

National Health and Nutrition Examination Survey 2005–2006

Documentation, Codebook, and Frequencies

Body Measurements

Examination

**Survey Years:
2005 to 2006**

**SAS Transport File:
BMX_D.XPT**



November 2007

NHANES 2005–2006 Data Documentation

Exam Component: Body Measurements (BMX_D)

First Published: November 2007

Last Revised: NA

Component Description

NHANES body measurement data are used to monitor trends in infant and child growth, to estimate the prevalence of overweight and obesity in the U.S. population, and to examine the associations between body weight and the health and nutritional status of the U.S. population. The target age groups for the NHANES 2005-2006 body measurement component are as follows:

Head circumference: birth through 6 months of age
Maximal calf circumference: 8 years of age and older
Mid-thigh circumference: 8 years of age and older
Mid-upper arm circumference: 2 months of age and older
Recumbent length: birth through 47 months
Standing height: 2 years and older
Subscapular skin fold: 2 months of age and older
Triceps skin fold: 2 months of age and older
Upper arm length: 2 months of age and older
Upper leg length: 8 years and older
Waist circumference: 2 years of age and older
Weight: All ages

Eligible Sample

All survey participants were eligible for the body measurement component. There were no medical, safety, or other exclusions for the body measurements protocol. The health technicians used their discretion to obtain as many measures as practical for persons who used a wheelchair. No changes have been made to the NHANES body measurement protocol since the continuous NHANES began in 1999.

Protocol and Procedure

The body measurement data were collected by trained health technicians. The health technician was accompanied by a recorder during each body measurement examination. The respondent's age, at the time of the screening interview, determined the body measurement examination protocol for survey participants. In some instances, several weeks elapsed between the initial screening interview and the health examination. The Demographics data file includes variables for age at screening (RIDAGEYR and RIDAGEMN) and age at examination (RIDAGEEX).

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 who had amputations because the information might be considered identifiable and pose a disclosure concern. Therefore, body weight data for individuals who had limb amputations were set to missing.

This data file includes body measurements 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 Demographic file variable, RIDEXPRG - pregnancy status at the time of the health examination.

For general guidelines on the body measurement procedures, please refer to the [Anthropometric Standardization Reference Manual](#) (1).

The NHANES body measurement techniques are illustrated in the [NHANES III Anthropometric Procedures Video](#) (2). The NHANES III body measurement protocol included more measurements than the protocol that was used in NHANES 2005-2006. The maximal calf circumference measurement was added to NHANES in 1999 and is not shown in the NHANES III video.

The NHANES 2005-2006 Body Measurement Procedures Manual is posted on the NHANES 2005-2006 website. The manual provides descriptions of the NHANES protocol, survey equipment, and quality control procedures.

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 using the NHANES III anthropometry video and demonstrations conducted by the expert examiner with volunteer subjects. The expert examiner reviewed and demonstrated the proper technique to use for each measurement. Supervised practice exercises followed with several volunteer subjects, including infants, children, and adults. New technicians were monitored closely by the chief health technician when they started working in the field.

Health technician performance in the field was monitored continuously using direct observation, data reviews, and periodic expert examiner (gold standard comparison) evaluations. All of the body measurement

rooms in the mobile examination centers (MECs) were identical with respect to the arrangement and type of equipment. Scheduled equipment calibration was performed by the health technicians and verified by supervisory staff. Please refer to the Body Measures Procedures Manual for a detailed description of the quality assurance and control measures used in NHANES.

Data Processing and Editing

Data were reviewed for unusual and erroneous values. The initial checks used range criteria that were based on the NHANES III and NHANES 1999–2004 body measures data. Range checks for infants under 2 months of age and maximal calf circumference were based on NHANES 1999–2004 data. During the data review, values that were above the 99th percentile or below the 1st percentile for a particular age or age-gender group were flagged for review. When records were flagged, the entire body measurements record was reviewed for reasonableness. Subject characteristics such as height, weight, age and gender were taken into consideration. Values that were unrealistic were deleted from the file. None of the original body measures data were changed and there are no imputed values in this file.

Analytic Notes

Component status code: A final body measures component status code (BMDSTAT) provides analysts with a quick method of determining complete and partial body measures examination records.

Unusual values: Unusual body measurement values were noted during the review of the data. Typically, unusual values occurred when a subject was extremely short, tall, overweight or underweight. Analysts should examine the distributions of the body measurements carefully. In particular, the upper arm length (BMXARML) and upper leg length (BMXLEG) values are affected by extreme amounts of adipose tissue. Skinfold measurements were not obtained for many obese subjects because the amount of adipose tissue exceeded the limits of the caliper, or the technician was not able to grasp a double thickness of tissue.

Comment Codes: Comment codes were noted by the health technicians during data collection to document problems or situations that arose during the body measurement examination. For example, the variable BMIWT is a comment code for the body weight measurement. If a subject 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 prior to analyzing the data and selecting the subjects to include in their analytic samples.

Sample Weights: The examination sample weights should be used to

analyze the body measurement data.

Please refer to the Analytic Guidelines for further details on the use of sample weights and other analytic issues. The Analytic Guidelines are available on the NHANES website.

References

1. Lohman TG, Roche AF, Martorell R, editors. Anthropometric Standardization Reference Manual. Abridged ed. Champaign, IL: Human Kinetics Books; 1988.
2. Centers for Disease Control and Prevention, National Center for Health Statistics. NHANES III Anthropometric Procedures Video. Available from:
http://www.cdc.gov/nchs/products/elec_prods/subject/video.htm
[Accessed 6/5/07]

Locator Record

Title: Body Measurements (BMX_D)

Contact Number: 1-866-441-NCHS

Years of Content: 2005–2006

First Published: November 2007

Revised: NA

Access Constraints: None

Use Constraints: None

Geographic Coverage: National

Subject: Body measurement component of the NHANES health examination

Record Source: NHANES 2005–2006

Survey Methodology: NHANES 2005–2006 is a stratified multistage probability sample of the civilian non-institutionalized population of the U.S.

Medium: NHANES Web site; SAS transport files

**National Health and Nutrition Examination Survey
Codebook for Data Production (2005-2006)**

**Exam Component:
Body Measurements (BMX_D)**

November 2007



SEQN	Target
	B(0 Yrs. to 150 Yrs.)
Hard Edits	SAS Label
	Respondent sequence number
English Text: Respondent sequence number.	
English Instructions:	

BMDSTATS	Target
	B(0 Yrs. to 150 Yrs.)
Hard Edits	SAS Label
	Body Measures Component Status Code
English Text: Body Measures Component status Code	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
1	Complete data for age group	7910	7910	
2	Partial: Height and weight obtained	196	8106	
3	Other partial exam	1766	9872	
4	No body measures exam data	78	9950	
.	Missing	0	9950	

BMXWT		Target		
		B(0 Yrs. to 150 Yrs.)		
Hard Edits		SAS Label		
0.0000 to 440.0000		Weight (kg)		
English Text: Weight (kg)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
2.6 to 371	Range of Values	9847	9847	
.	Missing	103	9950	

BMIWT		Target		
		B(0 Yrs. to 150 Yrs.)		
Hard Edits		SAS Label		
		Weight Comment		
English Text: Weight Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Could not obtain	29	29	
2	Exceeds capacity	0	29	
3	Clothing	282	311	
4	Medical appliance	15	326	
.	Missing	9624	9950	

BMXRECUM	Target			
	B(0 Mos. to 47 Mos.)			
Hard Edits	SAS Label			
16.0000 to 119.3000	Recumbent Length (cm)			
English Text: Recumbent Length (cm)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
46.8 to 113.3	Range of Values	1356	1356	
.	Missing	8594	9950	

BMIRECUM	Target			
	B(0 Mos. to 47 Mos.)			
Hard Edits	SAS Label			
	Recumbent Length Comment			
English Text: Recumbent Length Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Could not obtain	38	38	
2	Exceeds capacity	0	38	
3	Not straight	1	39	
.	Missing	9911	9950	

BMXHEAD	Target			
	B(0 Mos. to 6 Mos.)			
Hard Edits	SAS Label			
00.0000 to 99.9999	Head Circumference (cm)			
English Text: Head Circumference (cm)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
32.6 to 48	Range of Values	292	292	
.	Missing	9658	9950	

BMIHEAD	Target			
	B(0 Mos. to 6 Mos.)			
Hard Edits	SAS Label			
	Head Circumference Comment			
English Text: Head Circumference Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Could not obtain	0	0	
2	Exceeds capacity	0	0	
3	Not straight	0	0	
.	Missing	9950	9950	

BMXHT		Target		
		B(2 Yrs. to 150 Yrs.)		
Hard Edits		SAS Label		
70.0000 to 208.4000		Standing Height (cm)		
English Text: Standing Height (cm)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
79.8 to 204.1	Range of Values	8962	8962	
.	Missing	988	9950	

BMIHT		Target		
		B(2 Yrs. to 150 Yrs.)		
Hard Edits		SAS Label		
		Standing Height Comment		
English Text: Standing Height Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Could not obtain	62	62	
2	Exceeds capacity	0	62	
3	Not straight	258	320	
.	Missing	9630	9950	

BMXBMI	Target			
	B(2 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	Body Mass Index (kg/m**2)			
English Text: Body Mass Index (kg/m**2)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
11.74 to 130.21	Range of Values	8949	8949	
.	Missing	1001	9950	

BMXLEG	Target			
	B(8 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
0.0000 to 200.0000	Upper Leg Length (cm)			
English Text: Upper Leg Length (cm)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
21.5 to 53.7	Range of Values	7314	7314	
.	Missing	2636	9950	

BMILEG		Target		
		B(8 Yrs. to 150 Yrs.)		
Hard Edits		SAS Label		
		Upper Leg Length Comment		
English Text: Upper Leg Length Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Could not obtain	325	325	
.	Missing	9625	9950	

BMXCALF		Target		
		B(8 Yrs. to 150 Yrs.)		
Hard Edits		SAS Label		
0.0000 to 200.0000		Maximal Calf Circumference (cm)		
English Text: Maximal Calf Circumference (cm)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
20.2 to 75.6	Range of Values	7386	7386	
.	Missing	2564	9950	

BMICALF	Target			
	B(8 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	Maximal Calf Comment			
English Text: Maximal Calf Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Could not obtain	258	258	
.	Missing	9692	9950	

BMXARML	Target			
	B(2 Mos. to 150 Yrs.)			
Hard Edits	SAS Label			
0.0000 to 200.0000	Upper Arm Length (cm)			
English Text: Upper Arm Length (cm)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
9.5 to 48.6	Range of Values	9498	9498	
.	Missing	452	9950	

BMIARML		Target		
		B(2 Mos. to 150 Yrs.)		
Hard Edits		SAS Label		
		Upper Arm Length Comment		
English Text: Upper Arm Length Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Could not obtain	291	291	
.	Missing	9659	9950	

BMXARMC		Target		
		B(2 Mos. to 150 Yrs.)		
Hard Edits		SAS Label		
0.0000 to 200.0000		Arm Circumference (cm)		
English Text: Arm Circumference (cm)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
11 to 62.4	Range of Values	9494	9494	
.	Missing	456	9950	

BMIARMC	Target			
	B(2 Mos. to 150 Yrs.)			
Hard Edits	SAS Label			
	Arm Circumference Comment			
English Text: Arm Circumference Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Could not obtain	297	297	
.	Missing	9653	9950	

BMXWAIST	Target			
	B(2 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
0.0000 to 200.0000	Waist Circumference (cm)			
English Text: Waist Circumference (cm)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
40.2 to 175	Range of Values	8672	8672	
.	Missing	1278	9950	

BMIWAIST	Target			
	B(2 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	Waist Circumference Comment			
English Text: Waist Circumference Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Could not obtain	346	346	
.	Missing	9604	9950	

BMXTHICR	Target			
	B(8 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
0.0000 to 200.0000	Thigh Circumference (cm)			
English Text: Thigh Circumference (cm)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
28.3 to 93.9	Range of Values	7295	7295	
.	Missing	2655	9950	

BMITHICR	Target			
	B(8 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	Thigh Circumference Comment			
English Text: Thigh Circumference Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Could not obtain	350	350	
.	Missing	9600	9950	

BMXTRI	Target			
	B(2 Mos. to 150 Yrs.)			
Hard Edits	SAS Label			
0.0000 to 45.0000	Triceps Skinfold (mm)			
English Text: Triceps Skinfold (mm)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
3 to 45	Range of Values	8897	8897	
.	Missing	1053	9950	

BMITRI		Target		
		B(2 Mos. to 150 Yrs.)		
Hard Edits		SAS Label		
		Triceps Skinfold Comment		
English Text: Triceps Skinfold Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Could not obtain	712	712	
2	Exceeds capacity	183	895	
3	Hard to obtain	0	895	
.	Missing	9055	9950	

BMXSUB		Target		
		B(2 Mos. to 150 Yrs.)		
Hard Edits		SAS Label		
0.0000 to 45.0000		Subscapular Skinfold (mm)		
English Text: Subscapular Skinfold (mm)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
2.8 to 44	Range of Values	8110	8110	
.	Missing	1840	9950	

BMISUB		Target		
		B(2 Mos. to 150 Yrs.)		
Hard Edits		SAS Label		
		Subscapular Skinfold Comment		
English Text: Subscapular Skinfold Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Could not obtain	1575	1575	
2	Exceeds capacity	108	1683	
3	Hard to obtain	0	1683	
.	Missing	8267	9950	