

**National Health and Nutrition
Examination Survey 2003-2004**

**Documentation, Codebook,
and Frequencies**

**MEC Exam Component:
Audiometry Examination Data**

**Survey Years:
2003 to 2004**

**SAS Export File:
AUX_C.XPT**



February 2006

NHANES 2003–2004 Data Documentation

Exam Component: Audiometry (AUX_C)

Years of Coverage: 2003–2004

First Published: February 2006

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Component Description

The NHANES 2003–2004 Audiometry Examination Component consists of four parts:

1) A pre-exam audiometric questionnaire: This is a series of questions to identify conditions that would affect how audiometric testing is conducted, or how results are interpreted. Questions include whether the subject has ear tubes, a current cold or ear problem, or recent loud noise exposure. Note that more extensive data relating to study subject's hearing status are contained in the audiometry questionnaire (AUQ) section of the NHANES Sample Person Interview Questionnaire. Questionnaire information regarding occupational noise exposure can be found in the Occupational (OCQ) section of the NHANES Sample Person Interview Questionnaire.

2) A brief otoscopic screening (physical) exam of the ear canals and eardrums: This was performed to identify abnormalities which would require alternate audiometric procedures or influence interpretation of test results, and to identify conditions which might require medical referral. The exam screened for excessive or impacted ear cerumen (wax), physical abnormalities, or collapsing external ear canals.

3) Tympanometry: This is an objective assessment of middle ear function by testing the mobility of the eardrum in response to changes in air pressure within the ear canal. It was used to identify middle ear pathologies that might contribute to hearing loss. Tympanometric data, included in this primary Audiometry data file consists of quantitative measurement data for middle ear volume, pressure, compliance, and gradient.

4) Pure tone air conduction audiometry: This measures hearing sensitivity by presenting pure tone signals to the ear through earphones and by varying the intensity of the signals until a subject's hearing threshold at that frequency is determined. Testing was performed at frequencies across the range of human hearing.

Eligible Sample

The Audiometry Component tested a ½ sample of U.S. adults ages 20–69 years. Subjects using hearing aids who were not able to remove them for testing and subjects who had sufficient ear pain at the time of the exam that they could not tolerate headphones were excluded from the Audiometry Component. There were no other precluding conditions for any part of the audiologic exam.

Protocol and Procedure

All Audiometry Component sections were performed by a trained examiner on examinees aged 20–69 in a dedicated, sound-isolating room in the mobile examination center (MEC). Hearing threshold testing was conducted on both ears of examinees at seven frequencies (500, 1000, 2000, 3000, 4000, 6000, and 8000 Hz). Testing was conducted according to a modified Hughson Westlake procedure using the automated testing mode of the audiometer, except as indicated below. The effective range for automated audiometric testing was from –10 to 100 decibels (dB) at 500 to 6000 Hz and –10 to 90 dB at 8000 Hz. Thresholds could be tested through 120 dB (110 dB at 8000 Hz) using manual audiometric mode. Observed values, therefore, varied between –10 and 120 dB. If an examinee did not respond to the signal tone at any level for one or more frequencies because of deafness or severe hearing loss, a threshold level of 666 was entered. Manual testing was also conducted when the examinee could not operate the response switch or responded too slowly for the audiometer to accurately record the response.

In some instances, if a pure tone audiometric signal is sufficiently loud, it can “cross over” and be heard by the opposite ear via bone conduction. When this occurs, it is difficult to determine if the threshold obtained is truly the threshold of the test ear, or an artifact of the non-test ear (which may have better hearing). For the current study, a crossover retesting protocol was performed whenever the observed threshold at any given frequency was poorer in one ear than the other by 25 dB at 500 and 1000 Hz; or 40 dB at any higher frequency. Retesting was accomplished using insert earphones, which are smaller and have less direct contact with the head. Thus, a much louder stimulus is required before crossover occurs. Due to the complexity of the procedure, masking was not employed in this survey.

**Instruments,
Quality
Assurance &
Quality
Control**

Instrumentation for the Audiometry Component included an Interacoustics Model AD226 audiometer with standard TDH-39 headphones and Etymotic EarTone 3A insert earphones. Tympanometry was performed using a Micro Audiometrics Earscan Acoustic Impedance Tympanometer. All testing was performed within a sound-isolating booth, located in a dedicated room in the MEC. Audiometric calibration and background noise levels were checked using a Quest Model 1800 Precision Integrating Sound Level Meter and Model OB-300 1/3-1/1 octave filter set. Daily monitoring of calibration and ambient noise levels was accomplished with a Quest Model BA-201-25 Bioacoustic Simulator and Octave Band Monitor. All data from each of the four sections of the Audiometry Component were entered directly into the computerized NHANES survey database system. Data from the Interacoustics Model AD226 audiometer and Micro Audiometrics Earscan Acoustic Impedance tympanometer were captured electronically and uploaded into the survey information system automatically.

The audiometers used in this survey met the specifications of ANSI S3.6-1996 for Type 3 audiometers. An acoustic calibration check to measure the output and linearity of the audiometer (through both standard and insert earphones) was conducted before the examinations began at each MEC site using a Quest Model 1800 sound level meter kit; a complete acoustic calibration check was also conducted at the end of each stand. Throughout the stand, output of the audiometer was monitored daily using a Quest Model BA-201-25 bioacoustic simulator, and a daily listening check (tone quality, attenuator accuracy, headphone cords, crossover, etc.) was also performed. Standard and insert earphones were checked on an alternating basis. If a unit did not meet specifications, it was sent for servicing, and a fully calibrated backup unit was used for examinations. Manufacturer's calibration (traceable to the National Institute of Standards and Technology [NIST]) was performed annually on each audiometer.

An environmental noise survey was also conducted at the beginning of each stand using the Quest 1800 sound level meter. The survey was repeated weekly throughout the stand. The audiometric test room was required to meet or exceed the specifications of ANSI S3.1-1991 for ears covered testing. A Quest Model BA-201-25 Bioacoustic Simulator and Octave Band Monitor was used to continuously measure the background noise levels in the audiometric test room during audiometric examinations. Pure tone audiometric testing was not performed if

ambient noise levels in the test booth exceeded maximum permissible levels. A comprehensive calibration (traceable to NIST) of the sound level meter and bioacoustic simulator were performed annually by the manufacturer. The physical volume calibration of the Micro Audiometric Earscan tympanometer was checked at the start and end of each stand and daily throughout the stand. Air pressure was calibrated automatically by the unit each time it was turned on. The tympanometer also received an exhaustive NIST-traceable calibration check annually.

As an additional quality measure, all audiograms, whether conducted in automated or manual mode, tested the 1000 Hz frequency twice in each ear as a measure of the reliability of the subject's responses. Pure tone audiograms were not accepted if there was more than a 10 dB difference between them. For further details regarding any of these procedures, analysts should consult the NHANES Audiometry/Tympanometry Procedures Manual. (1)

The MEC Health Technicians who performed the Audiometry Examination Component of NHANES were professionally trained by a certified audiologist from the National Institute for Occupational Safety & Health (NIOSH). NIOSH also conducted health technician performance monitoring of each technician on a regular basis. Field visits to each MEC were conducted by the NIOSH Audiologist at least three times per year. Additionally, NCHS Project Officers visited the MECs approximately twice per year to observe the audiometry examinations and verify that standard testing procedures were being followed. NIOSH consultants provided the MEC health technicians with annual retraining and protocol updates.

The quantitative tympanometric measurements reported in this data file represent the single best of two curves obtained during testing. Subjective quality ratings for these tympanograms are the variables AUAREQC and AUALEQC. These represent a qualitative assessment of tympanogram quality by the consulting Audiologist. Please note, however, that this rating process scored tympanograms on the basis of quality, not normality. Abnormal tympanograms were classified as "good" if they were consistent with a subject's audiometric data, including otoscopy, numeric tympanometry readings, and audiogram.

Data Processing and Editing

All data were captured into the NHANES computerized database system, with audiometric and tympanometric data automatically uploaded. On a continuous basis, a consulting Audiologist performed a clinical review of all data for each subject as it was received, checking for quality and consistency. In addition, a computerized data editing program was developed to check for logical inconsistencies in the data and technician errors, and to cross-check other issues affecting data quality (consistency in identifying potential instances where crossover effects might have occurred, assurance of randomization of the initial test ear, etc.). Back-end edits of the data were performed as needed when errors were detected.

Analytic Notes

This examination was administered to a ½ sample of participants in the MEC. Therefore, the Audiometry sub-sample weights provided with the Audiometry data file should be used for data analysis. For more information on the use of sample weights in current NHANES data analysis and for combining weighted data across multiple NHANES survey years, please refer to the current NHANES Analytic and Reporting Guidelines.

Audiologic data analysis is a complex procedure and requires a thorough knowledge of the specialty content area for valid results to be obtained. If an analyst does not have professional experience in this area, it is recommended that audiologic consultation be obtained to help formulate and review the results of the analysis. Data analysts should be especially aware of the fact that the number “666” in all primary audiometric frequency data fields (AUXU1K1R through AUXU8KL) as well as in all repeat test frequencies (AUXR1K1R through AUXR8KL) is a qualitative code for non-response at a particular frequency, and does not represent actual measured decibel hearing threshold values. They should be appropriately edited prior to any numerical data analysis.

References

1. National Center for Health Statistics. Audiometry/Tympanometry Procedures Manual. January 2003.

Locator Record

Title: Audiometry (AUX_C)

Contact Number: 1-866-441-NCHS

Years of Content: 2003–2004

First Published: February 2006

Revised: December 2007

Access Constraints: None

Use Constraints: None

Geographic Coverage: National

Subject: Audiometric hearing testing

Record Source: NHANES 2003–2004

Survey Methodology: NHANES 2003–2004 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 (2003-2004)**

**MEC Examination
Audiometry (AUX_C)
Person Level Data**

February 2006



SEQN	Target
	B(20 Yrs. to 69 Yrs.)
Hard Edits	SAS Label
	Respondent sequence number
English Text: Respondent sequence number.	
English Instructions:	

W TSAU2YR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Audiometry Subsample 2 year MEC Weight			
English Text: Audiometry Subsample 2 year MEC Weight				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0 to 323087.55894	Range of Values	1889	1889	
.	Missing	0	1889	

AUAEXSTS	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Status of an Audio Exam			
English Text: Status of an Audiometry Exam				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Complete	1732	1732	
2	Partial	53	1785	
3	Not done	104	1889	
.	Missing	0	1889	

AUAEXCMT	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Comment code for an Audio Exam			
English Text: Comment code for an Audio Exam				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
2	SP refusal	44	44	
3	No time	2	46	
4	Physical limitation	19	65	
5	Communication problem	8	73	
6	Equipment failure	2	75	
7	Sp ill/emergency	5	80	
56	Came late/left early	0	80	
66	Data acquisition problems	0	80	
72	Error (technician/software/supply)	10	90	
84	SP with child	5	95	
99	Other, specify	62	157	
.	Missing	1732	1889	

AUQ010	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Have Ear Tube, Right or Left Ear?			
English Text: Do you now have a tube in your right or left ear? (If yes, indicate affected ear(s))				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes, right ear	2	2	
2	Yes, left ear	0	2	
3	Yes, both ears	3	5	
4	No	1777	1782	
7	Refused	1	1783	
9	Don't know	2	1785	
.	Missing	104	1889	

AUQ020	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Had Cold, Sinus or Earache Last 24 Hrs?			
English Text: Have you had a cold, sinus problem, or earache in the last 24 hours?				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes	283	283	
2	No	1499	1782	
7	Refused	0	1782	
9	Don't know	3	1785	
.	Missing	104	1889	

AUQ020A	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Had Cold Last 24 Hrs?			
English Text: Have you had a cold in the last 24 hours?				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	97	97	
2	No (checkbox unchecked)	183	280	
9	Don't know	3	283	
.	Missing	1606	1889	

AUQ020B	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Had Sinus Problem Last 24 Hours?			
English Text: Have you had a sinus problem in the last 24 hours				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	166	166	
2	No (checkbox unchecked)	114	280	
9	Don't know	3	283	
.	Missing	1606	1889	

AUQ020C	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Earache Last 24 Hours, Right?			
English Text: Have you had an earache in the right ear in the last 24 hours?				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	15	15	
2	No (checkbox unchecked)	265	280	
9	Don't know	3	283	
.	Missing	1606	1889	

AUQ020D	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Earache Last 24 Hours, Left?			
English Text: Have you had an earache in left ear in the last 24 hours?				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	13	13	
2	No (checkbox unchecked)	267	280	
9	Don't know	3	283	
.	Missing	1606	1889	

AUQ020E	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Earache Last 24 Hours, Both?			
English Text: Have you had an earache in both ears in the last 24 hours?				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	11	11	
2	No (checkbox unchecked)	269	280	
9	Don't know	3	283	
.	Missing	1606	1889	

AUQ030	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Exposed Loud Noise/Music Last 24 Hrs?			
English Text: Have you been exposed to loud noise or listened to music with headphones in the past 24 hours?				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes	146	146	
2	No	1638	1784	
7	Refused	1	1785	
9	Don't know	0	1785	
.	Missing	104	1889	

AUQ040	Target
	B(20 Yrs. to 69 Yrs.)
Hard Edits	SAS Label
1 to 24	Hours Since Noise/Music Ended?

English Text: How many hours ago did the noise or music end?

English Instructions:

Code or Value	Description	Count	Cumulative	Skip to Item
1 to 24	Range of Values	146	146	
77	SP refused	0	146	
99	Don't know	0	146	
.	Missing	1743	1889	

AUQ050	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Self Reported Better Ear			
English Text: Do you hear better in one ear than the other?				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes, right ear	168	168	
2	Yes, left ear	167	335	
7	Refused	0	335	
9	No / don't know	1450	1785	
.	Missing	104	1889	

AUXOTSPL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Normal Otoscopy, Left Ear?			
English Text: Normal: Left Ear Otoscopy				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	1539	1539	
2	No (checkbox unchecked)	246	1785	
.	Missing	104	1889	

AUXLOEXC	Target
	B(20 Yrs. to 69 Yrs.)
Hard Edits	SAS Label
	Excessive Cerumen, Left Ear
English Text: Excessive Cerumen, Left Ear	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	160	160	
2	No (checkbox unchecked)	1625	1785	
.	Missing	104	1889	

AUXLOIMC	Target
	B(20 Yrs. to 69 Yrs.)
Hard Edits	SAS Label
	Impacted Cerumen, Left Ear
English Text: Impacted Cerumen, Left Ear	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	71	71	
2	No (checkbox unchecked)	1714	1785	
.	Missing	104	1889	

AUXLOCOL	Target
	B(20 Yrs. to 69 Yrs.)
Hard Edits	SAS Label
	Collapsing Ear Canals, Left Ear
English Text: Collapsing Ear Canal, Left Ear	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	10	10	
2	No (checkbox unchecked)	1775	1785	
.	Missing	104	1889	

AUXLOABN	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Other Exam Abnormality, Left Ear?			
English Text: Other Exam Abnormality, Left Ear				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	14	14	
2	No (checkbox unchecked)	1771	1785	
.	Missing	104	1889	

AUDLOABC	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Comment:Other Ear Exam Abnormality, Left			
English Text: Other Exam Abnormality, Left, Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Possible Perforated Eardrum	0	0	
2	Perforated Eardrum	0	0	
3	Possible Infection	6	6	
4	TM Scarring/Deformity	3	9	
.	Missing	1880	1889	

AUXROTSP	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Normal Otoscopy, Right Ear?			
English Text: Normal: Right Ear Otoscopy				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	1518	1518	
2	No (checkbox unchecked)	267	1785	
.	Missing	104	1889	

AUXROEXC	Target
	B(20 Yrs. to 69 Yrs.)
Hard Edits	SAS Label
	Excessive Cerumen, Right Ear
English Text: Excessive Cerumen, Right Ear	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	189	189	
2	No (checkbox unchecked)	1596	1785	
.	Missing	104	1889	

AUXROIMC	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Impacted Cerumen, Right Ear			
English Text: Impacted Cerumen, Right Ear				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	65	65	
2	No (checkbox unchecked)	1720	1785	
.	Missing	104	1889	

AUXROCOL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Collapsing Ear Canals, Right Ear			
English Text: Collapsing Ear Canal, Right Ear				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	13	13	
2	No (checkbox unchecked)	1772	1785	
.	Missing	104	1889	

AUXROABN	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Other Exam Abnormality, Right Ear?			
English Text: Other Exam Abnormality, Right Ear				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Yes (checkbox checked)	13	13	
2	No (checkbox unchecked)	1772	1785	
.	Missing	104	1889	

AUDROABC	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Comment Other Ear Exam Abnormality Right			
English Text: Other Exam Abnormality, Right, Comment				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Possible Perforated Eardrum	0	0	
2	Perforated Eardrum	3	3	
3	Possible Infection	2	5	
4	TM Scarring/Deformity	3	8	
.	Missing	1881	1889	

AUXTMEPR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
-400.0000 to 200.0000	Middle Ear Pressure-Tymp, Rt Ear in daPa			
English Text: Middle ear pressure (tympanometry), right ear				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-276 to 150	Range of Values	1670	1670	
555	Compliance <= 0.2	104	1774	
777	Refused	0	1774	
888	Could not obtain	10	1784	
.	Missing	105	1889	

AUXTPVR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
0.0 to 7.0	Physical Volume-Tymp, Right Ear in cc			
English Text: Physical volume (tympanometry), right ear				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.3 to 6	Range of Values	1771	1771	
777	Refused	0	1771	
888	Could not obtain	10	1781	
.	Missing	108	1889	

AUXTWIDR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
0.0000 to 500.0000	Tympanometric width, right ear			
English Text: Tympanometric width, right ear				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0 to 246	Range of Values	1670	1670	
555	Compliance <= 0.2	104	1774	
777	Refused	0	1774	
888	Could not obtain	10	1784	
.	Missing	105	1889	

AUXTCOMR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
0.0000 to 8.0000	Compliance (tympanometry), right ear			
English Text: Compliance (tympanometry), right ear				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0 to 4.5	Range of Values	1774	1774	
777	Refused	0	1774	
888	Could not obtain	10	1784	
.	Missing	105	1889	

AUXTMEPL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
-400.0000 to 200.0000	Middle Ear Pressure, Tymp, Left in daPa			
English Text: Middle ear pressure (tympanometry), left ear				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-288 to 168	Range of Values	1675	1675	
555	Compliance <= 0.2	100	1775	
777	Refused	0	1775	
888	Could not obtain	9	1784	
.	Missing	105	1889	

AUXTPVL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
0.0 to 7.0	Physical Volume-Tymp, Left ear in cc			
English Text: Physical volume (tympanometry), left ear				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.2 to 6.3	Range of Values	1771	1771	
777	Refused	0	1771	
888	Could not obtain	9	1780	
.	Missing	109	1889	

AUXTWIDL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
0.0000 to 500.0000	Tympanometric width, left ear			
English Text: Tympanometric width, left ear				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0 to 330	Range of Values	1675	1675	
555	Compliance <= 0.2	100	1775	
777	Refused	0	1775	
888	Could not obtain	9	1784	
.	Missing	105	1889	

AUXTCOML	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
0.0000 to 8.0000	Compliance (tympanometry), left ear			
English Text: Compliance (tympanometry), left ear				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0 to 4.5	Range of Values	1775	1775	
777	Refused	0	1775	
888	Could not obtain	9	1784	
.	Missing	105	1889	

AUAEAR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Which ear tested first?			
English Text: Which ear tested first?				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Right	952	952	
2	Left	824	1776	
.	Missing	113	1889	

AUAMODE	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Audio Test Mode-Manual/Automatic/Mixed			
English Text: Mode of Audiometric Test (Manual/Automatic/Mixed)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Manual	11	11	
2	Automatic	1722	1733	
3	Mixed	41	1774	
.	Missing	115	1889	

AUAFMANL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Frequency, Switch to Manual Mode, Left			
English Text: Frequency at Which Switched From Auto to Manual Audio Testing (Left)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	None	1755	1755	
2	500 Hz	0	1755	
3	1000 Hz	1	1756	
4	2000 Hz	1	1757	
5	3000 Hz	1	1758	
6	4000 Hz	1	1759	
7	6000 Hz	5	1764	
8	8000 Hz	10	1774	
.	Missing	115	1889	

AUAFMANR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Frequency-Switch to Manual Mode, Right			
English Text: Frequency at Which Switched From Auto to Manual Audio Testing (Right)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	None	1750	1750	
2	500 Hz	1	1751	
3	1000 Hz	3	1754	
4	2000 Hz	0	1754	
5	3000 Hz	4	1758	
6	4000 Hz	0	1758	
7	6000 Hz	2	1760	
8	8000 Hz	14	1774	
.	Missing	115	1889	

AUXU1K1R	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right threshold @ 1000Hz (db)			
English Text: Right threshold @ 1000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 105	Range of Values	1766	1766	
666	No response	0	1766	
888	Could not obtain	2	1768	
.	Missing	121	1889	

AUXU500R	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right threshold @ 500Hz (db)			
English Text: Right threshold @ 500Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 120	Range of Values	1767	1767	
666	No response	0	1767	
888	Could not obtain	1	1768	
.	Missing	121	1889	

AUXU1K2R	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right Threshold @ 1000Hz-2nd Read (db)			
English Text: Right threshold @ 1000Hz (second reading)in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 95	Range of Values	1766	1766	
666	No response	0	1766	
888	Could not obtain	2	1768	
.	Missing	121	1889	

AUXU2KR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right threshold @ 2000Hz (db)			
English Text: Right threshold @ 2000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 110	Range of Values	1766	1766	
666	No response	1	1767	
888	Could not obtain	1	1768	
.	Missing	121	1889	

AUXU3KR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right threshold @ 3000Hz (db)			
English Text: Right threshold @ 3000Hz in decibels (Hearing Levels)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 110	Range of Values	1764	1764	
666	No response	2	1766	
888	Could not obtain	2	1768	
.	Missing	121	1889	

AUXU4KR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right threshold @ 4000Hz (db)			
English Text: Right threshold @ 4000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 120	Range of Values	1764	1764	
666	No response	2	1766	
888	Could not obtain	2	1768	
.	Missing	121	1889	

AUXU6KR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right threshold @ 6000Hz (db)			
English Text: Right threshold @ 6000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 120	Range of Values	1763	1763	
666	No response	3	1766	
888	Could not obtain	2	1768	
.	Missing	121	1889	

AUXU8KR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right threshold @ 8000Hz (db)			
English Text: Right threshold @ 8000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 110	Range of Values	1761	1761	
666	No response	5	1766	
888	Could not obtain	2	1768	
.	Missing	121	1889	

AUXU1K1L	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left threshold @ 1000Hz (db)			
English Text: Left threshold @ 1000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 100	Range of Values	1767	1767	
666	No response	1	1768	
888	Could not obtain	0	1768	
.	Missing	121	1889	

AUXU500L	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left threshold @ 500Hz (db)			
English Text: Left threshold @ 500Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 100	Range of Values	1767	1767	
666	No response	1	1768	
888	Could not obtain	0	1768	
.	Missing	121	1889	

AUXU1K2L	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left threshold @ 1000Hz-2nd Read (db)			
English Text: Left threshold @ 1000Hz (second reading)in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 100	Range of Values	1766	1766	
666	No response	1	1767	
888	Could not obtain	1	1768	
.	Missing	121	1889	

AUXU2KL	Target
	B(20 Yrs. to 69 Yrs.)
Hard Edits	SAS Label
	Left threshold @ 2000Hz (db)
English Text: Left threshold @ 2000Hz in decibels (Hearing Level)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 115	Range of Values	1767	1767	
666	No response	1	1768	
888	Could not obtain	0	1768	
.	Missing	121	1889	

AUXU3KL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left threshold @ 3000Hz (db)			
English Text: Left threshold @ 3000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 110	Range of Values	1765	1765	
666	No response	2	1767	
888	Could not obtain	1	1768	
.	Missing	121	1889	

AUXU4KL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left threshold @ 4000Hz (db)			
English Text: Left threshold @ 4000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 115	Range of Values	1766	1766	
666	No response	1	1767	
888	Could not obtain	1	1768	
.	Missing	121	1889	

AUXU6KL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left threshold @ 6000Hz (db)			
English Text: Left threshold @ 6000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 110	Range of Values	1759	1759	
666	No response	6	1765	
888	Could not obtain	2	1767	
.	Missing	122	1889	

AUXU8KL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left threshold @ 8000Hz (db)			
English Text: Left threshold @ 8000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
-10 to 105	Range of Values	1755	1755	
666	No response	9	1764	
888	Could not obtain	2	1766	
.	Missing	123	1889	

AUXR1K1R	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right retest threshold @ 1000Hz (db)			
English Text: Right retest threshold @ 1000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0 to 90	Range of Values	13	13	
666	No response	0	13	
888	Could not obtain	0	13	
.	Missing	1876	1889	

AUXR5CR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right retest threshold @ 500Hz (db)			
English Text: Right retest threshold @ 500Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
5 to 105	Range of Values	20	20	
666	No response	0	20	
888	Could not obtain	0	20	
.	Missing	1869	1889	

AUXR1K2R	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right Retest Threshold 1000Hz-2nd Read			
English Text: Right retest threshold @ 1000Hz, second reading (db)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
25 to 40	Range of Values	3	3	
666	No response	0	3	
888	Could not obtain	0	3	
.	Missing	1886	1889	

AUXR2KR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right retest threshold @ 2000Hz (db)			
English Text: Right retest threshold @ 2000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
65 to 90	Range of Values	8	8	
666	No response	0	8	
888	Could not obtain	0	8	
.	Missing	1881	1889	

AUXR3KR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right retest threshold @ 3000Hz (db)			
English Text: Right retest threshold @ 3000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
40 to 115	Range of Values	11	11	
666	No response	0	11	
888	Could not obtain	0	11	
.	Missing	1878	1889	

AUXR4KR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right retest threshold @ 4000Hz (db)			
English Text: Right retest threshold @ 4000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
40 to 115	Range of Values	8	8	
666	No response	0	8	
888	Could not obtain	0	8	
.	Missing	1881	1889	

AUXR6KR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right retest threshold @ 6000Hz (db)			
English Text: Right retest threshold @ 6000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
45 to 85	Range of Values	12	12	
666	No response	2	14	
888	Could not obtain	0	14	
.	Missing	1875	1889	

AUXR8KR	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right retest threshold @ 8000Hz (db)			
English Text: Right retest threshold @ 8000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
35 to 95	Range of Values	9	9	
666	No response	2	11	
888	Could not obtain	0	11	
.	Missing	1878	1889	

AUXR1K1L	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left retest threshold @ 1000Hz (db)			
English Text: Left retest threshold @ 1000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
5 to 85	Range of Values	23	23	
666	No response	0	23	
888	Could not obtain	0	23	
.	Missing	1866	1889	

AUXR5CL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left retest threshold @ 500Hz (db)			
English Text: Left retest threshold @ 500Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
50 to 90	Range of Values	12	12	
666	No response	0	12	
888	Could not obtain	0	12	
.	Missing	1877	1889	

AUXR1K2L	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left Retest Threshold 1000-2nd Read			
English Text: Left retest threshold @ 1000Hz, second reading in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
50	50	1	1	
666	No response	0	1	
888	Could not obtain	0	1	
.	Missing	1888	1889	

AUXR2KL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left retest threshold @ 2000Hz (db)			
English Text: Left retest threshold @ 2000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
45 to 95	Range of Values	11	11	
666	No response	0	11	
888	Could not obtain	0	11	
.	Missing	1878	1889	

AUXR3KL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left retest threshold @ 3000Hz (db)			
English Text: Left retest threshold @ 3000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
45 to 95	Range of Values	11	11	
666	No response	0	11	
888	Could not obtain	0	11	
.	Missing	1878	1889	

AUXR4KL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left retest threshold @ 4000Hz (db)			
English Text: Left retest threshold @ 4000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
35 to 110	Range of Values	13	13	
666	No response	0	13	
888	Could not obtain	0	13	
.	Missing	1876	1889	

AUXR6KL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left retest threshold @ 6000Hz (db)			
English Text: Left retest threshold @ 6000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
25 to 100	Range of Values	13	13	
666	No response	0	13	
888	Could not obtain	0	13	
.	Missing	1876	1889	

AUXR8KL	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left retest threshold @ 8000Hz (db)			
English Text: Left retest threshold @ 8000Hz in decibels (Hearing Level)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
15 to 95	Range of Values	17	17	
666	No response	0	17	
888	Could not obtain	0	17	
.	Missing	1872	1889	

AUAREQC	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Right Ear Quality Code			
English Text: Right Ear Quality Code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Good - tympanogram is smooth and symmetrical	1302	1302	
2	Adequate - tympanogram is 'noisy' but adequate for interpretation	435	1737	
3	Poor - tympanogram cannot be interpreted	15	1752	
7	SP Refused Tympanometry	0	1752	
8	There was no tymp	4	1756	
9	Equivocal - tympanogram cannot be evaluated without further information	22	1778	
888	CNO - technician could not obtain the tympanogram	1	1779	
.	Missing	110	1889	

AUALEQC	Target			
	B(20 Yrs. to 69 Yrs.)			
Hard Edits	SAS Label			
	Left Ear Quality Code			
English Text: Left Ear Quality Code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1	Good - tympanogram is smooth and symmetrical	1329	1329	
2	Adequate - tympanogram is 'noisy' but adequate for interpretation	399	1728	
3	Poor - tympanogram cannot be interpreted	24	1752	
7	SP Refused Tympanometry	0	1752	
8	There was no tymp	2	1754	
9	Equivocal - tympanogram cannot be evaluated without further information	22	1776	
888	CNO - technician could not obtain the tympanogram	3	1779	
.	Missing	110	1889	