National Health and Nutrition Examination Survey

August 2021-August 2023 Data Documentation, Codebook, and Frequencies

Body Measures (BMX_L)

Data File: BMX_L.xpt

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Last Revised: NA

Component Description

NHANES body measures data are used to monitor trends in infant and child growth, to estimate the prevalence of overweight and obesity in U.S. children, adolescents, and adults, and to examine the associations between body weight and the health and nutritional status of the U.S. population.

The measurements and target age groups for the public body measures data file (BMX_L) are as follows:

- Weight: All ages
- Head circumference: birth through 6 months
- Recumbent length: birth through 47 months
- Standing height: 2 years and older
- Upper leg length: 8 years and older
- Upper arm length: 2 months and older
- Mid-upper arm circumference: 2 months and older
- Waist circumference: 2 years and older
- Hip circumference: 12 years and older

Eligible Sample

All examined survey participants in the NHANES August 2021-August 2023 sample are included in this dataset. There were no medical, safety, or other exclusions for the body measures protocol. The health technicians used their discretion to obtain as many measures as practical for people who used a wheelchair.

Protocol and Procedure

The body measures data were collected, in the Mobile Examination Center (MEC), by trained health technicians. The health technician was assisted by a recorder during the body measures examination. The participant's age at the time of the screening interview determined the body measures examination protocol. In some instances, the age at the screening interview and age at the time of the health examination differed by several weeks. The Demographics data file includes variables age in years at screening (RIDAGEYR) for all participants and age in months at exam (RIDEXAGEM) for participants 0 to 239 months.

Arm and leg measurements were made on the right side of the body. If a participant had an amputation, medical condition, or medical appliance, such as a cast, that prevented measurements from being taken on the right side of the body, the health technician took measurements on the left side. The body measures file does not identify participants who had amputations because that information may be considered identifiable and pose a disclosure concern. The body weight data for participants who had limb amputations were set to "missing."

This data file includes body measures for women who were pregnant at the time of their health examination. Pregnancy status at the time of the health examination is indicated by the variable, RIDEXPRG, in the Demographic data file. RIDEXPRG values are reported for women 20–44 years of age. RIDEXPRG for several pregnant women who were outside of this age range are not reported due to disclosure concerns. The body measures data for these participants are also not reported.

The NHANES Anthropometry Procedures Manual are available on the NHANES website.

Quality Assurance & Quality Control

The NHANES health technicians completed a 2-day training program with survey staff and an expert anthropometrist. The training included an overview of the component, general guidelines and technical skills for each measurement, and demonstrations conducted by the expert examiner with volunteer subjects. The expert examiner reviewed and demonstrated the proper technique to use for each measure. Supervised practice exercises followed, conducted with several volunteer subjects, including infants, children, and adults. The chief health technician, at each of the MECs, monitored staff performance in the field. Health technician performance was also monitored using direct observation, data reviews, and periodic expert examiner (gold standard comparison) evaluations.

The body measures examination rooms in each of the MECs were identical with respect to layout and equipment. Scheduled equipment calibration was performed by the health technicians and verified by supervisory staff. The Anthropometry Procedures Manual includes detailed descriptions of the quality assurance and quality control measures that are used in the NHANES anthropometry/body measures component.

Data Processing and Editing

The BMX_L data were reviewed for unusual and erroneous values. Review criteria were based on the NHANES 1999–2016 body measurement data. During the data review, values that were above the 99th percentile or below the 1st percentile, for a specific age or age-gender group, were flagged for review. When records were flagged, the entire body measures record was reviewed for reasonableness. Subject characteristics, such as height, weight, age, and gender were taken into consideration. Values that were determined to be unrealistic were deleted from the file. None of the original body measures data were changed and there are no imputed values in this file.

Component status code (BMXSTATS):
This variable was created to indicate body measures component status. There are four categories:

1. Complete data for age group
2. Partial: only height and weight obtained
3. Other: partial exam
4. No body measures exam data

Body Mass Index (BMXBMI):
Body Mass Index (BMI) was calculated as weight in kilograms divided by height in meters squared, and then rounded to one decimal place.

BMI Category – Children/Adolescents (BMDBMIC):
This variable was created for children and adolescents aged 2 to 19 years at examination. Cutoff criteria are based on the Centers for Disease Control (CDC) growth chart "BMI-for-age charts, 2 to 20 years, by sex and age". Age in months at examination was used to match age in months from BMI growth chart data, separately for males and females. There are four categories:

1. Underweight (BMI < 5th percentile)

2. Normal weight (BMI 5th to < 85th percentiles)

3. Overweight (BMI 85th to < 95th percentiles)

4. Obese (BMI ≥ 95th percentile)

Analytic Notes

Component status code: A final body measures component status code provides analysis with a quick method of identifying survey participants with complete or partial body measure measurement data.

Unusual values: Unusual body measures values were noted during the review of the data. Typically, unusual values occurred when a subject was extremely short, tall, overweight, or underweight. In addition, the upper arm length (BMXARML) and upper leg length (BMXLEG) values may be affected by extreme amounts of adipose tissue. Analysts should examine the distributions of the body measurements carefully and consider whether it is appropriate to include or exclude extreme values in each analysis.

Comment codes: Comment codes were added by the health technicians, during data collection, to document problems or situations that arose during the body measures examination. For example, the variable BMIWT is a comment code for the body weight measurement. If a participant did not change into the NHANES exam gown, a code of BMIWT of "3" denoting "clothing worn" was made in the record. Analysts should review the comment code information for each of the body measures prior to data analysis.

Weight status classification: BMI, expressed as weight in kilograms divided by height in meters squared (Kg/m^2), is commonly used to classify weight status. The definitions of underweight, normal weight, overweight, and obesity in children and adolescents are not directly comparable with the definitions in adults. The age-and sex-specific 5th, 85th, and 95th percentiles of the growth charts are usually used as cutoff criteria for children and adolescents. The variable BMDBMIC provides weight status categorical for children and adolescents aged 2 to 19 years at examination. Consequently, BMDBMIC was not calculated for a few participants who were 19 years at the screening interview but became 20 years at the health examination.

Sample weights: The NHANES examination sample weights should be used to analyze the body measures data. Please refer to the NHANES Analytic Guidelines and the online NHANES Tutorial for further details on the use of sample weights and other analytic issues.

Codebook and Frequencies

SEQN - Respondent sequence number

Variable Name:	SEQN
SAS Label:	Respondent sequence number
English Text:	Respondent sequence number.
Target:	Both males and females 0 YEARS - 150 YEARS

BMDSTATS - Body Measures Component Status Code

Variable Name:	BMDSTATS
SAS Label:	Body Measures Component Status Code
English Text:	Body Measures Component status Code
Target:	Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Complete data for age group	8235	8235	
2	Partial: Only height and weight obtained	147	8382	
3	Other partial exam	409	8791	
4	No body measures exam data	69	8860	
.	Missing	0	8860	

BMXWT - Weight (kg)

Variable Name:	BMXWT
SAS Label:	Weight (kg)
English Text:	Weight (kg)
Target:	Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
2.7 to 248.2	Range of Values	8754	8754	
.	Missing	106	8860	

BMIWT - Weight Comment

Variable Name:	BMIWT
SAS Label:	Weight Comment
English Text:	Weight Comment
Target:	Both males and females 0 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Could not obtain	30	30	
3	Clothing	296	326	
4	Medical appliance	19	345	
.	Missing	8515	8860	

BMXRECUM - Recumbent Length (cm)

Variable Name:	BMXRECUM
SAS Label:	Recumbent Length (cm)
English Text:	Recumbent Length (cm)
Target:	Both males and females 0 MONTHS - 47 MONTHS

Code or Value	Value Description	Count	Cumulative	Skip to Item
48.5 to 118.8	Range of Values	454	454	
.	Missing	8406	8860	

BMIRECUM - Recumbent Length Comment

Variable Name:	BMIRECUM
SAS Label:	Recumbent Length Comment
English Text:	Recumbent Length Comment
Target:	Both males and females 0 MONTHS - 47 MONTHS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Could not obtain	18	18	
3	Not straight	0	18	
.	Missing	8842	8860	

BMXHEAD - Head Circumference (cm)

Variable Name:	BMXHEAD
SAS Label:	Head Circumference (cm)
English Text:	Head Circumference (cm)
Target:	Both males and females 0 MONTHS - 6 MONTHS

Code or Value	Value Description	Count	Cumulative	Skip to Item
34.4 to 46.5	Range of Values	70	70	
.	Missing	8790	8860	

BMIHEAD - Head Circumference Comment

Variable Name:	BMIHEAD
SAS Label:	Head Circumference Comment
English Text:	Head Circumference Comment
Target:	Both males and females 0 MONTHS - 6 MONTHS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Could not obtain	0	0	
.	Missing	8860	8860	

BMXHT - Standing Height (cm)

Variable Name:	BMXHT
SAS Label:	Standing Height (cm)
English Text:	Standing Height (cm)
Target:	Both males and females 2 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
79.1 to 200.7	Range of Values	8499	8499	
.	Missing	361	8860	

BMIHT - Standing Height Comment

Variable Name:	BMIHT
SAS Label:	Standing Height Comment
English Text:	Standing Height Comment
Target:	Both males and females 2 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Could not obtain	46	46	
3	Not straight	88	134	
.	Missing	8726	8860	

BMXBMI - Body Mass Index (kg/m**2)

Variable Name:	BMXBMI
SAS Label:	Body Mass Index (kg/m**2)
English Text:	Body Mass Index (kg/m**2)
Target:	Both males and females 2 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
11.1 to 74.8	Range of Values	8471	8471	
.	Missing	389	8860	

BMDBMIC - BMI Category - Children/Youth

Variable Name:	BMDBMIC
SAS Label:	BMI Category - Children/Youth
English Text:	BMI Category - Children/Youth
Target:	Both males and females 2 YEARS - 19 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Underweight	92	92	
2	Normal weight	1469	1561	
3	Overweight	372	1933	
4	Obese	559	2492	
.	Missing	6368	8860	

BMXLEG - Upper Leg Length (cm)

Variable Name:	BMXLEG
SAS Label:	Upper Leg Length (cm)
English Text:	Upper Leg Length (cm)
Target:	Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
24.9 to 51.6	Range of Values	7335	7335	
.	Missing	1525	8860	

BMILEG - Upper Leg Length Comment

Variable Name:	BMILEG
SAS Label:	Upper Leg Length Comment
English Text:	Upper Leg Length Comment
Target:	Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Could not obtain	396	396	
.	Missing	8464	8860	

BMXARML - Upper Arm Length (cm)

Variable Name:	BMXARML
SAS Label:	Upper Arm Length (cm)
English Text:	Upper Arm Length (cm)
Target:	Both males and females 2 MONTHS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
10 to 49.2	Range of Values	8568	8568	
.	Missing	292	8860	

BMIARML - Upper Arm Length Comment

Variable Name:	BMIARML
SAS Label:	Upper Arm Length Comment
English Text:	Upper Arm Length Comment
Target:	Both males and females 2 MONTHS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Could not obtain	200	200	
.	Missing	8660	8860	

BMXARMC - Arm Circumference (cm)

Variable Name:	BMXARMC
SAS Label:	Arm Circumference (cm)
English Text:	Arm Circumference (cm)
Target:	Both males and females 2 MONTHS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
12 to 63.3	Range of Values	8562	8562	
.	Missing	298	8860	

BMIARMC - Arm Circumference Comment

Variable Name:	BMIARMC
SAS Label:	Arm Circumference Comment
English Text:	Arm Circumference Comment
Target:	Both males and females 2 MONTHS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Could not obtain	205	205	
.	Missing	8655	8860	

BMXWAIST - Waist Circumference (cm)

Variable Name:	BMXWAIST
SAS Label:	Waist Circumference (cm)
English Text:	Waist Circumference (cm)
Target:	Both males and females 2 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
39.8 to 187	Range of Values	8190	8190	
.	Missing	670	8860	

BMIWAIST - Waist Circumference Comment

Variable Name:	BMIWAIST
SAS Label:	Waist Circumference Comment
English Text:	Waist Circumference Comment
Target:	Both males and females 2 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Could not obtain	347	347	
.	Missing	8513	8860	

BMXHIP - Hip Circumference (cm)

Variable Name:	BMXHIP
SAS Label:	Hip Circumference (cm)
English Text:	Hip Circumference (cm)
Target:	Both males and females 12 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
69.9 to 187.1	Range of Values	6776	6776	
.	Missing	2084	8860	

BMIHIP - Hip Circumference Comment

Variable Name:	BMIHIP
SAS Label:	Hip Circumference Comment
English Text:	Hip Circumference Comment
Target:	Both males and females 12 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Could not obtain	361	361	
.	Missing	8499	8860	