National Health and Nutrition Examination Survey 2001–2002

Documentation, Codebook, and Frequencies

Dual-Energy X-ray Absorptiometry

Examination

Survey Years:
2001 to 2002

SAS Transport File:
DXX_B.XPT

January 2008

Component Description

Users of the 2001-2002 Dual-Energy X-ray Absorptiometry data (variable name prefix DXX_B) are strongly encouraged to read the documentation before accessing the data file.

Because missing or invalid data have been multiply imputed, the DXX_B data release file contains 5 records for each survey participant 8 years of age and older who was interviewed and examined. Only 1 record should be used in calculating sample sizes. However, all 5 records must be used in analyses in order to obtain more accurate variance estimates. The records for some survey participants, such as pregnant females, are blank; pregnant females were not eligible for the DXA scan

Dual-energy x-ray absorptiometry (DXA) has become one of the most widely accepted methods of measuring body composition due in part to its speed, ease of use, and low radiation exposure (1-4). Starting in 1999, whole body DXA scans were administered in the NHANES mobile examination center (MEC). The NHANES DXA examination provides: 1) nationally representative data on body composition (bone and soft tissue), overall and for age, sex, and racial/ethnic groups; 2) estimates of the prevalence of obesity, as distinct from overweight; 3) estimates of whole body bone density; and 4) data to study the association between body composition and other health conditions and risk factors, such as cardiovascular disease, diabetes, hypertension, and activity and dietary patterns.

The DXA scans provide bone and soft tissue measurements for the total body, for both arms and both legs, the trunk, and head. Bone

measurements also were obtained for the pelvis, left and right ribs, thoracic spine, and lumbar spine. Values for the total body and regions include:

- Total mass (gm)
- Bone mineral content (BMC) (gm)
- Bone area (cm^2)
- Bone mineral density (BMD) (gm/cm^2)
- Fat mass (gm)
- Lean mass excluding BMC (gm)
- Lean mass including BMC (gm)
- Percent body fat (%)

Eligible Sample

DXA scans were administered to eligible survey participants 8 years of age and older. Pregnant females were ineligible for the DXA examination. Participants who were excluded from the DXA examination for reasons other than pregnancy were considered to be eligible nonrespondents. Reasons for exclusion from the DXA examination were as follows:

- Pregnancy (positive urine pregnancy test and/or self-report at the time of the DXA examination). Females between the ages of 12–59 years and menstruating 8–11 year olds were not permitted to take the DXA examination without a negative MEC pregnancy test result. In addition, females aged 12–59 years were excluded from the examination if they said they were pregnant at the time of the exam, even if the pregnancy test was negative.
- Self-reported history of radiographic contrast material (barium) use in past 7 days.
- Self-reported nuclear medicine studies in the past 3 days.
- Self-reported weight over 300 pounds or height over 6’5” (DXA

table limitations).

The variable DXAEXSTS indicates examination status. Equipment failure was the main reason for a completed, but invalid scan. The “Not scanned, other reason” code includes no time to complete the examination, pregnancy test not completed, and participant refusal, as well as exclusion for reasons other than pregnancy.

DXAEXSTS – examination status variable

1 = Scan completed
2 = Scan completed, but invalid
3 = Not scanned, pregnant
4 = Not scanned, weight > 300 lbs
5 = Not scanned, height > 6’5”
6 = Not scanned, other reason

Administration

Whole body DXA scans were taken with a Hologic QDR-4500A fan-beam densitometer (Hologic, Inc., Bedford, Massachusetts). Hologic software version 8.26:a3* was used to administer all scans. The densitometer scanned participants with an x-ray source using fan-beam scan geometry in three passes (1 minute per pass). The participants were positioned supine on the tabletop with their feet in a neutral position and hands flat by their side. A Velcro strap was used to keep the feet stationary and together. The DXA technique acquires two low-dose x-ray images at different average energies. The ratio of the attenuation of these two average energies, called an R-factor, is used to distinguish both bone from soft tissue, and the percent fat in soft tissue when bone isn’t present. The radiation exposure from DXA is extremely low at less than 10 uSv.

The DXA examinations were administered by certified radiology technologists. Further details of the DXA examination protocol are documented in the Body Composition Procedures Manual located on

the NHANES website.

Quality Assurance & Quality Control

A high level of quality control was maintained throughout the DXA data collection and scan analysis, including a rigorous phantom scanning schedule.

Monitoring of Field Staff and Densitometers

Staff from the National Center for Health Statistics (NCHS) and the NHANES data collection contractor monitored technologist acquisition performance through in-person observations in the field. Retraining sessions were conducted with the technologists annually and as needed to reinforce correct techniques and appropriate protocol. In addition, technologist performance codes were recorded by the NHANES quality control center at the University of California, San Francisco (UCSF), Department of Radiology as part of the participants' scan review. The codes documented when the technologist had deviated from acquisition procedures and scan quality could have been improved. The performance codes were tracked for each technologist individually and a summary reported to NCHS on a quarterly basis. Constant communication was maintained throughout the year among the UCSF, the NCHS, and the data collection contractor regarding any issues that arose.

Hologic service engineers performed all routine densitometer maintenance and repairs. Copies of all reports completed by the manufacturer's service engineers were sent to the UCSF when the scanners were serviced or repaired so any changes in measurement as a result of the work could be assessed. While some minor mechanical repairs were made during 2001-2002 survey operations, replacement or realignment of the detectors, apertures, or other major hardware was not required for any of the three densitometers.

Scan Analysis

Each participant and phantom scan was reviewed and analyzed by the UCSF using standard radiologic techniques and study-specific protocols developed for the NHANES. Hologic Discovery software, version 12.1, was used to analyze the scans. The Discovery analysis software incorporates the Auto WB application, which was developed to improve bone detection in children participating in the NHANES and other studies of children (5, 6). The Discovery analysis algorithms automatically detect and measure very low-density bone in children weighing 40 kg or less.

Expert review was conducted by the UCSF on 100% of analyzed participant scans to verify the accuracy and consistency of the results.

Invalidity codes

Invalidity codes were applied by the UCSF to indicate the reasons regions of the body could not be analyzed accurately. The invalidity codes are provided in the data file (see Analytic Notes for a description of the invalidity codes).

Quality Control Scans

The quality control phantoms were scanned according to a predetermined schedule. The Hologic Anthropomorphic Spine Phantom associated with each MEC was scanned daily as required by the manufacturer to ensure accurate calibration of the densitometer. Other MEC-specific phantoms, such as the Hologic Whole Body Slim-line Phantom and Hologic Tissue Step Phantom, were scanned 1 to 3 times weekly. Another set of phantoms, the Hologic Spine (HSP-Q96), Hologic Block, and Hologic Whole Body Phantoms, circulated among the MECs and were scanned at the start of operations at each survey site.

Air scans, phantom-less scans using the whole body scan mode, were

used to describe and monitor the systems' radiographic uniformity across the entire scan field. Poor uniformity could be caused by poor aperture alignment, incorrect gantry rotation, non-uniform gain in detectors, etc., that result in localized inaccuracies in the attenuation values.

The complete phantom scanning schedule is described in the Body Composition Procedures Manual located on the NHANES website.

Cross-calibration and Longitudinal monitoring

In multi-site studies such as the NHANES, verification that all DXA systems are performing within the expected limits is critical since data collected at the multiple sites are pooled for analysis. A cross-calibration study was conducted prior to the start of NHANES 1999 to identify the relationships among the densitometers in the three MECS. Since all three densitometers in the NHANES were the identical make and model, cross-calibration was simplified. However, in 1999, no standard existed for phantom cross-calibration for whole body BMD and soft tissue and new procedures were developed for the survey. At the time, the NHANES cross-calibration study was unique in that it included three scanners and in-vivo subjects and in-vitro phantoms.

In 2001-2002, longitudinal monitoring was conducted through the daily spine phantom scans as required by the manufacturer, 3 times weekly whole body slim-line phantom scans, and weekly air scans in order to correct any scanner-related changes in participant data. The circulating HSP-Q96, block, and whole body phantoms, which were scanned at the start of operations at each site, provided additional data for use in longitudinal monitoring and cross calibration. The cross-comparability of the data from each MEC was critical so the data could be pooled for analysis.

The UCSF used the Cumulative Statistics method (CUSUM) and the MEC-specific phantom data to determine breaks in the calibration of the densitometers over the course of the survey (10). Multiplicative correction factors were used to correct the phantom data back to the baseline calibration. The type, frequency, and magnitude of calibration problems detected in the NHANES data were similar to those in other studies using stationary densitometers that were being monitored by UCSF.

After applying the correction factors developed by UCSF from the cross-calibration and longitudinal phantom data to the NHANES participant data, the adjusted participant data were compared to unadjusted data. The magnitude of the changes and reduction in standard errors between the adjusted and unadjusted data were found to be small and correction of the participant data not required.

A number of issues were addressed through the quality control program. Direct feedback given to the technologists regarding acquisition problems affecting the quality of the scans and yearly refresher training resulted in improved technologist performance. The rigorous schedule of quality control scans provided continuous monitoring of machine performance. The expert review procedures assured that scan analysis was accurate and consistent. The air scan quality assurance tool used to evaluate whole body performance was first used in the NHANES and was subsequently adopted by Hologic as a mandatory scan mode for all whole body scanners.

Data Processing and Editing

Several steps were taken to produce the DXX_B data files.

5% Adjustment of Lean Mass and Fat Mass

The NHANES lean soft tissue mass and fat mass for the total body and regions were adjusted based on the results of an analysis of QDR-

4500A DXA data from seven research laboratories indicating that the QDR-4500A algorithm underestimated fat mass and overestimated lean mass (7). The analysis utilized six data sets provided by study investigators and one published data set. The analytic data included fat mass and lean mass measured on Hologic QDR-4500A densitometers and criteria measurements of body composition from total body water by dilution, underwater weighing, and four-compartment analysis. The QDR-4500A was determined to overestimate lean mass ($p < 0.05$) in the cohort of 1198 subjects. A statistically significant difference was observed in all seven data sets with a mean ± SE of 5 ± 1%. Based on the results of the analysis, the NHANES DXA lean mass was decreased by 5% and an equivalent kilogram weight added to the fat mass so the total mass did not change.

Multiple Imputation

The percentage of eligible survey participants in 2001-2002 with 100% valid data (all analyzed regions were valid) is shown by age group in Table 1. The percentage of participants with valid data decreases with increasing age. The decrease in valid data with age was due primarily to an increase in the number of participants with implants such as pacemakers, stents, and hip replacements and higher rates of obesity resulting in invalid truncal data from “obesity noise.” The percentage of participants with 100% valid data also decreases with increasing BMI (Table 2).

Because valid data decreased with increasing age and increasing BMI and because individuals with body weight greater than 300 pounds were not scanned (exclusion criterion for the DXA examination), invalid and missing data could not be treated as a random subset of the data file. To resolve the problem of bias due to non-random invalid and missing data, multiple imputation of the DXX_B data was performed. With the exception of pregnant women (who were ineligible for the DXA exam)

and participants with amputations other than fingers or toes, all participants aged 8 years and older with invalid or missing data were included in the multiple imputation process.

SAS-callable imputation and variance estimation software developed by the Survey Methodology Program at the University of Michigan's Institute of Survey Research (ISR), IVEware, was used to impute the NHANES DXA data (8). The IVEware module IMPUTE performs multiple imputations of missing values using the sequential regression imputation method (9). A detailed description of the imputation procedures is provided in the Documentation for Multiple Imputation of National Health and Nutrition Examination Survey 1999-2004 Dual Energy X-Ray Absorptiometry Data on the NHANES.

Five complete records containing valid and/or imputed values were created for each survey participant to allow the assessment of variability due to imputation. The DXX data file contains all 5 records. The variable "_multi_ " has values 1-5 which can be used to identify the records. For participants with multiply imputed data, each of the 5 records contains a different set of imputed values. Participants who have 100% valid data have 5 identical records, since no data were imputed.

Use of the imputed data sets will provide complete DXA data for all participants and ensure a more accurate standard error of the estimate.

Imputation Indicator Variables

The data file contains imputation indicator variables as listed below; the values for each variable are 0 = data not imputed, 1 = data imputed, and 2 = highly variable imputed data:

DXITOT = overall indicator; 1 or more regions were imputed

DXIHE = head
DXILA = left arm
DXILL = left leg
DXIRA = right arm
DXIRL = right leg
DXILR = left rib
DXIRR = right rib
DXITS = thoracic spine
DXILS = lumbar spine,
DXIPE = pelvis
DXITR = trunk

A subset of participants with highly variable imputed data, fat mass in particular, has blank records in the 2001-2002 DXX file. The data for these participants can be found in the DXX_B_S data file. Participants with highly variable imputed data (all imputation indicator variables = 2) had no valid DXA data and were missing measured weight and waist circumference, which were critical predictor variables in the imputation model. The data in DXX_B_ S should be reviewed carefully before inclusion in any analysis.

Analytic Notes

The DXX_B data file contains 5 records for each survey participant. The multiple records must be taken into account when calculating sample sizes. The following SAS example can be used to select a single record in order to calculate sample sizes:

```
data alldxx_b;
merge dexa.dxx_b (where =(_mult_ = 1)) work.demo;
by seqn;
```

The frequency counts in the codebook are the total number of observations from all 5 records. The counts must be divided by 5 to calculate the actual number of participants with the code or value.

Frequency counts are not provided for the DXX_B_S data file.

Analysts should read the Documentation for Multiple Imputation of National Health and Nutrition Examination Survey 1999-2004 Dual Energy X-Ray Absorptiometry Data on the NHANES website. The documentation provides sample code for analysis of the multiply imputed data using SAS-callable SUDAAN.

The NHANES examination sample weights should be used for all DXX_B analyses. Please refer to the Analytic Guidelines on the NHANES website for further details on the use of sample weights and other analytic issues.

Relationship among examination status codes and imputation indicator codes

DXAEXSTS	DXITOT	Data	Other Imputation Indicator Codes
1	0	All data were valid and none were imputed.	All codes = 0.
1	1	Data for at least 1 region(s) were invalid and imputed.	Code(s) for the imputed regions(s) = 1.
2	1	All data were invalid and all were imputed.	All codes = 1.
3	Missing	Participant was pregnant and excluded from the DXA exam. All data are missing and none were imputed. There are 344 pregnant females in the DXX_B data file.	Missing
4, 5, or 6	1	Participant was excluded from the exam for a reason other than pregnancy. All data were	All codes = 1.

		imputed.	
4 or 6	2	The participant was excluded from the exam. All data were imputed, but were considered to be highly variable and placed in DXX_B_S. There are 252 participants with highly variable data in the DXX_B_S file.	All codes = 2.
6	Missing	The participant was excluded from the exam, but the data could not be imputed for reasons such as amputation. All data are missing. There are 25 such participants in the DXX_B data file.	Missing

Invalidity Codes

Invalidity codes were applicable to completed scans only (DXAEXSTS=1). Valid regions were coded 0. Codes 1-7 indicate the reasons regions could not be analyzed accurately. If a participant was not scanned, all invalidity codes will be missing.

Invalidity codes

DXAHEBV = head bone

DXAHETV = head tissue

DXALABV = left arm bone

DXALATV = left arm tissue

DXALLBV = left leg bone

DXALLTV = left leg tissue

DXARABV = right arm bone

DXARATV = right arm tissue

DXARLBV = right leg bone

DXARLTV = right leg tissue

DXATRBV = trunk bone, includes thoracic and lumbar spine, left and

right ribs, and pelvis

DXATRTV = trunk tissue

Values for invalidity codes

0 = Valid data

1 = Jewelry and other objects not removed

2 = Non-removable objects (includes prostheses, implants, casts)

3 = Excessive x-ray “noise” due to obesity, i.e., the DXA beam could not penetrate the layers of abdominal fat to provide an analyzable scan image (applied to the trunk region only)

4 = Arm/leg overlap

5 = Body parts out of scan region

6 = Positioning problem (head, arms/hands or feet turned)

7 = Other (includes participant motion, unknown artifacts, deformities)

References

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10. Lu Y, Mathur AK, Blunt BA, Gluer CC, Will AS, Fuerst TP, Jergas MD, Andriano KN, Cummings SR, Genant HK. Dual X-ray absorptiometry quality control: comparison of visual examination and process-control charts.J Bone Miner Res. 1996 May;11(5):626-37

Table 1. Percentages of interviewed and examined participants 8 years of age and older with valid DXA data by age group, NHANES 2001-2002

Sex-age group (Years)	Interviewed and examined *	Eligible for DXA †		100% valid DXA data ‡	
	N	N	%	N	%
8-11	797	797	100	740	93
12-15	1231	1229	100	1108	90
16-19	1187	1141	96	986	86
20-29	972	783	80	642	82
30-39	871	765	89	606	79
40-49	891	890	100	702	79
50-59	665	665	100	515	77
60-69	695	695	100	501	72

70-79	531	531	100	386	73
80+	402	402	100	239	59
Total	**8242**	**7898**	**97**	**6425**	**81**

* The number interviewed and examined is the total number of participants in the data file with a SEQN variable. This number includes pregnant females (n=344).

† The total number eligible for DXA includes participants with both valid and imputed data (n=7621), participants with highly variable data in DXX_B_S (n=252), and participants for whom data could not be imputed (n=25). This number does not include pregnant females.

‡ Of those eligible for DXA who successfully completed a scan.

Table 2. Percentages of participants 20 years and older with valid DXA data by body mass index (BMI)* category, NHANES 2001-2002

BMI Category	Eligible for DXA*	100% Valid Data †	
	N	N	%
< 18	79	70	89
18-24.9	1355	1174	87
25-29.9	1639	1397	85
30-34.9	796	644	81
35.0-39.9	331	191	58
≥ 40	213	47	22
Total	**4413**	**3523**	**80**

***** Measured weight in kilograms divided by measured height in meters squared.

† Does not include pregnant females

‡ Of those eligible for DXA.

Locator Record

Title: Dual Energy X-ray Absorptiometry (DXX_B)

Contact Number: 1-866-441-NCHS

Years of Content: 2001-2002

First Published: January 2008

Revised: NA

Access Constraints: None

Use Constraints: None

Geographic Coverage: National

Subject: Personal examination data on total body fat mass, lean soft tissue mass, percent body fat, bone mineral content, and bone density

Record Source: NHANES 2001-2002

Survey Methodology: NHANES 2001-2002 is a stratified multistage probability sample of the civilian non-institutionalized population of the U.S.

Medium: NHANES Web site; SAS transport files

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

National Health and Nutrition Examination Survey
Codebook for Data Production (2001-2002)

MEC Examination
Dual-Energy X-ray Absorptiometry Examination (DXX_B)
Person Level Data

January 2008

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

SEQN	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Respondent sequence number
English Text:	
English Instructions:	

MULT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Imputation Version
English Text: Imputation version	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
1 to 5	Range of Values	41210	41210	
.	Missing	0	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXAEXSTS	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Exam Status
English Text:	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
1	Scan completed	35525	35525	
2	Scan completed, but invalid	15	35540	
3	Not scanned, pregnancy	1720	37260	
4	Not scanned, weight > 300 lbs	340	37600	
5	Not scanned, height > 6'5	5	37605	
6	Not scanned, other reason	3605	41210	
.	Missing	0	41210	

DXITOT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Overall Imputation Indicator
English Text: Overall imputation indicator	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	None of the regions are imputed	32125	32125	
1	At least one region is imputed	5980	38105	
2	Data are highly variable and can be found in DXX_S	1260	39365	
.	Missing	1845	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXIHE	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Head Imputation Indicator
English Text: Head Imputation Indicator	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Not imputed	35405	35405	
1	Imputed	2700	38105	
2	Highly Variable Imputation	1260	39365	
.	Missing	1845	41210	

DXXHEA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Head Area (cm^2)
English Text: Head Area (cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
156.31 to 329.06	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXAHEBV	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Head Bone Invalidity Code
English Text: Head Bone Invalidity Code	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Valid data	35405	35405	
1	Jewelry or other objects not removed	20	35425	
2	Non-removable objects	10	35435	
5	Body parts out of scan region	30	35465	
7	Other	60	35525	
.	Missing	5685	41210	

DXXHEBMC	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Head Bone Mineral Content (g)
English Text: Head Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
169.96 to 937.27	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXHEBMD	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Head Bone Mineral Density (g/cm^2)
English Text: Head Bone Mineral Density (grams/cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.844 to 3.813	Range of Values	38105	38105	
.	Missing	3105	41210	

DXAHETV	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Head Tissue Invalidity Code
English Text: Head Tissue Invalidity Code	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Valid data	35405	35405	
1	Jewelry or other objects not removed	20	35425	
2	Non-removable objects	10	35435	
5	Body parts out of scan region	30	35465	
7	Other	60	35525	
.	Missing	5685	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXHEFAT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Head Fat (g)
English Text: Head Fat (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
638.6 to 2372.9	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDHELE	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Head Lean excl BMC (g)
English Text: Head Lean excl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
1800.9 to 6353.9	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXHELI	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Head Lean incl BMC (g)
English Text: Head Lean incl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
2044.6 to 7213.9	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDHETOT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Head Total (g)
English Text: Head Total (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
2683.2 to 9586.8	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDHEPF	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Head Percent Fat
English Text: Head Percent Fat	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
21.4 to 30.2	Range of Values	38105	38105	
.	Missing	3105	41210	

DXILA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Arm Imputation Indicator
English Text:	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Not imputed	34955	34955	
1	Imputed	3150	38105	
2	Highly Variable Imputation	1260	39365	
.	Missing	1845	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXLAA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Arm Area (cm^2)
English Text: Left Arm Area (cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
51.97 to 378	Range of Values	38105	38105	
.	Missing	3105	41210	

DXALABV	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Arm Bone Invalidity Code
English Text: Left Arm Bone Invalidity Code	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Valid data	34960	34960	
1	Jewelry or other objects removed	55	35015	
2	Non-removable objects	110	35125	
4	Arm/leg overlap	50	35175	
5	Body parts out of scan region	320	35495	
6	Positioning problem	5	35500	
7	Other	25	35525	
.	Missing	5685	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXLABMC	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Arm BMC (g)
English Text: Left Arm Body Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
25.45 to 427.7	Range of Values	38105	38105	
.	Missing	3105	41210	

DXXLABMD	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Arm BMD (g/cm^2)
English Text: Left Arm Body Mineral Density (grams/cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.309 to 1.215	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXALATV	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Arm Tissue Invalidity Code
English Text: Left Arm Tissue Invalidity Code	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Valid data	34960	34960	
1	Jewelry or other objects not removed	55	35015	
2	Non-removable objects	110	35125	
4	Arm/leg overlap	50	35175	
5	Body parts out of scan region	320	35495	
6	Positioning problem	5	35500	
7	Other	25	35525	
.	Missing	5685	41210	

DXXLAFAT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Arm Fat (g)
English Text: Left Arm Fat (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
78.4 to 7352	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDLALE	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Arm Lean excl BMC (g)
English Text: Left Arm Lean excl Body Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
579.6 to 8592.4	Range of Values	38105	38105	
.	Missing	3105	41210	

DXXLALI	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Arm Lean incl BMC (g)
English Text: Left Arm Lean incl BMC (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
626.2 to 9001.2	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDLATOT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Arm Total (g)
English Text: Left Arm Total (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
938.1 to 14080.1	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDLAPF	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Arm Percent Fat
English Text: Left Arm Percent Fat	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
7.8 to 70.6	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXILL	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Leg Imputation Indicator
English Text:	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Not imputed	34775	34775	
1	Imputed	3330	38105	
2	Highly Variable Imputation	1260	39365	
.	Missing	1845	41210	

DXXLLA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Leg Area (cm^2)
English Text: Left Leg Area(cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
132.98 to 624.67	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXALLBV	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Leg Bone Invalidity Code
English Text: Left Leg Bone Invalidity Code	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Valid data	34790	34790	
1	Jewelry or other objects not removed	60	34850	
2	Non-removable objects	450	35300	
4	Arm/leg overlap	55	35355	
5	Body parts out of scan region	130	35485	
6	Positioning problem	15	35500	
7	Other	25	35525	
.	Missing	5685	41210	

DXXLLBMC	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Leg BMC (g)
English Text: Left Leg Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
94.13 to 1125	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXLLBMD	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Leg BMD (g/cm^2)
English Text: Left Leg Bone Mineral Density (grams/cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.523 to 1.932	Range of Values	38105	38105	
.	Missing	3105	41210	

DXALLTV	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Leg Tissue Invalidity Code
English Text: Left Leg Tissue Invalidity Code	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Valid data	34790	34790	
1	Jewelry or other objects not removed	60	34850	
2	Non-removable objects	450	35300	
4	Arm/leg overlap	55	35355	
5	Body parts out of scan region	130	35485	
6	Positioning problem	15	35500	
7	Other	25	35525	
.	Missing	5685	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXLLFAT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Leg Fat (g)
English Text: Left Leg Fat (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
541.6 to 21332	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDLLLE	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Leg Lean excl BMC (g)
English Text: Left Leg Lean excl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
1840.2 to 21664.7	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXLLLI	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Leg Lean incl BMC (g)
English Text: Left Leg Lean incl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
1969.9 to 22603	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDLLTOT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Leg Total (g)
English Text: Left Leg Total (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
2801.2 to 37406.6	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDLLPF	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Leg Percent Fat
English Text: Left Leg Percent Fat	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
9 to 66.7	Range of Values	38105	38105	
.	Missing	3105	41210	

DXIRA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Arm Imputation Indicator
English Text:	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Not imputed	34925	34925	
1	Imputed	3180	38105	
2	Highly Variable Imputation	1260	39365	
.	Missing	1845	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXRAA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Arm Area (cm^2)
English Text: Right Arm Area (cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
60.83 to 382.3	Range of Values	38105	38105	
.	Missing	3105	41210	

DXARABV	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Arm Bone Invalidity Code
English Text: Right Arm Bone Invalidity Code	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Valid data	34940	34940	
1	Jewelry or other objects not removed	80	35020	
2	Non-removable objects	100	35120	
4	Arm/leg overlap	60	35180	
5	Body parts out of scan region	325	35505	
6	Positioning problem	0	35505	
7	Other	20	35525	
.	Missing	5685	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXRABMC	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Arm BMC (g)
English Text: Right Arm Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
32.83 to 448.95	Range of Values	38105	38105	
.	Missing	3105	41210	

DXXRABMD	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Arm BMD (g/cm^2)
English Text: Right Arm Bone Mineral Density (grams/cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.332 to 1.33	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXARATV	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Arm Tissue Invalidity Code
English Text: Right Arm Tissue Invalidity Code	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Valid data	34940	34940	
1	Jewelry or other objects not removed.	80	35020	
2	Non-removable objects	100	35120	
4	Arm/leg overlap	60	35180	
5	Body parts out of scan region	325	35505	
6	Positioning problem	0	35505	
7	Other	20	35525	
.	Missing	5685	41210	

DXXRAFAT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Arm Fat (g)
English Text: Right Arm Fat (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
165.4 to 7293.7	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDRALE	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Arm Lean excl BMC (g)
English Text: Right Arm Lean excl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
621.2 to 8740.6	Range of Values	38105	38105	
.	Missing	3105	41210	

DXXRALI	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Arm Lean incl BMC (g)
English Text: Right Arm Lean incl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
667.5 to 9181.6	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDRATOT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Arm Total (g)
English Text: Right Arm Total (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
1017.8 to 14668.9	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDRAPF	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Arm Percent Fat
English Text: Right Arm Percent Fat	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
9.5 to 70.3	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXIRL	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Leg Imputation Indicator
English Text:	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Not imputed	34660	34660	
1	Imputed	3445	38105	
2	Highly Variable Imputation	1260	39365	
.	Missing	1845	41210	

DXXRLA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Leg Area (cm^2)
English Text: Right Leg Area (cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
127.39 to 631.73	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXARLBV	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Leg Bone Invalidity Code
English Text: Right Leg Bone Invalidity Code	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Valid data	34670	34670	
1	Jewelry or other objects not removed	75	34745	
2	Non-removable objects	535	35280	
4	Arm/leg overlap	55	35335	
5	Body parts out of scan region	135	35470	
6	Positioning problem	20	35490	
7	Other	35	35525	
.	Missing	5685	41210	

DXXRLBMC	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Leg BMC (g)
English Text: Right Leg Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
94.21 to 1197.46	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXRLBMD	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Leg BMD(g/cm^2)
English Text: Right Leg Bone Mineral Density (grams/cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.515 to 1.999	Range of Values	38105	38105	
.	Missing	3105	41210	

DXARLTV	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Leg Tissue Invalidity Code
English Text: Right Leg Tissue Invalidity Code	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Valid data	34670	34670	
1	Jewelry or other objects not removed	75	34745	
2	Non-removable objects	535	35280	
4	Arm/leg overlap	55	35335	
5	Body parts out of scan region	135	35470	
6	Positioning problem	20	35490	
7	Other	35	35525	
.	Missing	5685	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXRLFAT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Leg Fat (g)
English Text: Right Leg Fat (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
604.3 to 22148.8	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDRLLE	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Leg Lean excl BMC (g)
English Text: Right Leg Lean excl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
1946.8 to 22233.5	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXRLLI	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Leg Lean incl BMC (g)
English Text: Right Leg Lean incl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
2078.9 to 23226.4	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDRLTOT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Leg Total (g)
English Text: Right Leg Total (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
3019.1 to 37370.8	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDRLPF	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Leg Percent Fat
English Text: Right Leg Percent Fat	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
7.8 to 67.5	Range of Values	38105	38105	
.	Missing	3105	41210	

DXILR	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Ribs Imputation Indicator
English Text:	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Not imputed	33475	33475	
1	Imputed	4630	38105	
2	Highly Variable Imputation	1260	39365	
.	Missing	1845	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXLRA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Ribs Area (cm^2)
English Text: Left Ribs Area(cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
42.7 to 243.83	Range of Values	38105	38105	
.	Missing	3105	41210	

DXXLRBMC	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Ribs BMC (g)
English Text: Left Ribs Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
16.02 to 211.56	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXLRBMD	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Left Ribs BMD (g/cm^2)
English Text: Left Ribs Bone Mineral Density (grams/cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.267 to 1.158	Range of Values	38105	38105	
.	Missing	3105	41210	

DXIRR	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Ribs Imputation Indicator
English Text:	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Not imputed	33475	33475	
1	Imputed	4630	38105	
2	Highly Variable Imputation	1260	39365	
.	Missing	1845	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXRRA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Ribs Area (cm^2)
English Text: Right Ribs Area (cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
32.23 to 363.05	Range of Values	38105	38105	
.	Missing	3105	41210	

DXXRRBMC	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Ribs BMC (g)
English Text: Right Ribs Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
14.47 to 348.07	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXRRBMD	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Right Ribs BMD (g/cm^2)
English Text: Right Ribs Bone Mineral Density (grams/cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.315 to 1.044	Range of Values	38105	38105	
.	Missing	3105	41210	

DXITS	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Thoracic Spine Imputation Indicator
English Text:	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Not imputed	33490	33490	
1	Imputed	4615	38105	
2	Highly Variable Imputation	1260	39365	
.	Missing	1845	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXTSA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Thoracic Spine Area (cm^2)
English Text: Thoracic Spine Area (cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
39.54 to 263.79	Range of Values	38105	38105	
.	Missing	3105	41210	

DXXTSBMC	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Thoracic Spine BMC (g)
English Text: Thoracic Spine Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
18.64 to 522.65	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXTSBMD	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Thoracic Spine BMD (g/cm^2)
English Text: Thoracic Spine Bone Mineral Density (grams/cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.375 to 1.981	Range of Values	38105	38105	
.	Missing	3105	41210	

DXILS	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Lumbar Spine Imputation Indicator
English Text:	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Not imputed	33490	33490	
1	Imputed	4615	38105	
2	Highly Variable Imputation	1260	39365	
.	Missing	1845	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXLSA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Lumbar Spine Area (cm^2)
English Text: Lumbar Spine Area (cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
15.97 to 101.63	Range of Values	38105	38105	
.	Missing	3105	41210	

DXXLSBMC	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Lumbar Spine BMC (g)
English Text: Lumbar Spine Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
8.16 to 171.28	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXLSBMD	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Lumbar Spine BMD (g/cm^2)
English Text: Lumbar Spine Bone Mineral Density (grams/cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.398 to 2.056	Range of Values	38105	38105	
.	Missing	3105	41210	

DXIPE	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Pelvis Imputation Indicator
English Text:	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Not imputed	33490	33490	
1	Imputed	4615	38105	
2	Highly Variable Imputation	1260	39365	
.	Missing	1845	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXPEA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Pelvis Area (cm^2)
English Text: Pelvis Area (cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
63.1 to 474.57	Range of Values	38105	38105	
.	Missing	3105	41210	

DXXPEBMC	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Pelvis BMC (g)
English Text: Pelvis Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
43.88 to 1273.17	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXXPEBMD	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Pelvis BMD (g/cm^2)
English Text: Pelvis Bone Mineral Density (grams/cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.553 to 2.764	Range of Values	38105	38105	
.	Missing	3105	41210	

DXITR	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Trunk Imputation Indicator
English Text:	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Not imputed	33480	33480	
1	Imputed	4625	38105	
2	Highly Variable Imputation	1260	39365	
.	Missing	1845	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDTRA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Trunk Bone area (cm^2)
English Text: Trunk Bone area (cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
269.56 to 1121.28	Range of Values	38105	38105	
.	Missing	3105	41210	

DXATRBV	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Trunk Bone Invalidity Code
English Text: Trunk Bone Invalidity Code	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Valid data	33490	33490	
1	Jewelry or other objects not removed	95	33585	
2	Non-removable objects	685	34270	
3	Excessive X-ray noise	1220	35490	
4	Arm/leg overlap	5	35495	
5	Body parts out of scan region	0	35495	
6	Positioning problem	0	35495	
7	Other	30	35525	
.	Missing	5685	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDTRBMC	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Trunk BMC (g)
English Text: Trunk Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
142.73 to 1911.5	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDTRBMD	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Trunk Bone BMD (g/cm^2)
English Text: Trunk Bone BMD (g/cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.437 to 1.937	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXATRTV	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Trunk Tissue Invalidity Code
English Text: Trunk Tissue Invalidity Code	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0	Valid data	33490	33490	
1	Jewelry or other objects not removed	95	33585	
2	Non-removable objects	685	34270	
3	Excessive X-ray noise	1220	35490	
4	Arm/leg overlap	5	35495	
5	Body parts out of scan region	0	35495	
6	Positioning problem	0	35495	
7	Other	30	35525	
.	Missing	5685	41210	

DXXTRFAT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Trunk Fat (g)
English Text: Trunk Fat (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
676.3 to 47902.7	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDTRLE	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Trunk Lean excl BMC (g)
English Text: Trunk Lean excl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
5809 to 56510.7	Range of Values	38105	38105	
.	Missing	3105	41210	

DXXTRLI	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Trunk Lean incl BMC (g)
English Text: Trunk Lean incl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
5990.8 to 58085.1	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDTRTOT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Trunk Total (g)
English Text: Trunk Total (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
7483 to 102796.9	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDTRPF	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Trunk Percent Fat
English Text: Trunk Percent Fat	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
5.6 to 58.5	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDSTA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Subtotal Area (cm^2)
English Text: Subtotal Area (cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
673.29 to 3018.33	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDSTBMC	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Subtotal BMC (g)
English Text: Subtotal Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
406.03 to 4793.8	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDSTBMD	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Subtotal BMD (g/cm^2)
English Text: Subtotal Bone Mineral Density (grams/cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.46 to 1.682	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDSTFAT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Subtotal Fat (g)
English Text: Subtotal Fat (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
2358 to 103841.9	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDSTLE	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Subtotal Lean excl BMC (g)
English Text: Subtotal Lean excl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
11019.8 to 116331.9	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDSTLI	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Subtotal Lean incl BMC (g)
English Text: Subtotal Lean incl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
11549.9 to 120757.7	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDSTTOT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Subtotal (Total excl Head) (g)
English Text: Subtotal (Total excl Head) (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
15839.5 to 195282.8	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDSTPF	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Subtotal Percent Fat
English Text: Subtotal Percent Fat	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
8.4 to 59	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDTOA	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Total Area (cm^2)
English Text: Total Area (cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
870.16 to 3282.75	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDTOBMC	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Total Bone Mineral Content (g)
English Text: Total Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
660.85 to 5504.74	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDTOBMD	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Total Bone Mineral Density (g/cm^2)
English Text: Total Bone Mineral Density (grams/cm^2)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.568 to 1.794	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDTOFAT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Total Fat (g)
English Text: Total Fat (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
3170.3 to 105413.5	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDTOLE	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Total Lean excl BMC (g)
English Text: Total Lean excl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
12977.6 to 121428.5	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDTOLI	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Total Lean incl BMC (g)
English Text: Total Lean incl Bone Mineral Content (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
13696.2 to 126483.4	Range of Values	38105	38105	
.	Missing	3105	41210	

Note: the data file contains 5 records for each survey participant. The Count is the total number of observations from all 5 records. The Count must be divided by 5 to calculate the actual number of participants with the Code or Value.

DXDTOTOT	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Total Lean+Fat (g)
English Text: Total Lean incl BMC and Fat (grams)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
18886.6 to 202279.2	Range of Values	38105	38105	
.	Missing	3105	41210	

DXDTOPF	Target
	B(8 Yrs. to 120 Yrs.)
Hard Edits	**SAS Label**
	Total Percent Fat
English Text: Total Percent Fat	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
9.7 to 57.8	Range of Values	38105	38105	
.	Missing	3105	41210	