

# National Health and Nutrition Examination Survey

## 2001-2002 Data Documentation, Codebook, and Frequencies

### Body Measures (BMX\_B)

**Data File: BMX\_B.xpt**

**First Published: May 2004**

**Last Revised: NA**

---

## Component Description

The purpose of this component is to collect high quality body measurement data on survey participants. The NHANES body measurement component procedures are outlined in the NHANES Anthropometry Procedures Manual which is posted on the NHANES website (URL: <https://wwwn.cdc.gov/nchs/data/nhanes/1999-2000/manuals/bm.pdf>).

The body measurement assessments performed on survey participants varied according to the age of the survey participant. The body measurement protocol used age at the time of the screening interview. In some instances, several weeks elapsed between the initial screening interview and the health examination visit. The Demographics Data File includes an age variable for age at examination. The target samples for the body measurement assessments are as follows:

Body weight: All ages  
Recumbent length: 0 through 47 months  
Standing height: 24+ months  
Upper leg length: 8+ years  
Upper arm length: 2+ months  
Head circumference: 0 through 5 months  
Mid-upper arm circumference: 2+ months  
Waist circumference: 24+ months  
Mid-thigh circumference: 8+ years  
Maximal calf circumference: 8+ years  
Triceps skin fold: 2+ months  
Sub scapular skin fold: 2+months

Occasionally circumstances arose when it was not possible to complete the component on participants due to lack of time. At a minimum, weight and standing height or recumbent length were measured.

## Eligible Sample

There were no medical, safety, or other exclusions for the body measurements protocol. For persons who used a wheelchair, the health technicians used their discretion to obtain as many measures as practical. Height and weight were not typically measured in persons who used wheelchairs.

Arm and leg measurements were made on the right side of the body. If an examinee 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 examiner took measurements on the left side. The body measurements file does not identify persons with amputations due to data disclosure concerns. Body weight data for individuals who had limb amputations were excluded from the release file. A small number of measurements could not be obtained because of physical problems such as spine deformities, measures that exceeded the capacity of the measuring device, or when objects such as clothing (e.g., if a subject refused to change into an examination gown, remove their shoes, etc.) or hair decorations made it impossible to obtain accurate measurements.

This data set includes body measurements for women who were pregnant at the time of the exam. Analysts should determine if it is appropriate to exclude data for pregnant women in a particular analysis. Pregnancy status information is denoted by the Demographic Data File variable, RIDPREG.

## Protocol and Procedure

The data collection methods, examination protocol, and data collection forms are fully documented in the NHANES Anthropometry Procedures Manual. In addition, for general guidelines on standard procedures that were followed for the anthropometric measures, please refer to the Anthropometric Standardization Reference Manual (Lohman, 1988). The actual measurement techniques used in the survey are illustrated in the NHANES III Anthropometric Procedures Video. The video demonstrates the NHANES III anthropometric procedures in detail, and illustrates all of the measures except the calf circumference. This video may be obtained from the U.S. Government Printing Office (<https://wwwn.cdc.gov/nchs/nhanes/nhanes3/anthropometricvideos.aspx>). Please note that some of the measurements that were taken in NHANES III are not included in the protocol for the current survey.

All body measures were obtained by trained health technicians. The body measurement component was performed in a specially equipped room in the mobile examination center (MEC). The health technician was assisted by a trained recorder. The technician and recorders worked as a team to position, measure, and record the body measurement data accurately.

## Quality Assurance & Quality Control

The first line of quality control was provided by the automated data collection system. For weight, standing height, and recumbent length, all data were captured electronically from the measuring instruments to minimize potential data entry errors. Range edits, based on the 1st and 99th percentiles of the NHANES III distributions for age and gender categories were programmed into the automated data collection system. The data entry system generated messages that prompted the health technicians to verify or re-check measures that were outside the 1st and 99th percentile limits for a particular measurement.

Experienced trainers, NCHS staff, contractor staff, and gold standard examiners monitored health technician performance in the field. Retraining sessions were conducted with the technicians periodically and annually to reinforce the proper protocols and technique. Replicate examinations were performed by the gold standard examiners during visits to the field. Routine calibration of the body measures equipment was a part of the quality control plan for this component. The NHANES Anthropometry Procedures Manual details the equipment calibration procedures.

## Data Processing and Editing

The data recorded in the MEC were not modified during file preparation.

The data were edited for values that exceeded the capacity of the measuring equipment. Biologically implausible values were identified by examining age and sex-specific measurements that exceeded the 1st and 99th percentile values of the NHANES III distributions for each measure. A small number of observations that were implausible were set to missing.

## Analytic Notes

During the data editing process, outlier values were examined. When there was insufficient information to conclude that values were invalid, they were left in the data set. Analysts should examine the data spread and consider whether or not it is appropriate to include or exclude extreme values in a given analysis.

## References

- Lohman TG, Roche AF, Martorell R, eds. 1988. Anthropometric Standardization Reference Manual. Abridged edition. Champaign, IL: Human Kinetics Books.

## Codebook and Frequencies

### SEQN - Respondent sequence number

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

## BMXWT - Weight (kg)

**Variable Name:** BMXWT  
**SAS Label:** Weight (kg)  
**English Text:** Weight (kg)  
**Target:** Both males and females 0 YEARS - 150 YEARS  
**Hard Edits:** 0.0000 to 440.0000

Code or Value	Value Description	Count	Cumulative	Skip to Item
3.3 to 196.8	Range of Values	9825	9825	
.	Missing	652	10477	

## 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	35	35	
2	Exceeds capacity	0	35	
3	Clothing	531	566	
4	Medical appliance	21	587	
.	Missing	9890	10477	

## 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  
**Hard Edits:** 16.0000 to 119.3000

Code or Value	Value Description	Count	Cumulative	Skip to Item
48.4 to 112.7	Range of Values	1352	1352	
.	Missing	9125	10477	

## 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	73	73	
2	Exceeds capacity	0	73	
3	Not straight	1	74	
.	Missing	10403	10477	



## 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  
**Hard Edits:** 00.0000 to 99.9999

Code or Value	Value Description	Count	Cumulative	Skip to Item
35.1 to 50.2	Range of Values	296	296	
.	Missing	10181	10477	

## 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	3	3	
2	Exceeds capacity	0	3	
3	Not straight	0	3	
.	Missing	10474	10477	

## 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  
**Hard Edits:** 79.0000 to 208.4000

Code or Value	Value Description	Count	Cumulative	Skip to Item
79 to 199.1	Range of Values	9363	9363	
.	Missing	1114	10477	

## 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	74	74	
2	Exceeds capacity	0	74	
3	Not straight	96	170	
.	Missing	10307	10477	

## 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
7.99 to 65.41	Range of Values	9010	9010	
.	Missing	1467	10477	

## 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  
**Hard Edits:** 0.0000 to 200.0000

Code or Value	Value Description	Count	Cumulative	Skip to Item
24.8 to 55	Range of Values	7846	7846	
.	Missing	2631	10477	

## 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	336	336	
.	Missing	10141	10477	

## BMXCALF - Maximal Calf Circumference (cm)

**Variable Name:** BMXCALF  
**SAS Label:** Maximal Calf Circumference (cm)  
**English Text:** Maximal Calf Circumference (cm)  
**Target:** Both males and females 8 YEARS - 150 YEARS  
**Hard Edits:** 0.0000 to 200.0000

Code or Value	Value Description	Count	Cumulative	Skip to Item
21.6 to 61.6	Range of Values	7933	7933	
.	Missing	2544	10477	



## BMICALF - Maximal Calf Comment

**Variable Name:** BMICALF  
**SAS Label:** Maximal Calf Comment  
**English Text:** Maximal Calf Comment  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Could not obtain	254	254	
.	Missing	10223	10477	

## 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  
**Hard Edits:** 0.0000 to 200.0000

Code or Value	Value Description	Count	Cumulative	Skip to Item
10 to 46.5	Range of Values	9869	9869	
.	Missing	608	10477	

## 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	460	460	
.	Missing	10017	10477	

## 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  
**Hard Edits:** 0.0000 to 200.0000

Code or Value	Value Description	Count	Cumulative	Skip to Item
11.1 to 59.8	Range of Values	9868	9868	
.	Missing	609	10477	

## 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	461	461	
.	Missing	10016	10477	

## 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  
**Hard Edits:** 0.0000 to 200.0000

Code or Value	Value Description	Count	Cumulative	Skip to Item
39.6 to 165.2	Range of Values	9056	9056	
.	Missing	1421	10477	

## 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	467	467	
.	Missing	10010	10477	

## BMXTHICR - Thigh Circumference (cm)

**Variable Name:** BMXTHICR  
**SAS Label:** Thigh Circumference (cm)  
**English Text:** Thigh Circumference (cm)  
**Target:** Both males and females 8 YEARS - 150 YEARS  
**Hard Edits:** 0.0000 to 200.0000

Code or Value	Value Description	Count	Cumulative	Skip to Item
29.2 to 100	Range of Values	7804	7804	
.	Missing	2673	10477	



## BMITHICR - Thigh Circumference Comment

**Variable Name:** BMITHICR  
**SAS Label:** Thigh Circumference Comment  
**English Text:** Thigh Circumference Comment  
**Target:** Both males and females 8 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Could not obtain	378	378	
.	Missing	10099	10477	

## BMXTRI - Triceps Skinfold (mm)

**Variable Name:** BMXTRI  
**SAS Label:** Triceps Skinfold (mm)  
**English Text:** Triceps Skinfold (mm)  
**Target:** Both males and females 2 MONTHS - 150 YEARS  
**Hard Edits:** 0.0000 to 45.0000

Code or Value	Value Description	Count	Cumulative	Skip to Item
1.4 to 44.7	Range of Values	9432	9432	
.	Missing	1045	10477	

## BMITRI - Triceps Skinfold Comment

**Variable Name:** BMITRI

**SAS Label:** Triceps Skinfold Comment

**English Text:** Triceps Skinfold Comment

**Target:** Both males and females 2 MONTHS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Could not obtain	640	640	
2	Exceeds capacity	255	895	
3	Hard to obtain	0	895	
.	Missing	9582	10477	

## BMXSUB - Subscapular Skinfold (mm)

**Variable Name:** BMXSUB  
**SAS Label:** Subscapular Skinfold (mm)  
**English Text:** Subscapular Skinfold (mm)  
**Target:** Both males and females 2 MONTHS - 150 YEARS  
**Hard Edits:** 0.0000 to 45.0000

Code or Value	Value Description	Count	Cumulative	Skip to Item
2.8 to 43.2	Range of Values	8553	8553	
.	Missing	1924	10477	

## BMISUB - Subscapular Skinfold Comment

**Variable Name:** BMISUB

**SAS Label:** Subscapular Skinfold Comment

**English Text:** Subscapular Skinfold Comment

**Target:** Both males and females 2 MONTHS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1	Could not obtain	1666	1666	
2	Exceeds capacity	111	1777	
3	Hard to obtain	0	1777	
.	Missing	8700	10477	

