. Neonatology and Pharmacology Mead Johnson Nutrition Division Evansville, IN | 3 |
| John H. Himes, Ph.D. Division of Epidemiology University of Minnesota Minneapolis, MN | 1, 2, 4 |
| Jay Hirschman, M.P.H. Food and Nutrition Service U.S. Department of Agriculture Alexandria, VA | 3 |

- Should electronic formats be considered and developed or should there be a continued reliance on paper and pencil formats?

This workshop successfully dealt with many of these issues and provided a framework for the overall revision process. It became clear in the course of discussions, however, that additional topics would require further attention. These are discussed below. The deliberations at this workshop have been summarized (16).

Workshop 2

One topic from the first workshop that required additional discussion was the source of data to be used from birth to age 3 months. Consequently, a second dedicated workshop was held to discuss the feasibility and describe the potential design of an ancillary research project to collect early infancy growth data (table I). At this workshop characteristics of a special infant study were identified, and included the following:

- The design should be a cross-sectional, multicenter, hospital-based study with six sites, each including a single cooperating hospital with at least 3,000 births annually.
- Infants should be selected to reflect the national variation in socioeconomic status and ethnicity and measured at a central data collection center at each site from age 1 to 24 weeks.
- The target sample should consist of 500 healthy infants without physical limitations at each site, for a total sample of 3,000 infants.
- Data collected should include weight, recumbent length, head circumference, feeding history (breast, formula, etc.), and participation in public assistance programs, in addition to information detailed on the U.S. Standard Certificate of Live Birth.

This study would have been the most desirable option to fill in the data gaps for ages in early infancy. However,

Table I. Participants in the NCHS growth chart workshops—Continued

| Name and affiliation at time of the workshop | Workshop attended (See notes) |
|--|-------------------------------|
| Clifford L. Johnson, M.S.P.H. National Center for Health Statistics Centers for Disease Control and Prevention Hyattsville, MD | 1, 2, 3, 4 |
| Francis Johnston, Ph.D. Department of Anthropology University of Pennsylvania Philadelphia, PA | 1 |
| John L. Kiely, Ph.D. National Center for Health Statistics Centers for Disease Control and Prevention Hyattsville, MD | 3 |
| Robert J. Kuczmarski, Dr.P.H. National Center for Health Statistics Centers for Disease Control and Prevention Hyattsville, MD | 1, 2, 3, 4 |
| Robert M. Malina, Ph.D. (1) Department of Kinesiology and Health Education University of Texas at Austin Austin, TX | 1, 4 |
| (4) Institute for the Study of Youth Sports Michigan State University East Lansing, MI | |
| Joyce A. Martin, M.P.H. National Center for Health Statistics Centers for Disease Control and Prevention Hyattsville, MD | 3 |
| Reynaldo Martorell, Ph.D. Division of Nutritional Sciences Cornell University Ithaca, NY | 1 |
| Thomas McLemore National Center for Health Statistics Centers for Disease Control and Prevention Hyattsville, MD | 2 |
| Zuguo Mei, M.D. National Center for Chronic Disease Prevention and Health Promotion Centers for Disease Control and Prevention Atlanta, GA | 4 |
| William M. Moore, M.D. Medical Services Ross Products, Division of Abbott Laboratories Columbus, OH | 3 |
| Robert S. Murphy, M.S.P.H. National Center for Health Statistics Centers for Disease Control and Prevention Hyattsville, MD | 1, 3, 4 |
| Cynthia L. Ogden, Ph.D. National Center for Health Statistics Centers for Disease Control and Prevention Hyattsville, MD | 3, 4 |
| Mary D. Overpeck, Dr.P.H. National Institute for Child Health and Human Development National Institutes of Health Bethesda, MD | 3, 4 |
| Ibrahim Parvanta, M.S. National Center for Chronic Disease Prevention and Health Promotion Centers for Disease Control and Prevention Atlanta, GA | 4 |
| Geraldine Perry, Dr.P.H. National Center for Chronic Disease Prevention and Health Promotion Centers for Disease Control and Prevention Atlanta, GA | 4 |
| Alexander F. Roche, M.D. Division of Human Biology Wright State University Yellow Springs, OH | 1, 2, 3, 4 |

the cost of this project was estimated at \$1.3 million in 1994, and it was not possible to locate the resources necessary to proceed.

Workshop 3

Another topic identified in the first workshop was the issue of whether low birthweight infants should be included in the revised growth charts for the United States. Therefore, a third workshop was held in which experts with clinical and public health experience in low birthweight participated (table I). A summary of this workshop is available (84). Some key points in favor of excluding low birthweight infants (<2,500 gm) are as follows:

- Preterm low birthweight (LBW; 1,500–2,500 gm) and very low birthweight (VLBW; <1,500 gm) infants differ in growth status from term infants of normal birthweight, even after chronological ages are adjusted for gestational age.
- VLBW infants might still be hospitalized at 2–3 months and would not be included in the NHANES III sample.
- Separate LBW and VLBW charts already exist, such as those of the Infant Health and Development Program (IHDP).
- Clinicians would be able to select appropriate charts confidently because maternal recall of birthweight is generally accurate.

The major considerations in favor of retaining the LBW infants in the revised charts included the following:

- The IHDP charts were developed for preterm LBW infants. National natality data indicated that about 49 percent of babies born <2,500 gm are not preterm and more than 50 percent of infants born between 2000–2,500 gm are not preterm.
- Many users may not be familiar with specialized charts such as the IHDP charts, and which may not be readily available.
- Excluding infants with birthweights <2,500 gm would tend to make the revised charts more of a standard and less of a reference.

Table I. Participants in the NCHS growth chart workshops—Continued

| Name and affiliation at time of the workshop | Workshop attended (See notes) |
|--|-------------------------------|
| Alan Rogol, M.D. Division of Endocrinology & Metabolism University of Virginia Charlottesville, VA | 1 |
| Kelley Scanlon, Ph.D. National Center for Chronic Disease Prevention and Health Promotion Centers for Disease Control and Prevention Atlanta, GA | 4 |
| Paula Scariati, Ph.D. National Center for Chronic Disease Prevention and Health Promotion Centers for Disease Control and Prevention Atlanta, GA | 4 |
| Kenneth C. Schoendorf, M.D. National Center for Health Statistics Centers for Disease Control and Prevention Hyattsville, MD | 3 |
| Betty Lou Sherry, Ph.D. National Center for Chronic Disease Prevention and Health Promotion Centers for Disease Control and Prevention Atlanta, GA | 4 |
| E. O'Brian Smith, Ph.D. Pediatrics Department Baylor College of Medicine Houston, TX | 1 |
| Richard F. Troiano, Ph.D. National Center for Health Statistics Centers for Disease Control and Prevention Hyattsville, MD | 3, 4 |
| Frederick Trowbridge, M.D. National Center for Chronic Disease Prevention and Health Promotion Centers for Disease Control and Prevention Atlanta, GA | 1, 2 |
| Linda Wright, M.D. National Institute for Child Health and Human Development National Institutes of Health Bethesda, MD | 3 |
| Ray Yip, M.D. National Center for Chronic Disease Prevention and Health Promotion Centers for Disease Control and Prevention Atlanta, GA | 1, 2 |

NOTES: 1 = Workshop 1. NCHS growth chart workshop, December 13–15, 1992.

2 = Workshop 2. Workshop to consider the feasibility of a multicenter study to collect data on growth of infants for revision of the NCHS Growth Charts, February 10, 1994.

3 = Workshop 3. NCHS workshop to consider low birthweight in relation to the revision of the NCHS Growth Charts for infancy (birth–3 years), October 4–5, 1994.

4 = Workshop 4. Workshop to consider secular trends and possible pooling of data in relation to the revision of the NCHS Growth Charts, November 14–15, 1995.

- Excluding at the 2,500 gm level would leave out approximately 7.5 percent of all children and approximately 15 percent of all black infants born in the United States for whom the general, revised NCHS charts would not be applicable.

Subsequently, the final decision was to exclude only VLBW infants. For these children, specialized charts, such as the IHDP charts are available from birth to 3 years (71–73,85). The rationale is that at this level (<1,500 gm), virtually all children are preterm, their growth is markedly different from

the growth of higher birthweight, term infants, and less than 1 percent of all children born in the United States would be excluded.

Workshop 4

Analyses of NHANES III data indicated that an increasing trend in body weight was occurring among children, adolescents, and adults in the United States between the time of the NHANES II and NHANES III surveys (86–89). Consequently, a fourth workshop focused on the implications of this secular trend in body weight for the growth charts (table I). The alternative

methods for pooling multiple data sets were also considered during the course of this meeting. A summary of this workshop is available (90).

A review of the data indicated there was an increase in weight that was most pronounced at the upper percentiles of the distribution for males and females (91). Ultimately, it was important to know how including the NHANES III subjects in the pooled sample would influence the weight and BMI curves. If including heavier subjects from NHANES III in the combined data set from the five surveys elevated the percentiles to a substantially higher level, one option would be to exclude the NHANES III data. When NHANES III data were included, there was an effect on the higher percentile curves that became consistent at about 6 years of age. Using information discussed at this workshop, a decision was subsequently made to exclude the NHANES III weight and BMI data for ages 6 years and over from the revised growth charts.

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