NATIONAL HEALTH AND AGING TRENDS STUDY (NHATS)

VISION AND HEARING ACTIVITIES USER GUIDE



Rounds 11-12 Beta Release

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# Overview

This User Guide describes the objective vision and hearing data collected starting in Round 11 (2021) of the National Health and Aging Trends Study (NHATS). Starting in Round 11, all NHATS participants who were eligible for a Sample Person (SP) interview were eligible for four vision and hearing activities: distance and near vision acuity, contrast sensitivity, and pure tone audiometry. These tests were conducted with the aid of a tablet.

The NHATS Vision and Hearing Activity data has been included in the NHATS Tablet Activities File, available to registered users as a public release file from www.nhats.org. This User Guide provides background on each of the tests, details on NHATS collection methodology, available variables (including scoring algorithms for derived variables), and a brief overview of how to conduct weighted analyses that account for NHATS' complex survey design.

# Background

The three vision activities (i.e., distance and near acuity and contrast sensitivity) included in NHATS were designed to measure presenting binocular vision, which assesses ability with glasses or contacts if worn. An NHATS Vision e-book developed by Ridgevue Vision: ridgevue.com (released 4/17/19) was used for each of the vision activities. The protocol was designed to replicate the conditions of standard visual function tests routinely used in eye clinics. The protocol was evaluated in a pilot study in NHATS in 2019 (Hu et al. 2021) and also validated against clinical gold-standard tests in clinical sample of older adults (Varadaraj et al. 2021).

- Distance visual acuity at 5 feet is the most commonly tested visual function. It assesses the spatial resolution of the visual system. Respondents are shown 5 letters per screen and are asked to read them aloud from left to right.

- Contrast sensitivity refers to the amount of contrast (the difference in luminance between an object and its background) needed for a respondent to identify a character. Respondents are shown 2 letters per screen at a distance of 5 feet.  The letters become lighter in tone on each subsequent screen. Respondents are asked to read the letters out loud.

- Near visual acuity at usual reading distance is relevant to important daily function like reading. Near acuity may be influenced by spatial resolution of the visual system and by age-related physiologic changes of the crystalline lens that affects the ability to bring a near target into focus. Respondents are presented with five lower case letters per screen and asked to read these aloud from left to right.

Pure-tone audiometry is the clinical gold standard for assessment of peripheral hearing loss and is the foundation of clinical hearing assessments. Air-conduction pure-tone audiometry assesses the entire peripheral auditory system (outer, middle, and inner ear), rather than isolating contributions of the inner ear. Pure-tone thresholds represent the lowest volume, measured in decibels-hearing level (dB HL), at which a person can respond to a simple tone.  In NHATS, air-

conduction pure-tone audiometry was assessed using an iPad-based portable audiometer (SHOEBOX Ltd., Ottawa, Canada). Procedures for using the SHOEBOX application were evaluated in a pilot study in NHATS in 2019 (Hu et al. 2021) and the application been validated against gold-standard sound booth audiometers (Saliba et al. 2016; Thompson et al. 2015).

The vision and hearing activities attempt to isolate sensory function; however the NHATS vision activities also require the ability to provide an accurate verbal response and the NHATS hearing activity also requires the ability to raise one's hand in response to a sound.

## NHATS Vision and Hearing Activities 2019 Pilot Study

NHATS incorporated a pilot study into its 2019 round (N=417 participants; N=9 interviewers) to evaluate the objective vision and hearing protocols (Hu et al. 2021). Key findings included: there were high rates of cooperation rates (about 90% for each activity) and low rates of missingness; vision and hearing scores from tests were significantly associated with age and self-reported items; and percentages with poor vision and poor hearing were consistent with prior population-based studies. In addition, objective measures were more likely than self-reported measures to classify participants as having visual and auditory impairments and had stronger relationships with demographic correlates.

## Data Collection Protocol

**Equipment.** A generation 8 iPad (running 13.0 iOS in Round 11 and 16.0.2 iOS for Round 12) was loaded with the NHATS Vision e-book developed by Ridgevue Vision: ridgevue.com (released 4/17/19) and the automated SHOEBOX Ltd., application software (in Round 11, version 5.5.3 in the very early stage of the field work, and version 5.5.4 for the majority of the R11 field work, and in Round 12, version 5.6.3). The tablet was preset at 50% illumination prior to fieldwork.

Additional equipment included a portable table, a small stand for the tablet, antibacterial wipes, a flexible tape measure, calibrated headphones, audio wipes, and regular tissues (for hearing aid removal).

**Recording of results**. Interviewers were instructed to record vision activity results in a bounded paper Vision and Hearing Activities Booklet (VH Activities Booklet), designed for scanned data capture (see Appendix B). Hearing results were transmitted to a SHOEBOX Ltd. cloud-based server and then downloaded by Westat. Starting in Round 12, interviewers also record pure tone averages (PTA) for both right and left ears in the VH Activities Booklet.

**Vision protocol**. Interviewers first introduced the vision activity to the respondent as part of the CAPI instrument (VH).  They then followed the instructions in the VH Activities Booklet to set up the vision activity. For all three vision activities, respondents were asked to wear glasses or contacts if they normally wear them for seeing at the distance corresponding to each activity.

Interviewers seated the respondent in a location with at least 5 feet of unobstructed space to the front. They set up the portable table, tablet holder and tablet at 59 inches (approximately 5 feet)

from the respondent, as measured from the center of the respondent's chair to the position of the tablet on the table. The table legs were adjusted as needed so that the tablet sat at eye level. Setting the tablet on the small stand allowed the interviewer to adjust the angle of the tablet to eliminate glare, as needed.

*Distance acuity.* Respondents were shown 5 letters per screen. Letters became smaller with each successive screen. Respondents were asked to read the letters aloud from left to right, and were told once that they could guess if they were not sure. The interviewer marked each correct letter in the VH Activities Booklet and then recorded the number of correct letters on that screen to determine if they should swipe to the next screen or end. The interviewer stopped the activity once the respondent gave fewer than 3 correct answers on a given screen or when they completed the 12th screen.

*Contrast sensitivity.* Respondents were shown 2 letters per screen. Letters became lighter with each successive screen. Respondents were asked to read the letters out loud from left to right, and were told once that they could guess if they were not sure. The interviewer marked each correct letter in the VH Activities Booklet and then recorded the number of correct letters on that screen to determine if they should swipe to the next screen or end. The interviewer stopped the activity once the respondent gave no correct answers on a given screen or when they completed the 16th screen.

*Near acuity.* Interviewers handed the tablet to the respondent and asked them to hold it at their usual reading distance. Interviewers measured and recorded the distance between a respondent's eyes and the tablet (in inches) and asked the respondent to try not to move it closer or further away. The interviewer stood next to the respondent for this activity in order to see the letters and determine the number correct, as well as to help the respondent swipe to the next screen if needed. Respondents were shown 5 lower case letters per screen. Letters became smaller with each successive screen. Respondents were asked to read the letters out loud from left to right and were told once that they could guess if they were not sure. The interviewer marked each correct letter in the VH Activities Booklet and then recorded the number of correct letters on that screen to determine if they should swipe to the next screen or end. The interviewer stopped the activity once the respondent provided fewer than 3 correct answers on a given screen or when they completed the 12th screen.

After administering each test, the interviewers indicated in the booklet whether the activity was attempted and, if not, the reason(s) the activity was not attempted. After both the vision and hearing activities were completed, the interviewers also recorded in the CAPI instrument whether the vision activity was attempted (yes/no). Missing data indicators for each vision test are also provided in the data file (see Missing Data section and Appendix A).

**Hearing protocol (pure tone audiometry).** The portable audiometer uses active noise monitoring combined with noise-attenuated circumaural headphones (RADIOEAR, DD450) to ensure the test environment complies with clinical standards for adult hearing assessments. An automated algorithm presents tones in a threshold-seeking manner consistent with clinical best-practices to identify the lowest volume (in decibels hearing level [dB HL]) at which a participant can respond to a sound at six frequencies in each ear (250, 500, 1000, 2000, 4000, and 8000 Hz).

The algorithm identifies likely false positive responses and potential interference from ambient noise.

If there were sources of noise such as a television or fan that were loud enough to interfere with the assessment, interviewers requested permission to minimize or eliminate the noise. Interviewers created a profile for respondent in SHOEBOX Ltd. application and then plugged the audiometer headset directly into the tablet. Interviewers tested the headphones for each ear before conducting the hearing activity with the respondent.

Interviewers introduced the hearing test to respondents using text from the VH Activities Booklet (see Appendix B). They described and demonstrated the process and asked respondents to raise a hand when they heard a tone in either ear. Respondents were asked to remove any hearing devices and/or glasses and earrings. Interviewers then place headphones on the respondent using a sweeping motion from front to back.  The interviewer took a position behind the respondent. The interviewer then launched the SHOEBOX Ltd. application, which presents tones through the headset at six different frequencies (pitch, displayed as hertz [Hz]) and at different decibels (volume, displayed as decibel hearing level [dB HL]) for each ear separately. The algorithm was set to proceed automatically so that interviewers did not need to select frequency or intensity of stimuli. The interviewer entered responses indicating that the participant responded to the stimuli until the end of the test.

Interviewers recorded in the VH Activities Booklet whether the hearing activity was attempted and if not the reason(s) the activity was not attempted and also recorded in the CAPI instrument whether the hearing activity was attempted (yes/no). Starting in Round 12, interviewers also recorded pure tone averages (PTA) for both right and left ears in the VH Activities Booklet.

The SHOEBOX Ltd. hearing results were saved on the tablet and interviewers transmitted results to a SHOEBOX Ltd. cloud-based server once they connected to WiFi. In Round 11, as the result of a software update that occurred during the fieldwork that changed the screen where results were saved, some interviewers did not properly save the hearing results.  A missing data indicator identifying cases with missing hearing data is provided (see Missing Data section and Appendix A).

## Variables

Information about collection of the objective vision and hearing measures along with raw results from the tests are included in the Table Activities File.  Variable names in this file follow NHATS' standard conventions.  Variables from the VH CAPI section begin with vh, followed by the round number, and stem that briefly describes the item. Variables from the VH Activities Booklet start with "vb" if from the Vision section and "hb" from the Hearing section or from SHOEBOX.

The following table summarizes variables by source and type of activity. (Derived variables are described in the next section).

| Source | Distance acuity | Contrast sensitivity | Near acuity | Pure tone audiometry |
|---|---|---|---|---|
| VH Activities Booklet | | | | |
| Reading distance | - | - | vb#readdist (in inches) | - |
| Results | vb#resulta1-vb#resulta12 | vb#resultb1-vb#resultb16 | vb#resultc1-vb#resultc12 | - |
| Attempted | vb#5ldistance | vb#2ldistance | vb#5lreading | hb#hear |
| Aid worn/used | vb#5lglasses, vb#5lcontacts, vb#5lothvisaid | vb#2lglasses, vb#2lcontacts, vb#2lothvisaid | vb#readglasses, vb#readcontacts, vb#readothvisaid | hb#heardev (worn), hb#heardevtype (type) |
| Reason not attempted | vb#5lvisrsn1-vb#5lvisrsn 6, vb#5lvisrsn91 | vb#2lvisrsn-vb#2lvisrsn6, vb#2lvisrsn91 | vb#readvisrsn1-vb#readvisrsn6, vb#readvisrsn91 | hb#hearrsn1-hb#hearrsn6, hb#hearrsn91 |
| VH CAPI | | | | |
| Attempted | vh#vision | | | vh#hearing |

In addition, the SHOEBOX application provides 12 of the following 4 indicators, one for each ear and each frequency (250, 500, 1000, 2000, 4000, 8000 Hz):

| Source: Shoebox | Variable name |
|---|---|
| Threshold | hb#*+thresh |
| Excessive background noise | hb#*+noise |
| Test unreliable | hb#*+unreli |
| No response | hb#*+nores |
| #=round *l=left, r=right; +=frequency 250, 500, 1000, 2000, 4000, 8000 Hz | |

Missing data indicators for each vision and hearing test are also provided in the data file (see Missing Data section and Appendix A).

# Derived Variables

To facilitate analysis, NHATS provides derived variables for objective vision and hearing measures (see Appendix A for details). Derived variables include "d" after the round number.

For vision, three continuous variables (each on the log scale) were constructed:

- **Distance acuity vision test score (vb#ddistance)** is the logarithm of the minimum angle of resolution (logMAR; Bailey& Lovie-Kitchin 2013). The score was calculated using the formula $0.02 * (55 - S_D)$, where $S_D$=sum of correct letters for distance acuity test. On this scale 0.0 corresponds to 20/20 vision and higher values indicate worse functioning.

- **Near acuity vision test score (vb#dnear)** is expressed in logMAR. The score was calculated as $(0.02 * (55 – S_N)) + \log_{10}(40/X)$, where $S_N$ = sum of correct letters for near acuity test and $X$= reading distance in centimeters. Higher values indicate worse functioning.

- **Contrast sensitivity (vb#dcontrast)** is expressed in log contrast sensitivity (logCS; Owsley 2003). The score was computed as $0.40 + (0.05 * S_C)$, where $S_C$ = sum of correct letters for contrast sensitivity test. Higher values indicate better visual functioning.

Three derived variables were included for pure tone audiometry. For each ear, pure tone averages (PTA) were calculated as the average dB HL for four frequency measures most important for speech discrimination: 500Hz, 1,000Hz, 2,000Hz, and 4,000Hz. PTA was not calculated for an ear if one of the threshold measures was deemed unreliable or if there was no response.

- **Best pure tone average** (BPTA; hb#dbpta) was set equal to the PTA for the better hearing ear (i.e., lower value). If PTA could be calculated for only one ear, BPTA was set equal to PTA for that ear.
- **Worse pure tone average** (WPTA; hb#dwpta) was set equal to the PTA for the ear with the higher value. If PTA could be calculated for only one ear, WPTA was set equal to PTA for that ear.
- An indicator for the **better ear** (right, left) is also provided (hb#betterear), with values of right, left or same.

For each vision and hearing activity, we have also created a derived variable that indicates why data are missing (see Missing Data section and Appendix A).

## Creating Categorical Vision and Hearing Indicators

Users interested in classify respondents into categories based on the continuous scores may want to use the following guidelines:

- For **Distance vision impairment** use the World Health Organization (WHO 2019) definitions: any impairment (vb#ddistance >0.30 logMAR, where # is the round number, see also Appendix B); mild impairment (>0.3 to <0.48 logMAR); moderate impairment (≥0.48 to <1.0 logMAR); severe impairment (≥1.0 to <1.3 logMAR); blindness (logMAR ≥1.3).

- For **Near vision impairment** use the WHO (2019) definitions: worse than N6, which is approximately equivalent to 0.3 logMAR (i.e., vb#dnear > 0.3 logMAR).

- For **contrast sensitivity impairment**, there are no widely accepted definitions. Some investigators have used a cutoff of <1.55 logCS (i.e., vb#dcontrast <1.55) as an indicator of impairment (Varadaraj et al. 2021), since this was 2 SD below the sample mean in a prior study of normal contrast sensitivity values (Mäntyjärvi & Laitinen 2001). A similar approach could be used to derive an indicator of contrast sensitivity impairment based on deviation from the NHATS sample mean.

- For **hearing loss**, use the former WHO categories (Humes 2019; Olusanya et al. 2014; WHO 2001; WHO 2012) based on pure-tone average of the better ear (i.e., hb#dbpta): <26 dB HL = no hearing loss, 26-40 dB HL = mild hearing loss, 41-60 dB HL =

moderate hearing loss, 61-80 dB HL = severe hearing loss, and >80 dB HL = profound hearing loss. The categories were recently realigned by the WHO Global Burden of Disease working group, which lowered the pure-tone average cutoff for hearing loss from 25 to 20 dB HL (Olusanya et al. 2019). However, at this time, the new categories have not been universally adopted in epidemiology research and surveillance.

## Missing data

For each vision and hearing activity, we have created a derived variable that indicates why data are missing (see Appendix A). The variable has 6 values:

1= Deceased, original nursing home (r#dresid=6, 8)
2=No SP interview (r#dresid=3,5,7)
3=No Part 2 SP interview
4=SP did not attempt any vision activities / SP did not attempt the hearing activity
5= No VH booklet, this vision activity not attempted, No SHOEBOX data, other
6=Not missing

## Using NHATS Weights and Design Variables in Analyses

The vision and hearing test data are designed to be nationally representative of Medicare beneficiaries (e.g. in 2021, ages 71 and older; in 2022, ages 65 and older). In order to make statements that are generalizable to this population, the data must be weighted and design variables must also be used to account for NHATS' complex survey design. Details about accounting for NHATS' complex survey design features can be found in Freedman et al. (2022) available at www.nhats.org.

The weights and design variables for the Tablet Activities File are found on the SP file from the same year. To perform weighted analysis, the Tablet Activities File needs to be **merged** with the NHATS SP file for the same year using the identifier on both files, "**spid**".

Using Round 11 as an example, SAS, Stata and R code for merging and running weighted analyses with vision and hearing data are shown below.

**Stata Commands.** In Stata, users should specify the following svyset command .

```
*merge Tablet Activities file with NHATS SP file
use "[location]/NHATS_Round_#_SP_File.dta", clear
merge 1:1 spid using "[location]/NHATS_Round_#_Tab_Act_File.dta"

*specify survey design for weighted analysis
svyset w#varunit [pweight=w#anfinwgt0], strata(w#varstrat)
svy: [stata procedures]
```

**SAS Commands.**

```
libname nhats11 "[NHATS round # data file location]";
data newname;
        merge  nhats11.NHATS_Round_#_SP_File
                nhats11.NHATS_Round_#_Tab_Act_File;
        by spid;
run;

[sas survey procedure];
weight w#anfinwgt0;
cluster w#varunit;
strata w#varstrat;
[model or other statement];
run;
```

## R Commands.

```
newname <- merge(data frame for NHATS_Round_#_SP_File, data frame for
NHATS_Round_#_Tab_Act_File, by="spid", all.x = TRUE)   #all.x = TRUE keeps all
observations from the Round 11 NHATS SP file

library(survey) #need this line only once per session
nhats.dsgn <- svydesign(id=~w#varunit, strata=~w#varstrat, weights=~w#anfinwgt0,
data = newname, nest=TRUE)
[model or other statement]
```

# References

Bailey, I. L., & Lovie-Kitchin, J. E. (2013). Visual acuity testing. From the laboratory to the clinic. Vision research, 90, 2-9.

Freedman, Vicki A., Mengyao Hu, Jill DeMatteis, Judith D. Kasper. (2022). Accounting for Sample Design in NHATS and NSOC Analyses: Frequently Asked Questions. NHATS Technical Paper #23 v2. Johns Hopkins University School of Public Health. Available at www.NHATS.org.

Hu, M., Freedman, V. A., Ehrlich, J. R., Reed, N. S., Billington, C., & Kasper, J. D. (2021). Collecting objective measures of visual and auditory function in a national in-home survey of older adults. Journal of survey statistics and methodology, 9(2), 309-334.

Humes, L. E. (2019). The World Health Organization's hearing-impairment grading system: an evaluation for unaided communication in age-related hearing loss. International journal of audiology, 58(1), 12-20.

Mäntyjärvi, M., & Laitinen, T. (2001). Normal values for the Pelli-Robson contrast sensitivity test. Journal of Cataract & Refractive Surgery, 27(2), 261-266.

Owsley C. Contrast sensitivity. Ophthalmol Clin North Am. 2003;16(2):171–177.

Olusanya, B. O., Neumann, K. J., & Saunders, J. E. (2014). The global burden of disabling hearing impairment: a call to action. Bulletin of the World Health Organization, 92, 367-373.

Olusanya BO, Davis AC, Hoffman HJ. (2019). Hearing loss grades and the International classification of functioning, disability and health. Bull World Health Organ, 97, 725-728. doi: 10.2471/BLT.19.230367.

Olusanya, B. O., Neumann, K. J., & Saunders, J. E. (2014). The global burden of disabling hearing impairment: a call to action. Bulletin of the World Health Organization, 92, 367-373.

Saliba, J., Al-Reefi, M., Carriere, J. S., Verma, N., Provencal, C., & Rappaport, J. M. (2017). Accuracy of mobile-based audiometry in the evaluation of hearing loss in quiet and noisy environments. Otolaryngology–Head and Neck Surgery, 156(4), 706-711.

Thompson, G. P., Sladen, D. P., Borst, B. J. H., & Still, O. L. (2015). Accuracy of a tablet audiometer for measuring behavioral hearing thresholds in a clinical population. Otolaryngology–Head and Neck Surgery, 153(5), 838-842.

Varadaraj, V., Assi, L., Gajwani, P., Wahl, M., David, J., Swenor, B. K., & Ehrlich, J. R. (2021). Evaluation of Tablet-Based Tests of Visual Acuity and Contrast Sensitivity in Older Adults. Ophthalmic Epidemiology, 28(4), 293-300.

Varadaraj V, Munoz B, Simonsick EM, Swenor BK. (2021). Vision Impairment and Participation in Cognitively Stimulating Activities: The Health ABC Study. Journals of Gerontology: Biological and Medical Sciences, 76(5), 835-841. doi: 10.1093/gerona/glaa184.

World Health Organization. (2001). International Classification of Functioning, Disability and Health. Geneva, Switzerland: WHO.

World Health Organization. (2012). WHO Global Estimates on Prevalence of Hearing Loss: Mortality and Burden of Diseases and Prevention of Blindness and Deafness. Accessed at: www.who.int/pbd/deafness/WHO_GE_HL.pdf

World Health Organization. (2019). ICD-11 for Mortality and Morbidity Statistics. 9D90 Vision impairment including blindness. Geneva: World Health Organization.

# Appendix A. Vision and Hearing Derived Variables

| Variable Name VARIABLE LABEL | CODING SPECIFICATIONS/ SOURCE | VALUES and VALUE LABELS* |
|---|---|---|
| vb#ddistance R# D DISTANCE ACUITY VISION TEST SCORE | -1 if r#dresid = 6 or 8 <br> -9 if r#dresid = 3, 5, or 7 or if fl#pt2miss= 2 (Part 2 missing) <br> Else $= 0.02 * (55 - $ sum of $(VB1\_A1$ to VB1_A12) <br> Else = -9 if VH4 != 1 or VB2 = 2 or no data in VB1_A1 to VB1_A12 <br><br> Note: When calculating the sum, we filled in leading missing before a valid answer with 5 and missing between valid answers with the prior answer and treated other missing values as 0 before summing. | Score <br> -9 Missing <br> -1 Inapplicable |
| vb#dcontrast R# D CONTRAST SENSITIVITY VISION TEST SCORE | -1 if r#dresid = 6 or 8 <br> -9 if r#dresid = 3, 5, or 7 or if fl#pt2miss= 2 <br> Else = 0.40 + (0.05*sum of (VB5_B1 to VB5_B16)) <br><br> Else = -9 if VH4 != 1 or VB6 = 2 or no data in VB5_B1 to VB5_B16 <br><br> Note: When calculating the sum, we filled in leading missing before a valid answer with 2 and missing between valid answers with the prior answer and treated other missing values as 0 before summing. | Score -9 Missing <br> -1 Inapplicable |
| vb#dnear R# D NEAR ACUITY VISION TEST SCORE | -1 if r#dresid = 6 or 8 <br> -9 if r#dresid = 3, 5, or 7 or if fl#pt2miss= 2 <br> Else $= \big(0.02 * (55 - $ sum of $(VB10\_C1$ to $VB10\_C12))\big) + log10\left(\frac{40}{X}\right)$ <br> Else = -9 if VH4 != 1 or VB11 = 2 or no data in VB10_C1 to VB10_C12 or no data in VB9 <br><br> where $X = reading\ distance\ in\ cm = $ VB9* 2.54 <br><br> Note: When calculating the sum, we filled in leading missing before a valid answer with 2 and missing between valid answers with the prior answer and treated other missing values as 0 before summing. | Score <br> -9 Missing <br> -1 Inapplicable |
| vb#ddistancem R# D DISTANCE ACUITY VISION TEST SCORE MISSING RSN | =1 if vb#ddistance =-1 & r#dresid=6, 8 <br> Else =2 if vb#ddistance=-9 & r#dresid=3,5,7 <br> Else =3 if vb#ddistance=-9 & fl#pt2miss= 2 <br> Else =4 if vb#ddistance=-9 & vh#vision~=1 <br> Else =5 if vb#ddistance=-9 <br> Else =6 if vb#ddistance~=-1 & ~=-9 | 1= Deceased, original nursing home <br> 2=No SP interview <br> 3=No Part 2 SP interview <br> 4=SP did not attempt any vision activities |

| | | |
|---|---|---|
| | | 5= No booklet, this activity not attempted, other<br>6=Not missing |
| vb#dcontrastm<br>R# D CONTRAST SENSITIVITY VISION TEST SCORE MISSING RSN | =1 if vb#dcontrast =-1 & r#dresid=6, 8<br>Else =2 if vb#dcontrast=-9 & r#dresid=3,5,7<br>Else =3 if vb#dcontrast=-9 & fl#pt2miss= 2<br>Else =4 if vb#dcontrast=-9 & vh#vision~=1<br>Else =5 if vb#dcontrast=-9<br>Else =6 if vb#dcontrast~=-1 & ~=-9 | 1= Deceased, original nursing home<br>2=No SP interview<br>3=No Part 2 SP interview<br>4=SP did not attempt any vision activities<br>5= No booklet, this activity not attempted, distance to calculate missing, other<br>6=Not missing |
| vb#dnearm<br>R# D NEAR ACUITY VISION TEST SCORE MISSING RSN | =1 if vb#dcontrast =-1 & r#dresid=6, 8<br>Else =2 if vb#dcontrast=-9 & r#dresid=3,5,7<br>Else =3 if vb#dcontrast=-9 & fl#pt2miss= 2<br>Else =4 if vb#dcontrast=-9 & vh#vision~=1<br>Else =5 if vb#dcontrast=-9<br>Else =6 if vb#dcontrast~=-1 & ~=-9 | 1= Deceased, original nursing home<br>2=No SP interview<br>3=No Part 2 SP interview<br>4=SP did not attempt any vision activities<br>5= No booklet, this activity not attempted, other<br>6=Not missing |
| hb#dbpta<br>R# D PURE-TONE AVERAGE OF THE BETTER EAR | -1 if r#dresid = 6 or 8<br>-9 if r#dresid = 3, 5, or 7 or if fl#pt2miss= 2<br>Else=AIR_RIGHT_PTA if (AIR_RIGHT_PTA <= AIR_LEFT_PTA and AIR_RIGHT_PTA != . and AIR_LEFT_PTA != .) or (AIR_RIGHT_PTA!=. & AIR_LEFT_PTA=.)<br>Else=AIR_LEFT_PTA if (AIR_LEFT_PTA < AIR_RIGHT_PTA and AIR_RIGHT_PTA != . and AIR_LEFT_PTA != .) or (AIR_LEFT_PTA!=. & AIR_RIGHT_PTA=.)<br>Else=-9 | Score<br>-9 = Missing<br>-1 = Inapplicable |
| hb#dwpta<br>R# D PURE-TONE AVERAGE OF THE | -1 if r#dresid = 6 or 8<br>-9 if r#dresid = 3, 5, or 7 or if fl#pt2miss= 2 | Score<br>-9 = Missing<br>-1 = Inapplicable |

| | | |
|---|---|---|
| WORSE EAR | =AIR_RIGHT_PTA if (AIR_RIGHT_PTA >= AIR_LEFT_PTA & AIR_RIGHT_PTA != . & AIR_LEFT_PTA != .) OR (AIR_RIGHT_PTA!=. & AIR_LEFT_PTA=.)<br>ELSE=AIR_LEFT_PTA if (AIR_LEFT_PTA > AIR_RIGHT_PTA & AIR_RIGHT_PTA != . & AIR_LEFT_PTA != .) OR (AIR_LEFT_PTA!=. & AIR_RIGHT_PTA=.)<br>Else=-9 | |
| hb#dbetterear<br>R# D BETTER EAR | -1 if r#dresid = 6 or 8<br>-9 if r#dresid = 3, 5, or 7 or if fl#pt2miss= 2<br>Else=3 if AIR_LEFT_PTA = AIR_RIGHT_PTA & AIR_RIGHT_PTA != .<br>Else =2 if AIR_LEFT_PTA = hb11dbpta & AIR_LEFT_PTA !=.<br>Else = 1 if AIR_RIGHT_PTA = hb11dbpta & AIR_RIGHT_PTA != .<br>Else = -9 | 1 = Right<br>2 = Left<br>3 = Same<br>-9 = Missing<br>-1 = Inapplicable |
| hb11dbptam<br>R# D PURE-TONE AVERAGE MISSING RSN | =1 if hb#dbpta =-1 & r#dresid=6, 8<br>Else =2 if hb#dbpta =-9 & r#dresid=3,5,7<br>Else =3 if hb#dbpta=-9 & fl#pt2miss= 2<br>Else =4 if hb#dbpta =-9 & hb#hear~=1<br>Else =5 if hb#dbpta=-9<br>Else =6 if hb#dbpta~=-1 & ~=-9 | 1= Deceased, original nursing home<br>2=No SP interview<br>3=No Part 2 SP interview<br>4=Hearing activity not attempted<br>5=Attempted but no SHOEBOX data or other reason missing<br>6=Not missing |

**Appendix B. Vision and Hearing Activities Booklets**

Round 11
NHATS Vision and Hearing Activities Booklet

Date: ☐☐/☐☐/20☐☐
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Interviewer ID: N H A T ☐☐☐☐

# National Health and Aging Trends Study

## Vision and Hearing Activities Booklet

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**Materials:**
- Tablet
- Portable table
- Small tablet stand
- Cloth screen wipe
- Measuring tape
- Headphones
- Audio wipes
- Regular tissues
- Green masking tape


**Tablet Preparation:**
- Turn on tablet
- Confirm tablet:
  - Fully charged
  - Wi-Fi turned off
  - Brightness set to halfway

## Vision Activity

**For this first activity, we will ask you to read letters from across the room. If you normally wear glasses or contacts for distance you should wear them now.**

**This activity will take me just a moment to set up.**

> ➤ *Seat SP in chair with at least 5 feet of space in front*
>
> ➤ *Measure approximately 5 feet (59 inches) on the floor from middle of SP chair; mark with tape*
>
> ➤ *Set up table and place over 5 foot mark in front of SP*
>
> ➤ *Take out tablet, wipe screen*
>
> ➤ *Launch Vision ebook*
>
> ➤ *Navigate to **5 Letters at Distance** cover page*
>
> ➤ *Place tablet on stand on table at SP's eye level, adjust as necessary for 5 foot distance*
>
> ➤ *Check for glare on tablet screen, adjust lighting as necessary*

## 5 Letters at Distance

**Let's get started. I am going to show you some letters. Please read the letters out loud, from left to right.  If you are not sure, it's okay to guess.  Ready?**

> ➤ *Swipe to screen A1*
>
> ➤ *Record number CORRECT for each screen:*
>   - *If 3 or more correct, swipe to next screen*
>   - *If 0-2 correct, say* **Thank you. We can stop here.**

# 5 Letters at Distance

**Record Number Correct**

*Mark correct responses only*

vb11resulta1-12  R11 VB1 5 LETTERS DISTANCE VISION SCREEN A1-12 RESULT

| Screen A1 | V | F | N | U | Z | | If 0-2, go to VB2 |
| Screen A2 | H | D | R | P | F | | If 0-2, go to VB2 |
| Screen A3 | U | P | F | R | N | | If 0-2, go to VB2 |
| Screen A4 | D | F | H | N | R | | If 0-2, go to VB2 |
| Screen A5 | Z | H | D | P | F | | If 0-2, go to VB2 |
| Screen A6 | D | V | R | N | U | | If 0-2, go to VB2 |
| Screen A7 | R | D | H | E | U | | If 0-2, go to VB2 |
| Screen A8 | H | V | N | E | D | | If 0-2, go to VB2 |
| Screen A9 | Z | H | F | E | D | | If 0-2, go to VB2 |
| Screen A10 | R | N | D | P | Z | | If 0-2, go to VB2 |
| Screen A11 | N | V | D | Z | P | | If 0-2, go to VB2 |
| Screen A12 | D | Z | V | E | N | | If 0-2, go to VB2 |

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# 5 Letters at Distance

## VB2

**Mark activity result**

☐ 1. ATTEMPTED

☐ 2. NOT ATTEMPTED

vb115ldistance    R11 VB2 5 LETTERS DISTANCE VISION ACTIVITY ATTEMPTED

## Vision Aids

### VB3

**Observe, ask, or confirm if glasses, contacts, or other vision aid used for this activity. Mark _each_ item.**

|  | Yes | No |
|---|:---:|:---:|
| Glasses | ☐ | ☐ |
| Contacts | ☐ | ☐ |
| Other vision aid | ☐ | ☐ |

vb115lglasses      R11 VB3A GLASSES USED FOR 5 LETTERS DISTANCE ACTIVITY
vb115lcontacts     R11 VB3B CONTACTS USED FOR 5 LETTERS DISTANCE ACTIVITY
vb115lothvisaid    R11 VB3C OTH VISION AID USED FOR 5 LETTERS DISTANCE ACTIV

## Reasons not attempted

### VB4

**Mark _all_ that apply**

☐ SP unable to understand directions

☐ SP refused

☐ Proxy refused

☐ SP not present

☐ SP too ill

☐ SP language barrier

☐ Other (Specify):

vb115lvisrsn1     R11 VB4 NO 5 LETTERS DISTANCE SP UNABLE TO UNDERSTAND
vb115lvisrsn2     R11 VB4 NO 5 LETTERS DISTANCE SP REFUSED
vb115lvisrsn3     R11 VB4 NO 5 LETTERS DISTANCE PROXY REFUSED
vb115lvisrsn4     R11 VB4 NO 5 LETTERS DISTANCE SP TOO ILL
vb115lvisrsn5     R11 VB4 NO 5 LETTERS DISTANCE SP LANGUAGE BARRIER
vb115lvisrsn6     R11 VB4 NO 5 LETTERS DISTANCE SP NOT PRESENT
vb115lvisrsn91    R11 VB4 NO 5 LETTERS DISTANCE OTHER SPECIFY

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# 2 Letters at Distance

**Again, I will show you some letters. Please read the letters out loud, from left to right. If you are not sure, it's okay to guess. Ready?**

➤ *Swipe to screen B1*

➤ *Record number CORRECT for each screen:*
- *If 1 or 2 correct, swipe to next screen*
- *If 0 correct, say* **Thank you. We can stop here.**

vb11resultb1-16    R11 VB5 2 LETTERS DISTANCE VISION SCREEN B1-16 RESULT          **VB5**

*Mark correct responses only*

**Record Number Correct**

| Screen B1 | Z | N | | If 0, go to VB6 |
| Screen B2 | E | V | | If 0, go to VB6 |
| Screen B3 | P | N | | If 0, go to VB6 |
| Screen B4 | H | R | | If 0, go to VB6 |
| Screen B5 | Z | D | | If 0, go to VB6 |
| Screen B6 | U | F | | If 0, go to VB6 |
| Screen B7 | R | P | | If 0, go to VB6 |
| Screen B8 | E | Z | | If 0, go to VB6 |

| Screen B9 | N | V | | If 0, go to VB6 |
| Screen B10 | D | H | | If 0, go to VB6 |
| Screen B11 | U | F | | If 0, go to VB6 |
| Screen B12 | H | N | | If 0, go to VB6 |
| Screen B13 | V | R | | If 0, go to VB6 |
| Screen B14 | U | D | | If 0, go to VB6 |
| Screen B15 | E | F | | If 0, go to VB6 |
| Screen B16 | Z | P | | If 0, go to VB6 |

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# 2 Letters at Distance

## VB6

**Indicate activity result**

- ☐ 1. ATTEMPTED
- ☐ 2. NOT ATTEMPTED

**GO TO VB8. Reasons not attempted** →

vb112ldistance    R11 VB6 2 LETTERS DISTANCE VISION ACTIVITY ATTEMPTED

## Vision Aids

### VB7

**Observe, ask, or confirm if glasses, contacts, or other vision aid used for this activity. Mark each item.**

|                  | Yes | No |
|------------------|-----|-----|
| Glasses          | ☐   | ☐   |
| Contacts         | ☐   | ☐   |
| Other vision aid | ☐   | ☐   |

**GO TO 5 Letters at Reading Distance** →

vb112lglasses      R11 VB7A GLASSES USED FOR 2 LETTERS DISTANCE ACTIVITY
vb112lcontacts     R11 VB7B CONTACTS USED FOR 2 LETTERS DISTANCE ACTIVITY
vb112lothvisaid    R11 VB7C OTH VISION AID USED FOR 2 LETTERS DISTANCE ACTIV

## Reasons not attempted

### VB8

**Mark all that apply**

- ☐ SP unable to understand directions
- ☐ SP refused
- ☐ Proxy refused
- ☐ SP not present
- ☐ SP too ill
- ☐ SP language barrier
- ☐ Other (Specify):

vb112lvisrsn1     R11 VB8 NO 2 LETTERS DISTANCE SP UNABLE TO UNDERSTAND
vb112lvisrsn2     R11 VB8 NO 2 LETTERS DISTANCE SP REFUSED
vb112lvisrsn3     R11 VB8 NO 2 LETTERS DISTANCE PROXY REFUSED
vb112lvisrsn4     R11 VB8 NO 2 LETTERS DISTANCE SP TOO ILL
vb112lvisrsn5     R11 VB8 NO 2 LETTERS DISTANCE SP LANGUAGE BARRIER
vb112lvisrsn6     R11 VB8 NO 2 LETTERS DISTANCE SP NOT PRESENT
vb112lvisrsn91    R11 VB8 NO 2 LETTERS DISTANCE OTHER SPECIFY

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# 5 Letters at Reading Distance

**For the next activity, I will ask you to read from the tablet as if it were a book. If you normally wear glasses or contacts to read, you should wear them now.**

---
> ➤ *Swipe to cover screen for **5 Letters at Reading Distance***
> ➤ *Hand SP the tablet.*
---

**Please hold this tablet at a comfortable reading distance. First, I need to measure your reading distance. Once I've measured, please try to keep the tablet at this distance. That is, try not to move it closer or further away.**

---
> ➤ *Measure distance between tablet screen and SP's eyes*
>
> ➤ *Record distance to nearest 1/4 inch*

---
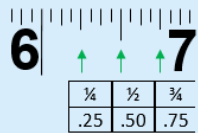
| Reading Distance | | | . | | | inches | **VB9** |
|---|---|---|---|---|---|---|---|

vb11readdist      R11 VB9 READING DISTANCE INCHES

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**Read each letter out loud from left to right.  If you are not sure, it's okay to guess.
I will tell you when to go to the next screen.**

➤ *Position yourself beside SP to view tablet screen*
➤ *If SP needs assistance swiping, help as needed*

➤ *Record number CORRECT for each screen:*
  - *If 3 or more correct, swipe to next screen*
  - *If 0-2 correct, say* **Thanks. Those are all the vision activities we have today.**

# 5 Letters at Reading Distance

**VB10**

*Mark correct responses only*

vb11resultc1-12    R11 VB10 5 LETTERS READING VISION SCREEN C1-12 RESULT

**Record Number Correct**

| Screen C1 | e | a | s | u | n | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C2 | x | u | s | e | o | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C3 | r | s | a | x | e | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C4 | s | x | a | n | r | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C5 | n | e | o | u | o | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C6 | n | e | n | a | x | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C7 | u | x | o | n | r | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C8 | o | a | u | x | s | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C9 | n | s | o | x | s | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C10 | u | r | o | e | r | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C11 | a | e | a | e | u | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C12 | s | x | n | e | a | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |

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# 5 Letters at Reading Distance

## VB11

*Indicate activity result*

- ☐ 1. ATTEMPTED
- ☐ 2. NOT ATTEMPTED

GO TO **VB13**. Reasons not attempted ➤

vb115lreading    R11 VB11 5 LETTERS READING VISION ACTIVITY ATTEMPTED

## Vision Aids

### VB12

*Observe, ask, or confirm if glasses, contacts, or other vision aid used for this activity. Mark each item.*

|  | Yes | No |
|---|---|---|
| Glasses | ☐ | ☐ |
| Contacts | ☐ | ☐ |
| Other vision aid | ☐ | ☐ |

GO TO Hearing Activity ➤

vb11readglasses      R11 VB12 GLASSES USED FOR 5 LETTERS READING ACTIVITY
vb11readcontacts     R11 VB12 CONTACTS USED FOR 5 LETTERS READING ACTIVITY
vb11readothvisaid    R11 VB12 OTH VISION AID USED FOR 5 LETTERS READING ACTIV

## Reasons not attempted

### VB13

*Mark all that apply*

- ☐ SP unable to understand directions
- ☐ SP refused
- ☐ Proxy refused
- ☐ SP not present
- ☐ SP too ill
- ☐ SP language barrier
- ☐ Other (Specify):

vb11readvisrsn1   R11 VB13 NO 5 LETTERS READING SP UNABLE TO UNDERSTAND
vb11readvisrsn2   R11 VB13 NO 5 LETTERS READING SP REFUSED
vb11readvisrsn3   R11 VB13 NO 5 LETTERS READING PROXY REFUSED
vb11readvisrsn4   R11 VB13 NO 5 LETTERS READING SP TOO ILL
vb11readvisrsn5   R11 VB13 NO 5 LETTERS READING SP LANGUAGE BARRIER
vb11readvisrsn6   R11 VB13 NO 5 LETTERS READING SP NOT PRESENT
vb11readvisrsn91  R11 VB13 NO 5 LETTERS READING OTHER SPECIFY

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# Hearing Activity

**Next we have a hearing activity. It will take me just a moment to set up.**

> ➤ *Ask SP if okay to turn off obvious noise sources*
>
> ➤ *Move table behind where SP is seated; set tablet on table*
>
> ➤ *Wipe headphones and let dry*
>
> ➤ *Launch Shoebox app and press **New Patient** icon*
> - *Enter information from CAPI **VH5** into New Patient screen (First Name ID, Last Name ID), press **Save***
>
> ➤ *Select the recently added patient from the patient list*
>
> ➤ *Select **Automated Pure Tone Test***
>
> ➤ *Plug headphones into tablet*
> - *Confirm onscreen that headphones are connected and test listening level*

**For this activity, you will wear headphones.**
- *If wearing glasses:* **Please take off your glasses.**
- *If hair over ears:* **Please push your hair behind your ears.**

**When I put the headphones on you, you may not hear anything at first. When you hear a tone in either ear, raise your hand and then lower it back down, like this.**

> ➤ *Demonstrate*

**Are you currently wearing a hearing device?**

Hearing Device Worn

| | |
|---|---|
| ***Mark response*** | **HB1** |
| ☐ 1. Yes | |
| ☐ a. Hearing aid for one ear | **HB1a** |
| ☐ b. Hearing aids for both ears | |
| ☐ c. Cochlear implant | |
| ☐ 2. No | hb11heardev R11 HB1 HEARING DEVICE WORN<br>hb11heardevtype R11 HB1A TYPE OF HEARING DEVICE WORN |

➤ *If wearing hearing device, say,* **Please take out your hearing device(s).**

---

➤ *Place headphones on SP*

- *Align red headphone with right ear*
- *Place headphones in front of ears and slide up and back to cover ears*
- *Adjust as necessary*

➤ *Tap **Start** on tablet*

➤ *Tap **Play Tone***

- *If SP raises hand, tap **Heard***
- *If SP does not raise hand, tap **Not Heard***

➤ *Continue presenting tones and entering responses until end of test*

- *If "Excessive Noise Detected" displays, select **Accept Thresholds***

➤ *When finished, move in front of SP to help remove the headphones*

➤ *If SP removed hearing devices or glasses, ensure they are put back on*

---

**Thank you. I need just a moment to pack up.**

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# Hearing Activity

## Indicate activity result                                    HB2

☐ 1. ATTEMPTED  [GO TO Closing →]

☐ 2. NOT ATTEMPTED

hb11hear          R11 HB2 HEARING ACTIVITY ATTEMPTED

## Reasons not attempted

### *Mark all that apply*                                      HB3

☐ SP unable to understand directions

☐ SP refused

☐ Proxy refused

☐ SP not present

☐ SP too ill

☐ SP language barrier

☐ Other (Specify):

hb11hearrsn1     R11 HB3 NO HEARING SP UNABLE TO UNDERSTAND
hb11hearrsn2     R11 HB3 NO HEARING SP REFUSED
hb11hearrsn3     R11 HB3 NO HEARING PROXY REFUSED
hb11hearrsn4     R11 HB3 NO HEARING SP TOO ILL
hb11hearrsn5     R11 HB3 NO HEARING SP LANGUAGE BARRIER
hb11hearrsn6     R11 HB3 NO HEARING SP NOT PRESENT
hb11hearrsn91    R11 HB3 NO HEARING OTHER SPECIFY

## Closing

➤ *Put away the following equipment:*
- *Headphones*
- *Small tablet stand*
- *Audio wipes, tissues*
- *Measuring tape*
- *Masking tape*
- *Return to tablet Home screen*

➤ *Return to CAPI*

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| | | | |
|---|---|---|---|
| hb11l250thresh | R11 HB LEFT EAR 250 THRESHOLD | hb11l250unreli | R11 HB LEFT EAR 250 UNRELIABLE |
| hb11l500thresh | R11 HB LEFT EAR 500 THRESHOLD | hb11l500unreli | R11 HB LEFT EAR 500 UNRELIABLE |
| hb11l1000thresh | R11 HB LEFT EAR 1000 THRESHOLD | hb11l1000unreli | R11 HB LEFT EAR 1000 UNRELIABLE |
| hb11l2000thresh | R11 HB LEFT EAR 2000 THRESHOLD | hb11l2000unreli | R11 HB LEFT EAR 2000 UNRELIABLE |
| hb11l4000thresh | R11 HB LEFT EAR 4000 THRESHOLD | hb11l4000unreli | R11 HB LEFT EAR 4000 UNRELIABLE |
| hb11l8000thresh | R11 HB LEFT EAR 8000 THRESHOLD | hb11l8000unreli | R11 HB LEFT EAR 8000 UNRELIABLE |
| hb11r250thresh | R11 HB RIGHT EAR 250 THRESHOLD | hb11r250unreli | R11 HB RIGHT EAR 250 UNRELIABLE |
| hb11r500thresh | R11 HB RIGHT EAR 500 THRESHOLD | hb11r500unreli | R11 HB RIGHT EAR 500 UNRELIABLE |
| hb11r1000thresh | R11 HB RIGHT EAR 1000 THRESHOLD | hb11r1000unreli | R11 HB RIGHT EAR 1000 UNRELIABLE |
| hb11r2000thresh | R11 HB RIGHT EAR 2000 THRESHOLD | hb11r2000unreli | R11 HB RIGHT EAR 2000 UNRELIABLE |
| hb11r4000thresh | R11 HB RIGHT EAR 4000 THRESHOLD | hb11r4000unreli | R11 HB RIGHT EAR 4000 UNRELIABLE |
| hb11r8000thresh | R11 HB RIGHT EAR 8000 THRESHOLD | hb11r8000unreli | R11 HB RIGHT EAR 8000 UNRELIABLE |
| hb11l250noise | R11 HB LEFT EAR 250 EXCESSIVE BACKGROUND NOISE | hb11l250nores | R11 HB LEFT EAR 250 NO RESPONSE |
| hb11l500noise | R11 HB LEFT EAR 500 EXCESSIVE BACKGROUND NOISE | hb11l500nores | R11 HB LEFT EAR 500 NO RESPONSE |
| hb11l1000noise | R11 HB LEFT EAR 1000 EXCESSIVE BACKGROUND NOISE | hb11l1000nores | R11 HB LEFT EAR 1000 NO RESPONSE |
| hb11l2000noise | R11 HB LEFT EAR 2000 EXCESSIVE BACKGROUND NOISE | hb11l2000nores | R11 HB LEFT EAR 2000 NO RESPONSE |
| hb11l4000noise | R11 HB LEFT EAR 4000 EXCESSIVE BACKGROUND NOISE | hb11l4000nores | R11 HB LEFT EAR 4000 NO RESPONSE |
| hb11l8000noise | R11 HB LEFT EAR 8000 EXCESSIVE BACKGROUND NOISE | hb11l8000nores | R11 HB LEFT EAR 8000 NO RESPONSE |
| hb11r250noise | R11 HB RIGHT EAR 250 EXCESSIVE BACKGROUND NOISE | hb11r250nores | R11 HB RIGHT EAR 250 NO RESPONSE |
| hb11r500noise | R11 HB RIGHT EAR 500 EXCESSIVE BACKGROUND NOISE | hb11r500nores | R11 HB RIGHT EAR 500 NO RESPONSE |
| hb11r1000noise | R11 HB RIGHT EAR 1000 EXCESSIVE BACKGROUND NOISE | hb11r1000nores | R11 HB RIGHT EAR 1000 NO RESPONSE |
| hb11r2000noise | R11 HB RIGHT EAR 2000 EXCESSIVE BACKGROUND NOISE | hb11r2000nores | R11 HB RIGHT EAR 2000 NO RESPONSE |
| hb11r4000noise | R11 HB RIGHT EAR 4000 EXCESSIVE BACKGROUND NOISE | hb11r4000nores | R11 HB RIGHT EAR 4000 NO RESPONSE |
| hb11r8000noise | R11 HB RIGHT EAR 8000 EXCESSIVE BACKGROUND NOISE | hb11r8000nores | R11 HB RIGHT EAR 8000 NO RESPONSE |

Derived Variables From Items in the Vision and Hearing Booklet (VB)

| | |
|---|---|
| hb11dbpta | R11 D PURE-TONE AVERAGE OF THE BETTER EAR |
| hb11dwpta | R11 D PURE-TONE AVERAGE OF THE WORSE EAR |
| hb11dbetterear | R11 D BETTER EAR |
| hb11dbptam | R11 D PURE-TONE AVERAGE MISSING RSN |

Round 12

NHATS Vision and Hearing Activities Booklet

Date: ☐☐ / ☐☐ / 2 0 ☐☐
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Interviewer ID: N H A T ☐☐☐

# National Health and Aging Trends Study

## Vision and Hearing

## Activities Booklet

**nhats**

Draft

**Materials:**
- Tablet
- Portable table
- Small tablet stand
- Cloth screen wipe
- Measuring tape
- Headphones
- Audio wipes
- Regular tissues
- Green masking tape

**Tablet Preparation:**
- Turn on tablet
- Confirm tablet:
  - Fully charged
  - Wi-Fi turned off
  - Brightness set to halfway

## Vision Activity

**For this first activity, we will ask you to read letters from across the room. If you normally wear glasses or contacts for distance you should wear them now.**

**This activity will take me just a moment to set up.**

> ➤ *Seat SP in chair with at least 5 feet of space in front*
> ➤ *Measure approximately 5 feet (59 inches) on the floor from middle of SP chair; mark with tape*
> ➤ *Set up table and place over 5 foot mark in front of SP*
> ➤ *Take out tablet, wipe screen*
> ➤ *Launch Vision ebook*
> ➤ *Navigate to **5 Letters at Distance** cover page*
> ➤ *Place tablet on stand on table at SP's eye level, adjust as necessary for 5 foot distance*
> ➤ *Check for glare on tablet screen, adjust lighting as necessary*

## 5 Letters at Distance

**Let's get started. I am going to show you some letters. Please read the letters out loud, from left to right.  If you are not sure, it's okay to guess.  Ready?**

> ➤ *Swipe to screen A1*
> ➤ *Record number CORRECT for each screen:*
>     - *If 3 or more correct, swipe to next screen*
>     - *If 0-2 correct, say* **Thank you. We can stop here.**

# 5 Letters at Distance

**Record Number Correct**

*Mark correct responses only*

vb12resulta1-12    R12 VB1 5 LETTERS DISTANCE VISION SCREEN A1-12 RESULT

| Screen A1 | V | F | N | U | Z | | If 0-2, go to VB2 |
|---|---|---|---|---|---|---|---|
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen A2 | H | D | R | P | F | | If 0-2, go to VB2 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen A3 | U | P | F | R | N | | If 0-2, go to VB2 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen A4 | D | F | H | N | R | | If 0-2, go to VB2 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen A5 | Z | H | D | P | F | | If 0-2, go to VB2 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen A6 | D | V | R | N | U | | If 0-2, go to VB2 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen A7 | R | D | H | E | U | | If 0-2, go to VB2 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen A8 | H | V | N | E | D | | If 0-2, go to VB2 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen A9 | Z | H | F | E | D | | If 0-2, go to VB2 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen A10 | R | N | D | P | Z | | If 0-2, go to VB2 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen A11 | N | V | D | Z | P | | If 0-2, go to VB2 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen A12 | D | Z | V | E | N | | If 0-2, go to VB2 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |

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# 5 Letters at Distance

## VB2

**Mark activity result**

☐ 1. ATTEMPTED

☐ 2. NOT ATTEMPTED

**GO TO VB4. Reasons not attempted** ➜

vb125ldistance    R12 VB2 5 LETTERS DISTANCE VISION ACTIVITY ATTEMPTED

## Vision Aids

### VB3

**Observe, ask, or confirm if glasses, contacts, or other vision aid used for this activity. Mark _each_ item.**

|  | Yes | No |
|---|---|---|
| Glasses | ☐ | ☐ |
| Contacts | ☐ | ☐ |
| Other vision aid | ☐ | ☐ |

**GO TO 2 Letters at Distance** ➜

vb125lglasses     R12 VB3A GLASSES USED FOR 5 LETTERS DISTANCE ACTIVITY
vb125lcontacts    R12 VB3B CONTACTS USED FOR 5 LETTERS DISTANCE ACTIVITY
vb125lothvisaid   R12 VB3C OTH VISION AID USED FOR 5 LETTERS DISTANCE ACTIV
vb125lvisrsn1     R12 VB4 NO 5 LETTERS DISTANCE SP UNABLE TO UNDERSTAND

## Reasons not attempted

### VB4

**Mark _all_ that apply**

☐ SP unable to understand directions

☐ SP refused

☐ Proxy refused

☐ SP too ill

☐ SP language barrier

☐ Other (Specify):

vb125lvisrsn1     R12 VB4 NO 5 LETTERS DISTANCE SP UNABLE TO UNDERSTAND
vb125lvisrsn2     R12 VB4 NO 5 LETTERS DISTANCE SP REFUSED
vb125lvisrsn3     R12 VB4 NO 5 LETTERS DISTANCE PROXY REFUSED
vb125lvisrsn4     R12 VB4 NO 5 LETTERS DISTANCE SP TOO ILL
vb125lvisrsn5     R12 VB4 NO 5 LETTERS DISTANCE SP LANGUAGE BARRIER
vb125lvisrsn6     R12 VB4 NO 5 LETTERS DISTANCE SP NOT PRESENT
vb125lvisrsn91    R12 VB4 NO 5 LETTERS DISTANCE OTHER SPECIFY

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# 2 Letters at Distance

**Again, I will show you some letters. Please read the letters out loud, from left to right. If you are not sure, it's okay to guess. Ready?**

➤ *Swipe to screen B1*

➤ *Record number CORRECT for each screen:*
- *If 1 or 2 correct, swipe to next screen*
- *If 0 correct, say **Thank you. We can stop here.***

vb12resultb1-16   R12 VB5 2 LETTERS DISTANCE VISION SCREEN B1-16 RESULT    **VB5**

*Mark correct responses only*

Record Number Correct

| Screen B1 | Z | N | ☐ | If 0, go to VB6 |
|---|---|---|---|---|
| | ☐ | ☐ | | |
| Screen B2 | E | V | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |
| Screen B3 | P | N | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |
| Screen B4 | H | R | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |
| Screen B5 | Z | D | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |
| Screen B6 | U | F | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |
| Screen B7 | R | P | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |
| Screen B8 | E | Z | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |

Record Number Correct

| Screen B9 | N | V | ☐ | If 0, go to VB6 |
|---|---|---|---|---|
| | ☐ | ☐ | | |
| Screen B10 | D | H | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |
| Screen B11 | U | F | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |
| Screen B12 | H | N | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |
| Screen B13 | V | R | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |
| Screen B14 | U | D | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |
| Screen B15 | E | F | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |
| Screen B16 | Z | P | ☐ | If 0, go to VB6 |
| | ☐ | ☐ | | |

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# 2 Letters at Distance

## Indicate activity result        VB6

- [ ] 1. ATTEMPTED
- [ ] 2. NOT ATTEMPTED    **GO TO VB8.** Reasons not attempted ➡

vb122ldistance    R12 VB6 2 LETTERS DISTANCE VISION ACTIVITY ATTEMPTED

## Vision Aids

### VB7

**Observe, ask, or confirm if glasses, contacts, or other vision aid used for this activity. Mark _each_ item.**

|  | Yes | No |
|---|---|---|
| Glasses | [ ] | [ ] |
| Contacts | [ ] | [ ] |
| Other vision aid | [ ] | [ ] |

**GO TO 5 Letters at Reading Distance** ➡

vb122lglasses    R12 VB7A GLASSES USED FOR 2 LETTERS DISTANCE ACTIVITY
vb122lcontacts    R12 VB7B CONTACTS USED FOR 2 LETTERS DISTANCE ACTIVITY
vb122lothvisaid    R12 VB7C OTH VISION AID USED FOR 2 LETTERS DISTANCE ACTIV

## Reasons not attempted

### VB8

**Mark _all_ that apply**

- [ ] SP unable to understand directions
- [ ] SP refused
- [ ] Proxy refused
- [ ] SP too ill
- [ ] SP language barrier
- [ ] Other (Specify):

vb122lvisrsn1    R12 VB8 NO 2 LETTERS DISTANCE SP UNABLE TO UNDERSTAND
vb122lvisrsn2    R12 VB8 NO 2 LETTERS DISTANCE SP REFUSED
vb122lvisrsn3    R12 VB8 NO 2 LETTERS DISTANCE PROXY REFUSED
vb122lvisrsn4    R12 VB8 NO 2 LETTERS DISTANCE SP TOO ILL
vb122lvisrsn5    R12 VB8 NO 2 LETTERS DISTANCE SP LANGUAGE BARRIER
vb122lvisrsn6    R12 VB8 NO 2 LETTERS DISTANCE SP NOT PRESENT
vb122lvisrsn91    R12 VB8 NO 2 LETTERS DISTANCE OTHER SPECIFY

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# 5 Letters at Reading Distance

**For the next activity, I will ask you to read from the tablet as if it were a book. If you normally wear glasses or contacts to read, you should wear them now.**

➤ *Swipe to cover screen for **5 Letters at Reading Distance***
➤ *Hand SP the tablet.*

**Please hold this tablet at a comfortable reading distance. First, I need to measure your reading distance. Once I've measured, please try to keep the tablet at this distance. That is, try not to move it closer or further away.**

➤ *Measure distance between tablet screen and SP's eyes*

➤ *Record distance to nearest 1/4 inch*
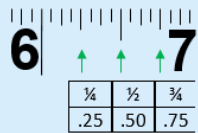


| | | |
|---|---|---|
| ¼ | ½ | ¾ |
| .25 | .50 | .75 |

| | | | | **VB9** |
|---|---|---|---|---|
| Reading Distance | ☐☐ . ☐☐ | inches | | |
| | vb12readdist | R12 VB9 READING DISTANCE INCHES | | |

**Read each letter out loud from left to right. If you are not sure, it's okay to guess. I will tell you when to go to the next screen.**

> ➤ *Position yourself beside SP to view tablet screen*
> ➤ *If SP needs assistance swiping, help as needed*

> ➤ *Record number CORRECT for each screen:*
>     - *If 3 or more correct, swipe to next screen*
>     - *If 0-2 correct, say* **Thanks. Those are all the vision activities we have today.**

# 5 Letters at Reading Distance

**Record Number Correct**

*Mark correct responses only*

vb12resultc1-12    R12 VB10 5 LETTERS READING VISION SCREEN C1-12 RESULT

| Screen C1 | e | a | s | u | n | | If 0-2, go to VB11 |
|---|---|---|---|---|---|---|---|
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C2 | x | u | s | e | o | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C3 | r | s | a | x | e | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C4 | s | x | a | n | r | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C5 | n | e | o | u | o | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C6 | n | e | n | a | x | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C7 | u | x | o | n | r | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C8 | o | a | u | x | s | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C9 | n | s | o | x | s | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C10 | u | r | o | e | r | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C11 | a | e | a | e | u | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Screen C12 | s | x | n | e | a | | If 0-2, go to VB11 |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |

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# 5 Letters at Reading Distance

## VB11

*Indicate activity result*

- ☐ 1. ATTEMPTED
- ☐ 2. NOT ATTEMPTED → GO TO **VB13**. Reasons not attempted

vb125lreading     R12 VB11 5 LETTERS READING VISION ACTIVITY ATTEMPTED

## Vision Aids

### VB12

*Observe, ask, or confirm if glasses, contacts, or other vision aid used for this activity. Mark <u>each</u> item.*

|                  | Yes | No |
|------------------|-----|-----|
| Glasses          | ☐   | ☐  |
| Contacts         | ☐   | ☐  |
| Other vision aid | ☐   | ☐  |

GO TO Hearing Activity →

vb12readglasses     R12 VB12 GLASSES USED FOR 5 LETTERS READING ACTIVITY
vb12readcontacts     R12 VB12 CONTACTS USED FOR 5 LETTERS READING ACTIVITY
vb12readothvisaid     R12 VB12 OTH VISION AID USED FOR 5 LETTERS READING ACTIV

## Reasons not attempted

### VB13

*Mark <u>all</u> that apply*

- ☐ SP unable to understand directions
- ☐ SP refused
- ☐ Proxy refused
- ☐ SP too ill
- ☐ SP language barrier
- ☐ Other (Specify):

vb12readvisrsn1 R12 VB13 NO 5 LETTERS READING SP UNABLE TO UNDERSTAND
vb12readvisrsn2 R12 VB13 NO 5 LETTERS READING SP REFUSED
vb12readvisrsn3 R12 VB13 NO 5 LETTERS READING PROXY REFUSED
vb12readvisrsn4 R12 VB13 NO 5 LETTERS READING SP TOO ILL
vb12readvisrsn5 R12 VB13 NO 5 LETTERS READING SP LANGUAGE BARRIER
vb12readvisrsn6 R12 VB13 NO 5 LETTERS READING SP NOT PRESENT
vb12readvisrsn91 R12 VB13 NO 5 LETTERS READING OTHER SPECIFY

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# Hearing Activity

**Next we have a hearing activity. It will take me just a moment to set up.**

> ➤ *Ask SP if okay to turn off obvious noise sources*
>
> ➤ *Move table behind where SP is seated, set stand on the table*
>
> ➤ *Set the tablet on the stand*
>
> ➤ *Wipe headphones and let dry*
>
> ➤ *Launch Shoebox app and press **New Patient** icon*
>     - *Enter information from CAPI **VH5** into New Patient screen (First Name ID, Last Name ID), press **Save***
>
> ➤ *Select the recently added patient from the patient list*
>
> ➤ *Select **Automated Pure Tone Test***
>
> ➤ *Plug headphones into tablet*
>     - *Confirm onscreen that headphones are connected and test listening level*

**For this activity, you will wear headphones.**
- *If wearing glasses:* **Please take off your glasses.**
- *If hair over ears:* **Please push your hair behind your ears.**

**When I put the headphones on you, you may not hear anything at first. When you hear a tone in either ear, raise your hand and then lower it back down, like this.**

> ➤ *Demonstrate*

**Are you currently wearing a hearing device?**

Hearing Device Worn

| | | |
|---|---|---|
| ***Mark response*** | | **HB1** |
| ☐ 1. Yes | | |
| ☐ a. Hearing aid for one ear | | **HB1a** |
| ☐ b. Hearing aids for both ears | | |
| ☐ c. Cochlear implant | | |
| ☐ 2. No | hb12heardev<br>hb12heardevtype | R12 HB1 HEARING DEVICE WORN<br>R12 HB1A TYPE OF HEARING DEVICE WORN |

➤ *If wearing hearing device, say,* **Please take out your hearing device(s).**

➤ *Place headphones on SP*
- *Align red headphone with right ear*
- *Place headphones in front of ears and slide up and back to cover ears*
- *Adjust as necessary*

➤ *Tap* **Start** *on tablet*

➤ *Tap* **Play Tone**
- *If SP raises hand, tap* **Heard**
- *If SP does not raise hand, tap* **Not Heard**

➤ *Continue presenting tones and entering responses until Thank You screen*
- *If "Excessive Noise Detected" displays, select* **Accept Thresholds**

➤ *At Thank You screen, tap* **Save and Review**

➤ *Move in front of SP to help remove the headphones*

➤ *If SP removed hearing devices or glasses, ensure they are put back on*

| | | |
|---|---|---|
| ***Record PTA Results:*** | | |
| Right Ear: PTA ☐☐☐ | | **HB1b** |
| Left Ear:  PTA ☐☐☐ | | **HB1c** |

**Thank you. I need just a moment to pack up.**

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# Hearing Activity

## Indicate activity result | HB2

- [ ] 1. ATTEMPTED  **GO TO Closing** →
- [ ] 2. NOT ATTEMPTED

hb12hear     R12 HB2 HEARING ACTIVITY ATTEMPTED

## Reasons not attempted

### Mark **all** that apply | HB3

- [ ] SP unable to understand directions
- [ ] SP refused
- [ ] Proxy refused
- [ ] SP too ill
- [ ] SP language barrier
- [ ] Other (Specify):

| | |
|---|---|
| hb12hearrsn1 | R12 HB3 NO HEARING SP UNABLE TO UNDERSTAND |
| hb12hearrsn2 | R12 HB3 NO HEARING SP REFUSED |
| hb12hearrsn3 | R12 HB3 NO HEARING PROXY REFUSED |
| hb12hearrsn4 | R12 HB3 NO HEARING SP TOO ILL |
| hb12hearrsn5 | R12 HB3 NO HEARING SP LANGUAGE BARRIER |
| hb12hearrsn6 | R12 HB3 NO HEARING SP NOT PRESENT |
| hb12hearrsn91 | R12 HB3 NO HEARING OTHER SPECIFY |

## Closing

➤ *Put away the following equipment:*
   - *Headphones*
   - *Small tablet stand*
   - *Audio wipes, tissues*
   - *Measuring tape*
   - *Masking tape*
   - *Return to tablet Home screen*

➤ *Return to CAPI*

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## Shoebox Variables

| | | | |
|---|---|---|---|
| hb12l250thresh | R12 HB LEFT EAR 250 THRESHOLD | hb12l250unreli | R12 HB LEFT EAR 250 UNRELIABLE |
| hb12l500thresh | R12 HB LEFT EAR 500 THRESHOLD | hb12l500unreli | R12 HB LEFT EAR 500 UNRELIABLE |
| hb12l1000thresh | R12 HB LEFT EAR 1000 THRESHOLD | hb12l1000unreli | R12 HB LEFT EAR 1000 UNRELIABLE |
| hb12l2000thresh | R12 HB LEFT EAR 2000 THRESHOLD | hb12l2000unreli | R12 HB LEFT EAR 2000 UNRELIABLE |
| hb12l4000thresh | R12 HB LEFT EAR 4000 THRESHOLD | hb12l4000unreli | R12 HB LEFT EAR 4000 UNRELIABLE |
| hb12l8000thresh | R12 HB LEFT EAR 8000 THRESHOLD | hb12l8000unreli | R12 HB LEFT EAR 8000 UNRELIABLE |
| hb12r250thresh | R12 HB RIGHT EAR 250 THRESHOLD | hb12r250unreli | R12 HB RIGHT EAR 250 UNRELIABLE |
| hb12r500thresh | R12 HB RIGHT EAR 500 THRESHOLD | hb12r500unreli | R12 HB RIGHT EAR 500 UNRELIABLE |
| hb12r1000thresh | R12 HB RIGHT EAR 1000 THRESHOLD | hb12r1000unreli | R12 HB RIGHT EAR 1000 UNRELIABLE |
| hb12r2000thresh | R12 HB RIGHT EAR 2000 THRESHOLD | hb12r2000unreli | R12 HB RIGHT EAR 2000 UNRELIABLE |
| hb12r4000thresh | R12 HB RIGHT EAR 4000 THRESHOLD | hb12r4000unreli | R12 HB RIGHT EAR 4000 UNRELIABLE |
| hb12r8000thresh | R12 HB RIGHT EAR 8000 THRESHOLD | hb12r8000unreli | R12 HB RIGHT EAR 8000 UNRELIABLE |
| hb12l250noise | R12 HB LEFT EAR 250 EXCESSIVE BACKGROUND NOISE | hb12l250nores | R12 HB LEFT EAR 250 NO RESPONSE |
| hb12l500noise | R12 HB LEFT EAR 500 EXCESSIVE BACKGROUND NOISE | hb12l500nores | R12 HB LEFT EAR 500 NO RESPONSE |
| hb12l1000noise | R12 HB LEFT EAR 1000 EXCESSIVE BACKGROUND NOISE | hb12l1000nores | R12 HB LEFT EAR 1000 NO RESPONSE |
| hb12l2000noise | R12 HB LEFT EAR 2000 EXCESSIVE BACKGROUND NOISE | hb12l2000nores | R12 HB LEFT EAR 2000 NO RESPONSE |
| hb12l4000noise | R12 HB LEFT EAR 4000 EXCESSIVE BACKGROUND NOISE | hb12l4000nores | R12 HB LEFT EAR 4000 NO RESPONSE |
| hb12l8000noise | R12 HB LEFT EAR 8000 EXCESSIVE BACKGROUND NOISE | hb12l8000nores | R12 HB LEFT EAR 8000 NO RESPONSE |
| hb12r250noise | R12 HB RIGHT EAR 250 EXCESSIVE BACKGROUND NOISE | hb12r250nores | R12 HB RIGHT EAR 250 NO RESPONSE |
| hb12r500noise | R12 HB RIGHT EAR 500 EXCESSIVE BACKGROUND NOISE | hb12r500nores | R12 HB RIGHT EAR 500 NO RESPONSE |
| hb12r1000noise | R12 HB RIGHT EAR 1000 EXCESSIVE BACKGROUND NOISE | hb12r1000nores | R12 HB RIGHT EAR 1000 NO RESPONSE |
| hb12r2000noise | R12 HB RIGHT EAR 2000 EXCESSIVE BACKGROUND NOISE | hb12r2000nores | R12 HB RIGHT EAR 2000 NO RESPONSE |
| hb12r4000noise | R12 HB RIGHT EAR 4000 EXCESSIVE BACKGROUND NOISE | hb12r4000nores | R12 HB RIGHT EAR 4000 NO RESPONSE |
| hb12r8000noise | R12 HB RIGHT EAR 8000 EXCESSIVE BACKGROUND NOISE | hb12r8000nores | R12 HB RIGHT EAR 8000 NO RESPONSE |

## Derived Variables From Items in the Vision and Hearing Booklet (VB)

| | |
|---|---|
| vb12ddistance | R12 D DISTANCE ACUITY VISION TEST SCORE |
| vb12dcontrast | R12 D CONTRAST SENSITIVITY VISION TEST SCORE |
| vb12dnear | R12 D NEAR ACUITY VISION TEST SCORE |
| vb12ddistancem | R12 D DISTANCE ACUITY VISION TEST SCORE MISSING RSN |
| vb12dcontrastm | R12 D CONTRAST SENSITIVITY VISION TEST SCORE MISSING RSN |
| vb12dnearm | R12 D NEAR ACUITY VISION TEST SCORE MISSING RSN |
| hb12dbpta | R12 D PURE-TONE AVERAGE OF THE BETTER EAR |
| hb12dwpta | R12 D PURE-TONE AVERAGE OF THE WORSE EAR |
| hb12dbetterear | R12 D BETTER EAR |
| hb12dbptam | R12 D PURE-TONE AVERAGE MISSING RSN |