



Atherosclerosis Risk in Communities Study

Cohort Exam Visit 11 NCS
V2_V11_CNFA_NP Derived Variable Dictionary
(v1.0)
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Prepared by the Collaborative Studies Coordinating Center

ARIC V2_V11_CNFA_NP Derived Variable Dictionary

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NEW OR CHANGED FROM PREVIOUS DISTRIBUTION

This table describes the changes to the last published V2_V11_CNFA_NP dictionary.

Modification Date	Variable Name	Reason(s) for Change

1. OVERVIEW

The V2_V11_CNFA_NP dataset contains 65,323 records from 14,676 participants who completed one or more neurocognitive tests between Visit 2 (1990-1992) and Visit 11 (2024-2025). The dataset utilizes a long format in which each participant has multiple records. Each record represents a specific visit or sub-study during which the participant completed an assessment. The purpose of this dataset is to provide ARIC collaborators with a set of variables that can be used to examine risk and protective factors associated with cognitive change over time.

The dataset naming conventions are as follows: The dataset name retains the retrieval date (ex: V2_V11_CNFA_NP_251210) until the dataset is considered final and frozen. After a dataset is frozen, the retrieval date is dropped from the dataset name (ex: V2_V11_CNFA_NP). Datasets with “NP” in the name have dates removed; instead, dates are replaced with the number of follow up days after the Visit 1 date and the year of the original date variable. The first two characters refer to the earliest visit included in the dataset. The next two characters indicate the last visit in the dataset. The variable naming convention is similar. Across-visit variables have identical names. The last digit in the variable name identifies the definition version of a variable.

Details about the administration of neurocognitive tests can be found in ARIC Manual 17. The construction of factor scores based on these neurocognitive tests is described in ARIC Manual 30.

2. ADMINISTRATIVE

Administrative variables are used to identify specific participants, the visit and date on which the participant completed one or more neurocognitive tests, and whether the assessment was conducted in-person or by phone.

2.1 SUBJECTID (ARIC Subject ID (CIR))

Type: Character; length: \$7.

2.2 ID (ARIC ID - same as SUBJECTID)

Description: The historical participant identifier from visits 1-4 is ID. The value of ID is the same value as SUBJECTID. Use ID when merging visit 11/NCS stage 1 data with datasets from previous visits necessary for longitudinal analyses.

Type: Character; length: \$7.

Algorithm: ID=SUBJECTID.

Source variable(s): SUBJECTID

2.3 VTYPE (Visit type)

Description: A variable created to indicate the specific visit at which an assessment was administered. Neurocognitive tests were administered at Visit 2 (1990-1992), Visit 3 (1993-1995), Visit 4 (1996-1998), Visit 5 (2011-2013), Visit 6 (2016-2017), Visit 7 (2018-2019), Visit 8 (2020), Visit 9 (2021-2022), and Visit 11 (2024-2025), as well as during MRI and PET imaging visits that occurred during the timespan of Visit 10 (2023). Neurocognitive tests were also administered during two MRI sub-studies ('BRAIN' from 2004 to 2006 and 'CarMRI' from 2005 to 2006) as well as during the baseline ('ACHY0'), one-year follow-up ('ACHY1'), two-year follow-up ('ACHY2'), three-year follow-up ('ACHY3') of the ACHIEVE randomized controlled trial and the subsequent ACHIEVE-HIFU/BHFU ancillary study ('ACHY4', 'ACHY5', 'ACHY6', 'ACHY7').

Type: Character; length: \$6.

Algorithm:
If ID is in [CNFA] then VTYPE='V2'.
If ID is in [CNFB04] then VTYPE='V3'.
If ID is in [CNFC04] then VTYPE='V4'.
If ID is in [NCS Visit 5] then VTYPE='V5NCS'.
If ID is in [NCS Visit 6] then VTYPE='V6NCS'.
If ID is in [NCS Visit 7] then VTYPE='V7NCS'.
If ID is in [NCS or NCST Visit 8] then VTYPE='V8NCS'.
If ID is in [NCS Visit 9] then VTYPE='V9NCS'.
If ID is in [NCS MRI and PET Neurocognitive] then VTYPE='VMPNCS'.
If ID is in [NCS Visit 11] then VTYPE='V11NCS'.
If ID is in [NCS ACHIEVE] and EventName='Screen and Baseline' and ID, NCS date, and NCST date are not present in [NCS Visit 7, NCS Visit 8, NCST Visit 8, or NCS Visit 9] then VTYPE='ACHY0'.
If ID is in [NCS ACHIEVE] and EventName='Year 1' and ID, NCS date, and NCST date are not present in [NCS Visit 7, NCS Visit 8, NCST Visit 8, or NCS Visit 9] then VTYPE='ACHY1'.
If ID is in [NCS ACHIEVE] and EventName='Year 2' and ID, NCS date, and NCST date are not present in [NCS Visit 7, NCS Visit 8, NCST Visit 8, or NCS Visit 9] then VTYPE='ACHY2'.
If ID is in [NCS ACHIEVE] and EventName='Y3 CLINIC' and ID, NCS date, and NCST date are not present in [NCS Visit 7, NCS Visit 8, NCST Visit 8, or NCS Visit 9] then VTYPE='ACHY3'.

If ID is in [NCS ACHIEVE ANX] and EventName='ANX Year 1' and ID and NCS date are not present in [NCS Visit 9, NCS MRI and PET Neurocognitive] then VTYPE='ACHY4'.
 If ID is in [NCS ACHIEVE ANX] and EventName='ANX Year 2' and ID and NCS date are not present in [NCS MRI and PET Neurocognitive, NCS Visit 11] then VTYPE='ACHY5'.
 If ID is in [NCS ACHIEVE ANX] and EventName='ANX Year 3' and ID and NCS date are not present in [NCS Visit 11] then VTYPE='ACHY6'.
 If ID is in [NCS ACHIEVE ANX] and EventName='ANX Year 4' and ID and NCS date are not present in [NCS Visit 11] then VTYPE='ACHY7'.
 If ID is in [CNF_IA1] then VTYPE='BRAIN'.
 If ID is in [CNFF] then VTYPE='CarMRI'.

Source variable(s): ID, EventName, NCS date, NCST date

2.4 INPERSONTESTS (Indicator for one or more cognitive tests administered in person)

Description: A variable created to denote whether an in-person neurocognitive assessment was administered. 0 indicates that an in-person neurocognitive assessment *was not* administered. 1 indicates that an in-person neurocognitive assessment *was* administered.

Type: Numeric

Algorithm: INPERSONTESTS=0.
 If ID is in [CNFA] then INPERSONTESTS=1.
 If ID is in [CNFB04] then INPERSONTESTS=1.
 If ID is in [CNFC04] then INPERSONTESTS=1.
 If ID is in [NCS Visit 5], [MME Visit 5], or [CDP Visit 5] then INPERSONTESTS=1.
 If ID is in [NCS Visit 6], [MME6 Visit 6], or [CDP Visit 6] then INPERSONTESTS=1.
 If ID is in [NCS Visit 7], [MME6 Visit 7], or [CDP Visit 7] then INPERSONTESTS=1.
 If ID is in [NCS Visit 8], [MME6 Visit 8], or [CDP Visit 8] then INPERSONTESTS=1.
 If ID is in [NCS Visit 9], [MME6 Visit 9], or [CDP Visit 9] then INPERSONTESTS=1.
 If ID is in [NCS MRI and PET Neurocognitive], [MME6 MRI and PET Neurocognitive], or [CDP MRI and PET Neurocognitive] then INPERSONTESTS=1.

If ID is in [NCS Visit 11], [MME6 Visit 11], or [CDP Visit 11] then INPERSONTESTS=1.
 If ID is in [NCS ACHIEVE] or [NCS ACHIEVE ANX] then INPERSONTESTS=1.
 If ID is in [CNF_IA1] then INPERSONTESTS=1.
 If ID is in [CNFF] then INPERSONTESTS=1.

Source variable(s): ID

2.5 PHONETESTS (Indicator for one or more cognitive tests administered by phone)

Description: A variable created to denote whether a phone-based neurocognitive assessment was administered. 0 indicates that a phone-based neurocognitive assessment *was not* administered. 1 indicates that a phone-based neurocognitive assessment *was* administered. 2 indicates that a phone-based neurocognitive assessment *was not* administered but the Six Item Cognitive Screener or the Ascertain Dementia Eight Item Informant Questionnaire was administered over the phone.

Type: Numeric

Algorithm: PHONETESTS=0.
 Else if ID is in [NCST Visit 8] or [MCHT Visit 8] then PHONETESTS=1.
 Else if ID is in [NCST ACHIEVE] or [MCHT ACHIEVE] then PHONETESTS=1.
 Else if ID is in [SISALL], VTYPE='V6NCS', and [SISALL]SIS date is between 1/1/2016 and 12/31/2017 then PHONETESTS=2.
 Else if ID is in [SISALL], VTYPE='V7NCS', and [SISALL]SIS date is between 1/1/2018 and 12/31/2019 then PHONETESTS=2.
 Else if ID is in [SISALL], VTYPE='V8NCS', and [SISALL]SIS date is between 1/1/2020 and 12/31/2020 then PHONETESTS=2.
 Else if ID is in [SISALL], VTYPE in ('V9NCS', 'VMPNCS'), and [SISALL]SIS date is between 1/1/2021 and 3/10/2024 then PHONETESTS=2.
 Else if ID is in [SISALL], VTYPE='V11NCS', and [SISALL]SIS date is between 3/11/2024 and 10/18/2025 then PHONETESTS=2.
 Else if ID is in [ADS], VTYPE='V6NCS', and [ADS]ADS date is between 1/1/2016 and 12/31/2017 then PHONETESTS=2.
 Else if ID is in [ADS], VTYPE='V7NCS', and [ADS]ADS date is between 1/1/2018 and 12/31/2019 then PHONETESTS=2.
 Else if ID is in [ADS], VTYPE='V8NCS', and [ADS]ADS date is between 1/1/2020 and 12/31/2020 then PHONETESTS=2.

Else if ID is in [ADS], VTYPE in ('V9NCS', 'VMPNCS'), and [ADS]ADS date is between 1/1/2021 and 3/10/2024 then PHONETESTS=2.
Else if ID is in [ADS], VTYPE='V11NCS', and [ADS]ADS date is between 3/11/2024 and 10/18/2025 then PHONETESTS=2.

Source variable(s): ID, SIS date, ADS date

2.6 INPERSONDATE_FollowUpDays (Days of follow up from visit 1 to In-person cognitive assessment date)

Description: A variable created to indicate the days of follow up from visit 1 to the date an in-person neurocognitive test was administered.

Type: Numeric

Algorithm:
If VTYPE='V2' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 2.
If VTYPE='V3' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 3.
If VTYPE='V4' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 4.
If VTYPE='V5NCS' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 5 NCS date.
Else if VTYPE='V5NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 5 MMSE date.
Else if VTYPE='V5NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 5 CDP date.
Else if VTYPE='V5NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 5.
If VTYPE='V6NCS' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 6 NCS date
Else if VTYPE='V6NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 6 MMSE date.
Else if VTYPE='V6NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 6 CDP date.
Else if VTYPE='V6NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 6.

If VTYPE='V7NCS' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 7 NCS date.

Else if VTYPE='V7NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 7 MMSE date.

Else if VTYPE='V7NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 7 CDP date.

Else if VTYPE='V7NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 7.

If VTYPE='V8NCS' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 8 NCS date.

Else if VTYPE='V8NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 8 MMSE date.

Else if VTYPE='V8NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 8 CDP date.

Else if VTYPE='V8NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 8.

If VTYPE='V9NCS' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 9 NCS date.

Else if VTYPE='V9NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 9 MMSE date.

Else if VTYPE='V9NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 9 CDP date.

Else if VTYPE='V9NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 9.

If VTYPE='VMPNCS' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and the NCS date from the MRI and PET imaging visit.

Else if VTYPE='VMPNCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and the MMSE date from the MRI and PET imaging visit.

Else if VTYPE='VMPNCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and the CDP date from the MRI and PET imaging visit.

If VTYPE='V11NCS' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 11 NCS date.

Else if VTYPE='V11NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 11 MMSE date.

Else if VTYPE='V11NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 11 CDP date.

Else if VTYPE='V11NCS' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and visit 11.

If VTYPE='ACHY0', 'ACHY1', 'ACHY2', or 'ACHY3' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and ACHIEVE NCS date.

If VTYPE='ACHY4', 'ACHY5', 'ACHY6', or 'ACHY7' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and ACHIEVE ANX NCS date.

If VTYPE='Brain' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and [CNF_IA1] CNF date.

Else if VTYPE='Brain' and INPERSONDATE_FollowUpDays is missing then INPERSONDATE_FollowUpDays is the number of days between visit 1 and [ANT_IA1] ANT date.

If VTYPE='CarMRI' then INPERSONDATE_FollowUpDays is the number of days between visit 1 and [CNFF] CNF date.

Source variable(s): VTYPE, visit 1 date, visit 2 date, visit 3 date, visit 4 date, NCS date, MME date, CDP date, visit 5 date, visit 6 date, visit 7 date, visit 8 date, visit 9 date, MRI/PET imaging visit date, visit 11 date, [CNF_IA1] CNF date, [ANT_IA1] ANT date, [CNFF] CNF date

2.7 INPERSONDATE_year (Year of In-person cognitive assessment date)

Description: A variable created to indicate the year an in-person neurocognitive test was administered.

Type: Numeric

Algorithm: If VTYPE='V2' then INPERSONDATE_year is the year of visit 2.
 If VTYPE='V3' then INPERSONDATE_year is the year of visit 3.
 If VTYPE='V4' then INPERSONDATE_year is the year of visit 4.
 If VTYPE='V5NCS' then INPERSONDATE_year is the year of visit 5 NCS date.
 Else if VTYPE='V5NCS' and INPERSONDATE_year is missing then INPERSONDATE_year is the year of visit 5 MMSE date.
 Else if VTYPE='V5NCS' and INPERSONDATE_year is missing then INPERSONDATE_year is the year of visit 5 CDP date.

Else if VTYPE='V5NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 5.
 If VTYPE='V6NCS' then INPERSONDATE_year is the year of visit
 6 NCS date
 Else if VTYPE='V6NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 6 MMSE date.
 Else if VTYPE='V6NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 6 CDP date.
 Else if VTYPE='V6NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 6.
 If VTYPE='V7NCS' then INPERSONDATE_year is the year of visit
 7 NCS date.
 Else if VTYPE='V7NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 7 MMSE date.
 Else if VTYPE='V7NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 7 CDP date.
 Else if VTYPE='V7NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 7.
 If VTYPE='V8NCS' then INPERSONDATE_year is the year of visit
 8 NCS date.
 Else if VTYPE='V8NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 8 MMSE date.
 Else if VTYPE='V8NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 8 CDP date.
 Else if VTYPE='V8NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 8.
 If VTYPE='V9NCS' then INPERSONDATE_year is the year of visit
 9 NCS date.
 Else if VTYPE='V9NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 9 MMSE date.
 Else if VTYPE='V9NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 9 CDP date.
 Else if VTYPE='V9NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 9.
 If VTYPE='VMPNCS' then INPERSONDATE_year is the year of the
 NCS date from the MRI and PET imaging visit.
 Else if VTYPE='VMPNCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of the MMSE date from the
 MRI and PET imaging visit.
 Else if VTYPE='VMPNCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of the CDP date from the
 MRI and PET imaging visit.
 If VTYPE='V11NCS' then INPERSONDATE_year is the year of visit
 11 NCS date.
 Else if VTYPE='V11NCS' and INPERSONDATE_year is missing
 then INPERSONDATE_year is the year of visit 11 MMSE date.

Else if VTYPE='V11NCS' and INPERSONDATE_year is missing then INPERSONDATE_year is the year of visit 11 CDP date.
 Else if VTYPE='V11NCS' and INPERSONDATE_year is missing then INPERSONDATE_year is the year of visit 11.
 If VTYPE='ACHY0', 'ACHY1', 'ACHY2', or 'ACHY3' then INPERSONDATE_year is the year of ACHIEVE NCS date.
 If VTYPE='ACHY4', 'ACHY5', 'ACHY6', or 'ACHY7' then INPERSONDATE_year is the year of ACHIEVE ANX NCS date.
 If VTYPE='Brain' then INPERSONDATE_year is the year of [CNF_IA1] CNF date.
 Else if VTYPE='Brain' and INPERSONDATE_year is missing then INPERSONDATE_year is the year of [ANT_IA1] ANT date.
 If VTYPE='CarMRI' then INPERSONDATE_year is the year of [CNFF] CNF date.

Source variable(s): VTYPE, visit 2 date, visit 3 date, visit 4 date, NCS date, MME date, CDP date, visit 5 date, visit 6 date, visit 7 date, visit 8 date, visit 9 date, MRI/PET imaging visit date, visit 11 date, [CNF_IA1] CNF date, [ANT_IA1] ANT date, [CNFF] CNF date

2.8 PHONEDATE_FollowUpDays (Days of follow up from visit 1 to Telephone cognitive assessment date)

Description: A variable created to indicate the days of follow up from visit 1 to the date a phone-based neurocognitive test was administered.

Type: Numeric

Algorithm: If VTYPE='V8NCS' then PHONEDATE_FollowUpDays is the number of days between visit 1 and visit 8 NCST date.
 Else if VTYPE='V8NCS' and PHONEDATE_FollowUpDays is missing then PHONEDATE_FollowUpDays is the number of days between visit 1 and visit 8 MCHT date.
 Else if PHONEDATE_FollowUpDays is missing and PHONETESTS=2 then PHONEDATE_FollowUpDays is the number of days between visit 1 and SIS date.
 Else if PHONEDATE_FollowUpDays is missing and PHONETESTS=2 then PHONEDATE_FollowUpDays is the number of days between visit 1 and ADS date.

2.9 PHONEDATE_year (Year of Telephone cognitive assessment date)

Description: A variable created to indicate the year a phone-based neurocognitive test was administered.

Type: Numeric

Algorithm: If VTYPE='V8NCS' then PHONEDATE_year is the year of visit 8 NCST date.
Else if VTYPE='V8NCS' and PHONEDATE_year is missing then PHONEDATE_year is the year of visit 8 MCHT date.
Else if PHONEDATE_year is missing and PHONETESTS=2 then PHONEDATE_year is the year of SIS date.
Else if PHONEDATE_year is missing and PHONETESTS=2 then PHONEDATE_year is the year of ADS date.

Source variable(s): NCST date, MCHT date, SIS date, ADS date, PHONETESTS

2.10 VDATE_FollowUpDays (Days of follow up from visit 1 to Cognitive assessment date)

Description: A variable created to indicate the days of follow up from visit 1 to the date a neurocognitive test was administered.

Type: Numeric

Algorithm: VDATE_FollowUpDays is the mean of INPERSONDATE_FollowUpDays and PHONEDATE_FollowUpDays.

Source variable(s): INPERSONDATE_FollowUpDays, PHONEDATE_FollowUpDays

2.11 VDATE_year (Year of Cognitive assessment date)

Description: A variable created to indicate the year a neurocognitive test was administered.

Type: Numeric

Algorithm: VDATE_year is the mean of INPERSONDATE_year and PHONEDATE_year.

Source variable(s): INPERSONDATE_year, PHONEDATE_year

3. NEUROCOGNITIVE Z SCORES

During Visit 2, three neurocognitive tests were administered in-person to each participant. These tests included the Delayed Word Recall, Digit Symbol Substitution, and Word Fluency. The tests were re-administered at Visits 3, 4, 5, 6, 7, 8, 9, and 11, as well as during two MRI sub-studies (VTYPE='BRAIN' and VTYPE='CarMRI'), MRI and PET imaging visits in 2023-early 2024, and the ACHIEVE randomized controlled trial and subsequent ACHIEVE-HIFU/BHFU ancillary study. The raw scores of these tests were standardized to Visit 2 by calculating the mean (mean_{v2}) and standard deviation (sd_{v2}) at Visit 2, subtracting mean_{v2} from all values, and dividing by sd_{v2} .

3.1 ZSCORE_DWR (Z score of delayed word recall)

Description: A z score version of the Delayed Word Recall standardized to Visit 2.

Type: Numeric

Algorithm:

If VTYPE='V2' then DWRSCORE=[CNFA]CNFA01.
 If VTYPE='V3' then DWRSCORE=[CNFB04]CNFB1.
 If VTYPE='V4' then DWRSCORE=[CNFC04]CNFC1.
 If VTYPE='V5NCS' then DWRSCORE=[NCS Visit 5]NCS3B.
 If VTYPE='V6NCS' then DWRSCORE=[NCS Visit 6]NCS3B.
 If VTYPE='V7NCS' then DWRSCORE=[NCS Visit 7]NCS3B.
 If VTYPE='V8NCS' then DWRSCORE=[NCS Visit 8]NCS3B.
 If VTYPE='V9NCS' then DWRSCORE=[NCS Visit 9]NCS3B.
 If VTYPE='VMPNCS' then DWRSCORE=[NCS MRI and PET Neurocognitive]NCS3B.
 If VTYPE='V11NCS' then DWRSCORE=[NCS Visit 11]NCS3B.
 If VTYPE='ACHY0', 'ACHY1', 'ACHY2', or 'ACHY3' then DWRSCORE=[NCS ACHIEVE]NCS3B.
 If VTYPE='ACHY4', 'ACHY5', 'ACHY6', or 'ACHY7' then DWRSCORE=[NCS ACHIEVE ANX]NCS3B.
 If VTYPE='Brain' then DWRSCORE=[CNF_IA1]CNFD5.
 If VTYPE='CarMRI' then DWRSCORE=[CNFF]CNFF2.
 If DWRSCORE <0 or >10 then DWRSCORE is set to missing.

If VTYPE='V2' then calculate the mean of DWRSCORE as $\text{DWRSCORE}_{\text{mean}_{v2}}$ and the standard deviation of DWRSCORE as $\text{DWRSCORE}_{\text{sd}_{v2}}$. Calculate ZSCORE_DWR for all visits as $\text{ZSCORE_DWR} = (\text{DWRSCORE} - \text{DWRSCORE}_{\text{mean}_{v2}}) / \text{DWRSCORE}_{\text{sd}_{v2}}$.

Source variable(s): VTYPE, CNFA01, CNFB1, CNFC1, NCS3B, CNFD5, CNFF2

3.2 ZSCORE_DSS (Z score of digit symbol substitution)

Description: A z score version of the Digit Symbol Substitution standardized to Visit 2.

Type: Numeric

Algorithm:

If VTYPE='V2' then DSSSCORE=[CNFA]CNFA02.
 If VTYPE='V3' then DSSSCORE=[CNFB04]CNFB2.
 If VTYPE='V4' then DSSSCORE=[CNFC04]CNFC2.
 If VTYPE='V5NCS' then DSSSCORE=[NCS Visit 5]NCS2B.
 If VTYPE='V6NCS' then DSSSCORE=[NCS Visit 6]NCS2B.
 If VTYPE='V7NCS' then DSSSCORE=[NCS Visit 7]NCS2B.
 If VTYPE='V8NCS' then DSSSCORE=[NCS Visit 8]NCS2B.
 If VTYPE='V9NCS' then DSSSCORE=[NCS Visit 9]NCS2B.
 If VTYPE='VMPNCS' then DSSSCORE=[NCS MRI and PET Neurocognitive]NCS2B.
 If VTYPE='V11NCS' then DSSSCORE=[NCS Visit 11]NCS2B.
 If VTYPE='ACHY0', 'ACHY1', 'ACHY2', or 'ACHY3' then DSSSCORE=[NCS ACHIEVE]NCS2B.
 If VTYPE='ACHY4', 'ACHY5', 'ACHY6', or 'ACHY7' then DSSSCORE=[NCS ACHIEVE ANX]NCS2B.
 If VTYPE='Brain' then DSSSCORE=[CNF_IA1]CNFD3.
 If VTYPE='CarMRI' then DSSSCORE=[CNFF]CNFF3.

If VTYPE='V2' then calculate the mean of DSSSCORE as DSSSCOREmean_{v2} and the standard deviation of DSSSCORE as DSSSCOREsd_{v2}. Calculate ZSCORE_DSS for all visits as $ZSCORE_DSS = (DSSSCORE - DSSSCOREmean_{v2}) / DSSSCOREsd_{v2}$.

Source variable(s): VTYPE, CNFA02, CNFB2, CNFC2, NCS2B, CNFD3, CNFF3

3.3 ZSCORE_WFT (Z score of word fluency)

Description: A z score version of the Word Fluency standardized to Visit 2.

Type: Numeric

Algorithm:

If VTYPE='V2' then WFTSCORE=[CNFA]CNFA04.
 If VTYPE='V3' then WFTSCORE=[CNFB04]CNFB4.
 If VTYPE='V4' then WFTSCORE=[CNFC04]CNFC4.
 If VTYPE='V5NCS' then WFTSCORE=[NCS Visit 5]NCS5E.
 If VTYPE='V6NCS' then WFTSCORE=[NCS Visit 6]NCS5E.
 If VTYPE='V7NCS' then WFTSCORE=sum([NCS Visit 7] NCS5B, NCS5C, NCS5D).
 If VTYPE='V8NCS' then WFTSCORE=sum([NCS Visit 8]

NCS5B, NCS5C, NCS5D).
 If VTYPE='V9NCS' then WFTSCORE=sum([NCS Visit 9]
 NCS5B, NCS5C, NCS5D).
 If VTYPE='VMPNCS' then WFTSCORE=sum([NCS MRI and PET
 Neurocognitive]NCS5B, NCS5C, NCS5D).
 If VTYPE='V11NCS' then WFTSCORE=sum([NCS Visit 11]
 NCS5B, NCS5C, NCS5D).
 If VTYPE='ACHY0', 'ACHY1', 'ACHY2', or 'ACHY3' then
 WFTSCORE=sum([NCS ACHIEVE]
 NCS5B, NCS5C, NCS5D).
 If VTYPE='ACHY4', 'ACHY5', 'ACHY6', or 'ACHY7' then
 WFTSCORE=sum([NCS ACHIEVE ANX] NCS5B, NCS5C,
 NCS5D).
 If VTYPE='Brain' then WFTSCORE=sum([CNF_IA1]
 (CNFD7A, CNFD7B, CNFD7C, CNFD9A, CNFD9B, CNFD9C,
 CNFD11A, CNFD11B, CNFD11C).
 If VTYPE='CarMRI' then WFTSCORE=[CNFF]CNFF4.
 If WFTSCORE <0 or >75 then WFTSCORE is set to missing.

If VTYPE='V2' then calculate the mean of WFTSCORE as
 WFTSCOREmean_{v2} and the standard deviation of WFTSCORE as
 WFTSCOREsd_{v2}. Calculate ZSCORE_WFT for all visits as

$$ZSCORE_WFT = (WFTSCORE - WFTSCOREmean_{v2}) / WFTSCOREsd_{v2}$$

Source variable(s): VTYPE, CNFA04, CNFB4, CNFC4, NCS5B, NCS5C, NCS5D,
 NCS5E, CNFD7A, CNFD7B, CNFD7C, CNFD9A, CNFD9B,
 CNFD9C, CNFD11A, CNFD11B, CNFD11C, CNFF4

3.4 MISSINGTESTS (Number of missing neurocognitive tests)

Description: A variable created to indicate whether the Delayed Word Recall, Digit Symbol Substitution, or Word Fluency were missing from a specific visit or sub-study. The count ranges from 0 to 3.

Type: Numeric

Algorithm: Count of missing from ZSCORE_DWR, ZSCORE_DSS, and ZSCORE_WFT.

Source variable(s): ZSCORE_DWR, ZSCORE_DSS, ZSCORE_WFT

3.5 GLOBZ_NCTS (Mean of DWR, DSS, and WFT z scores)

<u>Description:</u>	A 3-test combined score of cognition calculated by computing the mean from the z score versions of the Delayed Word Recall, Digit Symbol Substitution, and Word Fluency administered during a specific visit or sub-study.
<u>Type:</u>	Numeric
<u>Algorithm:</u>	If MISSINGTESTS=0 then GLOBZ_NCTS=mean(ZSCORE_DWR, ZSCORE_DSS, ZSCORE_WFT).
<u>Source variable(s):</u>	MISSINGTESTS, ZSCORE_DWR, ZSCORE_DSS, ZSCORE_WFT

4. NEUROCOGNITIVE FACTOR SCORES

At Visit 2 and Visit 4, three neurocognitive tests were administered in-person. These included the Delayed Word Recall, Digit Symbol Substitution, and Word Fluency. During one of the MRI sub-studies (VTYPE='BRAIN'), eight neurocognitive tests were administered. The five additional tests were Logical Memory (Wechsler, 1987), Incidental Learning (Ryan & Lopez, 2001), Animal Naming (Benton & Hamsher, 1976), and Trail Making Tests A and B (Reitan, 1958). At Visits 5 through 7, Boston Naming (Williams, Mack, & Henderson, 1989) and the Digit Span Backwards (Wechsler, 1987) were added to the test battery. All ten tests were administered during Visit 9, as well as the ACHIEVE randomized controlled trial and ACHIEVE-HIFU/BHFU ancillary study. During MRI and PET imaging visits that occurred in 2023 through early March 2024 (denoted as Visit 'MP'), some participants were administered an abbreviated neurocognitive battery that excluded Boston Naming, Logical Memory, and Digit Span Backwards from the full ten-test battery. This abbreviated battery was administered during Visit 11.

The initial test battery for Visit 8 was comprised of the Delayed Word Recall, Digit Symbol Substitution, Word Fluency, Incidental Learning, and Animal Naming. Due to the outbreak of COVID-19, in-person neurocognitive testing was halted in March of 2020. Four months later, a modified six-test battery was administered over the phone. The modified battery included Digit Span Backwards, Animal Naming, and a truncated Word Fluency limited to the letters F and A. Three additional tests were incorporated into the battery for the first time. These tests included the Consortium to Establish a Registry for Alzheimer's Disease (CERAD) Word List (Morris, Mohs, Rogers, Fillenbaum, & Heyman, 1988) and oral versions of Trail Making Tests A and B.

Raw scores from each in-person neurocognitive test were discretized into ten or fewer categories. A confirmatory factor analysis with categorical indicators (Gross, et al., 2015) was employed to compute a global cognition factor score (ver1) for each participant. Separate factor scores for the cognitive domains of language, executive function, and memory (Rawlings, et al., 2016) were generated by applying the same methodology. Factor scores were standardized to Visit 5.

In 2020, additional iterations of the global cognition factor score were developed that harmonized in-person and phone-based neurocognitive tests through co-calibration (Gross, Jones, Fong, Tommet, & Inouye, 2014). Co-calibration can be performed when one of two assumptions are met. The first assumption is that one or more tests are psychometrically equivalent regardless of modality. These tests are used as linking items to produce scores that are comparable even if the battery of tests varies over time. The second, alternative assumption is that the underlying construct of global cognition has not changed in a representative subsample of individuals who complete both in-person and phone-based tests. Test and modality specific measurement error is estimated in this subsample and the resulting measurement model is applied to the remaining sample. Co-calibration was utilized to compute factor scores from models with continuous indicators harmonized under the assumption of invariant tests (ver2), continuous indicators harmonized under the assumption of invariant global cognition in a representative subsample (ver3), categorical indicators harmonized under the assumption of invariant tests (ver4), and categorical indicators harmonized under the assumption of invariant global cognition in a representative subsample (ver5). Factor scores computed from only phone-based neurocognitive tests were generated from models with continuous indicators (ver6) and categorical indicators (ver7). Factor scores computed from in-person neurocognitive tests using continuous indicators were also generated (ver8). Additionally, factor scores from in-person neurocognitive tests using equal-interval categorical indicators were computed (ver9), as well as co-calibrated factor scores with equal-interval categorical indicators harmonized under: 1) the assumption of invariant tests (ver10) and 2) the assumption of invariant global cognition in a representative subsample (ver11). Separate factor scores for the cognitive domains of language, executive function, and memory were generated by applying the same methodology. However, co-calibrated factor scores (Ver2-Ver5) for the domains of executive function and memory exhibited poor between-visit reliability and consequently will not be distributed until an improved model is developed. Factor scores computed from in-person and phone-based neurocognitive tests were standardized to Visit 5. Factor scores computed from only phone-based neurocognitive tests were standardized to Visit 8. Additional details about the factor scores and which to use for specific analyses can be found in ARIC Manual 30.

4.1 GLOBALFS1 (Global cognition factor score (in person) from categorical indicators (ver1))

Description: A factor score of global cognition computed based on discretized versions of neurocognitive tests from Visits 2, 4, 5, 6, 7, 8, 9, MP, and 11, plus one of the MRI sub-studies (VTYPE='BRAIN'), the ACHIEVE randomized controlled trial, and ACHIEVE-HIFU/BHFU ancillary study.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor

score was computed if one or more tests were completed during an in-person assessment.

Source variable(s): DWRC2, DSSC2, WFTTC2, DWRCM, ILRPCM, DSSCM, LMTTCM, TMTACM, TMTBCM, WFTTCM, ANSCM, DWRC4, DSSC4, WFTTC4, DWRC5, WFTTC5, DSSC5, ILRPC5, ANSC5, DSBC5, BNTC5, LMTTC5, TMTAC5, TMTBC5, DWRC6, WFTTC6, DSSC6, ILRPC6, ANSC6, DSBC6, BNTC6, LMTTC6, TMTAC6, TMTBC6, DWRC7, WFTTC7, DSSC7, ILRPC7, ANSC7, DSBC7, BNTC7, LMTTC7, TMTAC7, TMTBC7, DWRC8, WFTTC8, DSSC8, ILRPC8, ANSC8, DSBC8, BNTC8, LMTTC8, TMTAC8, TMTBC8, DWRC9, WFTTC9, DSSC9, ILRPC9, ANSC9, DSBC9, BNTC9, LMTTC9, TMTAC9, TMTBC9, DWRC11, WFTTC11, DSSC11, ILRPC11, ANSC11, DSBC11, BNTC11, LMTTC11, TMTAC11, TMTBC11

4.2 GLOBALFS2 (Global cognition factor score (co-calibrated) from continuous indicators and invariant tests (ver2))

Description: A factor score of global cognition computed based on standardized versions of neurocognitive tests from Visits 2, 4, 5, 6, 7, 8, 9, MP, and 11, plus one of the MRI sub-studies (VTYPE='BRAIN'), the ACHIEVE randomized controlled trial, and the ACHIEVE-HIFU/BHFU ancillary study.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during an in-person or phone-based assessment.

Source variable(s): DWRS2, DSSS2, WFTTS2, DWRS5, ILRPS5, ILRSS5, DSSS5, LMTASM, LMTBSM, LMTCSM, LMTDSM, TMTASM, TMTBSM, WFTFSM, WFTASM, WFTSSM, ANSSM, DWRS4, DSSS4, WFTTS4, DWRS5, DSSS5, WFTFS5, WFTAS5, WFTSS5, ILRPS5, ILRSS5, ANSS5, LMTAS5, LMTBS5, LMTCS5, LMTDS5, DSBS5, BNTS5, TMTAS5, TMTBS5, DWRS6, DSSS6, WFTFS6, WFTAS6, WFTSS6, ILRPS6, ILRSS6, ANSS6, LMTAS6, LMTBS6, LMTCS6, LMTDS6, DSBS6, BNTS6, TMTAS6, TMTBS6, DWRS7, DSSS7, WFTFS7, WFTAS7, WFTSS7, ILRPS7, ILRSS7, ANSS7, LMTAS7, LMTBS7, LMTCS7, LMTDS7, DSBS7, BNTS7, TMTAS7, TMTBS7, DWRS8, DSSS8, WFTFS8, WFTAS8, WFTSS8, ILRPS8, ILRSS8, ANSS8, LMTAS8, LMTBS8, LMTCS8, LMTDS8, DSBS8, BNTS8, TMTAS8, TMTBS8, TCRDAS8, TCRDBS8,

TCRDCS8, TCRDDS8, TWFTFS8, TWFTAS8, TANSS8, TDSBS8, TTMTAS8, TTMTBS8, DWRS9, DSSS9, WFTFS9, WFTAS9, WFTSS9, ILRPS9, ILRSS9, ANSS9, LMTAS9, LMTBS9, LMTCS9, LMTDS9, DSBS9, BNTS9, TMTAS9, TMTBS9, TCRDAS9, TCRDBS9, TCRDCS9, TCRDDS9, TWFTFS9, TWFTAS9, TANSS9, TDSBS9, TTMTAS9, TTMTBS9, DWRS11, DSSS11, WFTFS11, WFTAS11, WFTSS11, ILRPS11, ILRSS11, ANSS11, LMTAS11, LMTBS11, LMTCS11, LMTDS11, DSBS11, BNTS11, TMTAS11, TMTBS11

4.3 GLOBALFS3 (Global cognition factor score (co-calibrated) from continuous indicators and invariant subsample cognition (ver3))

Description: A factor score of global cognition computed based on standardized versions of neurocognitive tests from Visits 2, 4, 5, 6, 7, 8, 9, MP, and 11, plus one of the MRI sub-studies (VTYPE='BRAIN'), the ACHIEVE randomized controlled trial, and the ACHIEVE-HIFU/BHFU ancillary study.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during an in-person or phone-based assessment.

Source variable(s): DWRS2, DSSS2, WFTTS2, DWRS4, DSSS4, WFTFS4, WFTAS4, WFTSS4, ILRPS4, ILRSS4, ANSS4, LMTAS4, LMTBS4, LMTCS4, LMTDS4, DSBS4, BNTS4, TMTAS4, TMTBS4, TCRDAS4, TCRDBS4, TCRDCS4, TCRDDS4, TWFTFS4, TWFTAS4, TANSS4, TDSBS4, TTMTAS4, TTMTBS4, DWRS5, DSSS5, WFTFS5, WFTAS5, WFTSS5, ILRPS5, ILRSS5, ANSS5, LMTAS5, LMTBS5, LMTCS5, LMTDS5, DSBS5, BNTS5, TMTAS5, TMTBS5, DWRS6, DSSS6, WFTFS6, WFTAS6, WFTSS6, ILRPS6, ILRSS6, ANSS6, LMTAS6, LMTBS6, LMTCS6, LMTDS6, DSBS6, BNTS6, TMTAS6, TMTBS6, DWRS7, DSSS7, WFTFS7, WFTAS7, WFTSS7, ILRPS7, ILRSS7, ANSS7, LMTAS7, LMTBS7, LMTCS7, LMTDS7, DSBS7, BNTS7, TMTAS7, TMTBS7, DWRS8, DSSS8, WFTFS8, WFTAS8, WFTSS8, ILRPS8, ILRSS8, ANSS8, LMTAS8, LMTBS8, LMTCS8, LMTDS8, DSBS8, BNTS8, TMTAS8, TMTBS8, TCRDAS8, TCRDBS8, TCRDCS8, TCRDDS8, TWFTFS8, TWFTAS8, TANSS8, TDSBS8, TTMTAS8, TTMTBS8, DWRS9, DSSS9, WFTFS9, WFTAS9, WFTSS9, ILRPS9, ILRSS9, ANSS9, LMTAS9, LMTBS9, LMTCS9, LMTDS9, DSBS9, BNTS9, TMTAS9, TMTBS9, TCRDAS9, TCRDBS9, TCRDCS9, TCRDDS9, TWFTFS9, TWFTAS9, TANSS9, TDSBS9, TTMTAS9, TTMTBS9, DWRS11, DSSS11,

WFTFS11, WFTAS11, WFTSS11, ILRPS11, ILRSS11, ANSS11, LMTAS11, LMTBS11, LMTCS11, LMTDS11, DSBS11, BNTS11, TMTAS11, TMTBS11

4.4 GLOBALFS4 (Global cognition factor score (co-calibrated) from categorical indicators and invariant tests (ver4))

Description: A factor score of global cognition computed based on discretized versions of neurocognitive tests from Visits 2, 4, 5, 6, 7, 8, 9, MP, and 11, plus one of the MRI sub-studies (VTYPE='BRAIN'), the ACHIEVE randomized controlled trial, and the ACHIEVE-HIFU/BHFU ancillary study.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during an in-person or phone-based assessment.

Source variable(s): DWRC2, DSSC2, WFTTC2, DWRCM, ILRPCM, DSSCM, TMTACM, TMTBCM, ANSCM, ILRSCM, LMTACM, LMTBCM, LMTCCM, LMTDCM, WFTFCM, WFTACM, WFTSCM, DWRC4, DSSC4, WFTTC4, DWRC5, DSSC5, ILRPC5, ANSC5, DSBC5, BNTC5, TMTAC5, TMTBC5, ILRSC5, LMTAC5, LMTBC5, LMTCC5, LMTDC5, WFTFC5, WFTAC5, WFTSC5, DWRC6, DSSC6, ILRPC6, ANSC6, DSBC6, BNTC6, TMTAC6, TMTBC6, ILRSC6, LMTAC6, LMTBC6, LMTCC6, LMTDC6, WFTFC6, WFTAC6, WFTSC6, DWRC7, DSSC7, ILRPC7, ANSC7, DSBC7, BNTC7, TMTAC7, TMTBC7, ILRSC7, LMTAC7, LMTBC7, LMTCC7, LMTDC7, WFTFC7, WFTAC7, WFTSC7, DWRC8, DSSC8, ILRPC8, ANSC8, DSBC8, BNTC8, TMTAC8, TMTBC8, ILRSC8, LMTAC8, LMTBC8, LMTCC8, LMTDC8, WFTFC8, WFTAC8, WFTSC8, TTMTAC8, TTMTBC8, TANSC8, TDSBC8, TWFTAC8, TWFTFC8, TCRDAC8, TCRDBC8, TCRDCC8, TCRDDC8, DWRC9, DSSC9, ILRPC9, ANSC9, DSBC9, BNTC9, TMTAC9, TMTBC9, ILRSC9, LMTAC9, LMTBC9, LMTCC9, LMTDC9, WFTFC9, WFTAC9, WFTSC9, TTMTAC9, TTMTBC9, TANSC9, TDSBC9, TWFTAC9, TWFTFC9, DWRC11, DSSC11, ILRPC11, ANSC11, DSBC11, BNTC11, TMTAC11, TMTBC11, ILRSC11, LMTAC11, LMTBC11, LMTCC11, LMTDC11, WFTFC11, WFTAC11, WFTSC11

4.5 GLOBALFS5 (Global cognition factor score (co-calibrated) from categorical indicators and invariant subsample cognition (ver5))

<u>Description:</u>	A factor score of global cognition computed based on discretized versions of neurocognitive tests from Visits 2, 4, 5, 6, 7, 8, 9, MP, and 11, plus one of the MRI sub-studies (VTYPE='BRAIN'), the ACHIEVE randomized controlled trial, and the ACHIEVE-HIFU/BHFU ancillary study.
<u>Type:</u>	Numeric
<u>Algorithm:</u>	Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during an in-person or phone-based assessment.
<u>Source variable(s):</u>	DWRC2, DSSC2, WFTTC2, DWRCM, ILRPCM, DSSCM, TMTACM, TMTBCM, ANSCM, ILRSCM, LMTACM, LMTBCM, LMTCCM, LMTDCM, WFTFCM, WFTACM, WFTSCM, DWRC4, DSSC4, WFTTC4, DWRC5, DSSC5, ILRPC5, ANSC5, DSBC5, BNTC5, TMTAC5, TMTBC5, ILRSC5, LMTAC5, LMTBC5, LMTCC5, LMTDC5, WFTFC5, WFTAC5, WFTSC5, DWRC6, DSSC6, ILRPC6, ANSC6, DSBC6, BNTC6, TMTAC6, TMTBC6, ILRSC6, LMTAC6, LMTBC6, LMTCC6, LMTDC6, WFTFC6, WFTAC6, WFTSC6, DWRC7, DSSC7, ILRPC7, ANSC7, DSBC7, BNTC7, TMTAC7, TMTBC7, ILRSC7, LMTAC7, LMTBC7, LMTCC7, LMTDC7, WFTFC7, WFTAC7, WFTSC7, DWRC8, DSSC8, ILRPC8, ANSC8, DSBC8, BNTC8, TMTAC8, TMTBC8, ILRSC8, LMTAC8, LMTBC8, LMTCC8, LMTDC8, WFTFC8, WFTAC8, WFTSC8, TTMTAC8, TTMTBC8, TANSC8, TDSBC8, TWFTAC8, TWFTFC8, TCRDAC8, TCRDBC8, TCRDCC8, TCRDDC8, DWRC9, DSSC9, ILRPC9, ANSC9, DSBC9, BNTC9, TMTAC9, TMTBC9, ILRSC9, LMTAC9, LMTBC9, LMTCC9, LMTDC9, WFTFC9, WFTAC9, WFTSC9, TTMTAC9, TTMTBC9, TANSC9, TDSBC9, TWFTAC9, TWFTFC9, DWRC11, DSSC11, ILRPC11, ANSC11, DSBC11, BNTC11, TMTAC11, TMTBC11, ILRSC11, LMTAC11, LMTBC11, LMTCC11, LMTDC11, WFTFC11, WFTAC11, WFTSC11

4.6 GLOBALFS6 (Global cognition factor score (phone) from continuous indicators (ver6))

<u>Description:</u>	A factor score of global cognition computed based on standardized versions of neurocognitive tests from Visit 8 plus the ACHIEVE randomized controlled trial.
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Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a methodology documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during a phone-based assessment.

Source variable(s): TCRDAS8, TCRDBS8, TCRDCS8, TCRDDS8, TWFTFS8, TWFTAS8, TANSS8, TDSBS8, TTMTAS8, TTMTBS8, TCRDAS9, TCRDBS9, TCRDCS9, TCRDDS9, TWFTFS9, TWFTAS9, TANSS9, TDSBS9, TTMTAS9, TTMTBS9

4.7 GLOBALFS7 (Global cognition factor score (phone) from categorical indicators (ver7))

Description: A factor score of global cognition computed based on discretized versions of neurocognitive tests from Visit 8 plus the ACHIEVE randomized controlled trial.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a methodology documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during a phone-based assessment.

Source variable(s): TTMTAC8, TTMTBC8, TANSC8, TDSBC8, TWFTAC8, TWFTFC8, TCRDAC8, TCRDBC8, TCRDCC8, TCRDDC8, TTMTAC9, TTMTBC9, TANSC9, TDSBC9, TWFTAC9, TWFTFC9, TCRDAC9, TCRDBC9, TCRDCC9, TCRDDC9

4.8 GLOBALFS8 (Global cognition factor score (in person) from continuous indicators (ver8))

Description: A factor score of global cognition computed based on standardized versions of neurocognitive tests from Visits 2, 4, 5, 6, 7, 8, 9, MP, and 11, plus one of the MRI sub-studies (VTYPE='BRAIN'), the ACHIEVE randomized controlled trial, and the ACHIEVE-HIFU/BHFU ancillary study.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during an in-person assessment.

Source variable(s): DWRS2, DSSS2, WFTTS2, DWRS4, DSSS4, WFTTS4, DWRS5, WFTTS5, DSSS5, ILRPS5, ANSS5, DSBS5, BNTS5, LMTS5, TMTAS5, TMTBS5, DWRS6, WFTTS6, DSSS6, ILRPS6, ANSS6, DSBS6, BNTS6, LMTS6, TMTAS6, TMTBS6, DWRS7, WFTTS7, DSSS7, ILRPS7, ANSS7, DSBS7, BNTS7, LMTS7, TMTAS7, TMTBS7, DWRS8, WFTTS8, DSSS8, ILRPS8, ANSS8, DSBS8, BNTS8, LMTS8, TMTAS8, TMTBS8, DWRS9, WFTTS9, DSSS9, ILRPS9, ANSS9, DSBS9, BNTS9, LMTS9, TMTAS9, TMTBS9, DWRS11, WFTTS11, DSSS11, ILRPS11, ANSS11, DSBS11, BNTS11, LMTS11, TMTAS11, TMTBS11

4.9 GLOBALFS9 (Global cognition factor score (in person) from equal interval categorical indicators (ver9))

Description: A factor score of global cognition computed based on discretized versions of neurocognitive tests from Visits 2, 4, 5, 6, 7, 8, 9, MP, and 11, plus one of the MRI sub-studies (VTYPE='BRAIN'), the ACHIEVE randomized controlled trial, and the ACHIEVE-HIFU/BHFU ancillary study.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during an in-person assessment.

Source variable(s): DWRE2, DSSE2, WFTTE2, DWRE4, DSSE4, WFTTE4, DWRE5, DSSE5, ILRPE5, ANSE5, DSBE5, BNTE5, TMTAE5, TMTBE5, ILRSE5, LMTAE5, LMTBE5, LMTCE5, LMTDE5, WFTFE5, WFTAE5, WFTSE5, DWRE6, DSSE6, ILRPE6, ANSE6, DSBE6, BNTE6, TMTAE6, TMTBE6, ILRSE6, LMTAE6, LMTBE6, LMTCE6, LMTDE6, WFTFE6, WFTAE6, WFTSE6, DWRE7, DSSE7, ILRPE7, ANSE7, DSBE7, BNTE7, TMTAE7, TMTBE7, ILRSE7, LMTAE7, LMTBE7, LMTCE7, LMTDE7, WFTFE7, WFTAE7, WFTSE7, DWRE8, DSSE8, ILRPE8, ANSE8, DSBE8, BNTE8, TMTAE8, TMTBE8, ILRSE8,

LMTAE8, LMTBE8, LMTCE8, LMTDE8, WFTFE8, WFTAE8, WFTSE8, DWRE9, DSSE9, ILRPE9, ANSE9, DSBE9, BNTE9, TMTAE9, TMTBE9, ILRSE9, LMTAE9, LMTBE9, LMTCE9, LMTDE9, WFTFE9, WFTAE9, WFTSE9, DWRE11, DSSE11, ILRPE11, ANSE11, DSBE11, BNTE11, TMTAE11, TMTBE11, ILRSE11, LMTAE11, LMTBE11, LMTCE11, LMTDE11, WFTFE11, WFTAE11, WFTSE11

4.10 GLOBALFS10 (Global cognition factor score (co-calibrated) from equal interval categorical indicators and invariant tests (ver10))

- Description: A factor score of global cognition computed based on discretized versions of neurocognitive tests from Visits 2, 4, 5, 6, 7, 8, 9, MP, and 11, plus one of the MRI sub-studies (VTYPE='BRAIN'), the ACHIEVE randomized controlled trial, and the ACHIEVE-HIFU/BHFU ancillary study.
- Type: Numeric
- Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during an in-person assessment.
- Source variable(s): DWRE2, DSSE2, WFTTE2, DWRE4, DSSE4, WFTTE4, DWREM, ILRPEM, DSSEM, TMTAEM, TMTBEM, ANSEM, ILRSEM, LMTAEM, LMTBEM, LMTCEM, LMTDEM, WFTFEM, WFTAEM, WFTSEM, DWRE5, DSSE5, ILRPE5, ANSE5, DSBE5, BNTE5, TMTAE5, TMTBE5, ILRSE5, LMTAE5, LMTBE5, LMTCE5, LMTDE5, WFTFE5, WFTAE5, WFTSE5, DWRE6, DSSE6, ILRPE6, ANSE6, DSBE6, BNTE6, TMTAE6, TMTBE6, ILRSE6, LMTAE6, LMTBE6, LMTCE6, LMTDE6, WFTFE6, WFTAE6, WFTSE6, DWRE7, DSSE7, ILRPE7, ANSE7, DSBE7, BNTE7, TMTAE7, TMTBE7, ILRSE7, LMTAE7, LMTBE7, LMTCE7, LMTDE7, WFTFE7, WFTAE7, WFTSE7, DWRE8, DSSE8, ILRPE8, ANSE8, DSBE8, BNTE8, TMTAE8, TMTBE8, ILRSE8, LMTAE8, LMTBE8, LMTCE8, LMTDE8, WFTFE8, WFTAE8, WFTSE8, DWRE9, DSSE9, ILRPE9, ANSE9, DSBE9, BNTE9, TMTAE9, TMTBE9, ILRSE9, LMTAE9, LMTBE9, LMTCE9, LMTDE9, WFTFE9, WFTAE9, WFTSE9, DWRE11, DSSE11, ILRPE11, ANSE11, DSBE11, BNTE11, TMTAE11, TMTBE11, ILRSE11, LMTAE11, LMTBE11, LMTCE11, LMTDE11, WFTFE11, WFTAE11, WFTSE11

4.11 GLOBALFS11 (Global cognition factor score (co-calibrated) from equal interval categorical indicators and invariant subsample cognition (ver11))

<u>Description:</u>	A factor score of global cognition computed based on discretized versions of neurocognitive tests from Visits 2, 4, 5, 6, 7, 8, 9, MP, and 11, plus one of the MRI sub-studies (VTYPE='BRAIN'), the ACHIEVE randomized controlled trial, and the ACHIEVE-HIFU/BHFU ancillary study.
<u>Type:</u>	Numeric
<u>Algorithm:</u>	Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during an in-person assessment.
<u>Source variable(s):</u>	DWRE2, DSSE2, WFTTE2, DWRE4, DSSE4, WFTTE4, DWREM, ILRPEM, DSSEM, TMTAEM, TMTBEM, ANSEM, ILRSEM, LMTAEM, LMTBEM, LMTCEM, LMTDEM, WFTFEM, WFTAEM, WFTSEM, DWRE5, DSSE5, ILRPE5, ANSE5, DSBE5, BNTE5, TMTAE5, TMTBE5, ILRSE5, LMTAE5, LMTBE5, LMTCE5, LMTDE5, WFTFE5, WFTAE5, WFTSE5, DWRE6, DSSE6, ILRPE6, ANSE6, DSBE6, BNTE6, TMTAE6, TMTBE6, ILRSE6, LMTAE6, LMTBE6, LMTCE6, LMTDE6, WFTFE6, WFTAE6, WFTSE6, DWRE7, DSSE7, ILRPE7, ANSE7, DSBE7, BNTE7, TMTAE7, TMTBE7, ILRSE7, LMTAE7, LMTBE7, LMTCE7, LMTDE7, WFTFE7, WFTAE7, WFTSE7, DWRE8, DSSE8, ILRPE8, ANSE8, DSBE8, BNTE8, TMTAE8, TMTBE8, ILRSE8, LMTAE8, LMTBE8, LMTCE8, LMTDE8, WFTFE8, WFTAE8, WFTSE8, DWRE9, DSSE9, ILRPE9, ANSE9, DSBE9, BNTE9, TMTAE9, TMTBE9, ILRSE9, LMTAE9, LMTBE9, LMTCE9, LMTDE9, WFTFE9, WFTAE9, WFTSE9, DWRE11, DSSE11, ILRPE11, ANSE11, DSBE11, BNTE11, TMTAE11, TMTBE11, ILRSE11, LMTAE11, LMTBE11, LMTCE11, LMTDE11, WFTFE11, WFTAE11, WFTSE11

4.12 LANGUAGEFS1 (Language domain factor score (in person) from categorical indicators (ver1))

<u>Description:</u>	A language domain factor score computed based on discretized versions of neurocognitive tests from Visits 5, 6, 7, 8, 9, MP, and 11, plus the ACHIEVE randomized controlled trial and ACHIEVE-HIFU/BHFU ancillary study.
<u>Type:</u>	Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during an in-person assessment.

Source variable(s): WFTTC5, ANSC5, BNTC5, WFTTC6, ANSC6, BNTC6, WFTTC7, ANSC7, BNTC7, WFTTC8, ANSC8, BNTC8, WFTTC9, ANSC9, BNTC9, WFTTC11, ANSC11, BNTC11

4.13 LANGUAGEFS2 (Language domain factor score (co-calibrated) from continuous indicators and invariant tests (ver2))

Description: A language domain factor score computed based on standardized versions of neurocognitive tests from Visits 5, 6, 7, 8, 9, MP, and 11, plus the ACHIEVE randomized controlled trial and ACHIEVE-HIFU/BHFU ancillary study.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during an in-person or phone-based assessment.

Source variable(s): WFTFS5, WFTAS5, WFTSS5, ANSS5, BNTS5, WFTFS6, WFTAS6, WFTSS6, ANSS6, BNTS6, WFTFS7, WFTAS7, WFTSS7, ANSS7, BNTS7, WFTFS8, WFTAS8, WFTSS8, ANSS8, BNTS8, TWFTFS8, TWFTAS8, TANSS8, WFTFS9, WFTAS9, WFTSS9, ANSS9, BNTS9, TWFTFS9, TWFTAS9, TANSS9, WFTFS11, WFTAS11, WFTSS11, ANSS11, BNTS11

4.14 LANGUAGEFS3 (Language domain factor score (co-calibrated) from continuous indicators and invariant subsample cognition (ver3))

Description: A language domain factor score computed based on standardized versions of neurocognitive tests from Visits 5, 6, 7, 8, 9, MP, and 11, plus the ACHIEVE randomized controlled trial and ACHIEVE-HIFU/BHFU ancillary study.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor

score was computed if one or more tests were completed during an in-person or phone-based assessment.

Source variable(s): WFTFS5, WFTAS5, WFTSS5, ANSS5, BNTS5, WFTFS6, WFTAS6, WFTSS6, ANSS6, BNTS6, WFTFS7, WFTAS7, WFTSS7, ANSS7, BNTS7, WFTFS8, WFTAS8, WFTSS8, ANSS8, BNTS8, TWFTFS8, TWFTAS8, TANSS8, WFTFS9, WFTAS9, WFTSS9, ANSS9, BNTS9, TWFTFS9, TWFTAS9, TANSS9, WFTFS11, WFTAS11, WFTSS11, ANSS11, BNTS11

4.15 LANGUAGEFS4 (Language domain factor score (co-calibrated) from categorical indicators and invariant tests (ver4))

Description: A language domain factor score computed based on discretized versions of neurocognitive tests from Visits 5, 6, 7, 8, 9, MP, and 11, plus the ACHIEVE randomized controlled trial and ACHIEVE-HIFU/BHFU ancillary study.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during an in-person or phone-based assessment.

Source variable(s): WFTFC5, WFTAC5, WFTSC5, ANSC5, BNTC5, WFTFC6, WFTAC6, WFTSC6, ANSC6, BNTC6, WFTFC7, WFTAC7, WFTSC7, ANSC7, BNTC7, WFTFC8, WFTAC8, WFTSC8, ANSC8, BNTC8, TWFTFC8, TWFTAC8, TANSC8, WFTFC9, WFTAC9, WFTSC9, ANSC9, BNTC9, TWFTFC9, TWFTAC9, TANSC9, WFTFC11, WFTAC11, WFTSC11, ANSC11, BNTC11

4.16 LANGUAGEFS5 (Language domain factor score (co-calibrated) from categorical indicators and invariant subsample cognition (ver5))

Description: A language domain factor score computed based on discretized versions of neurocognitive tests from Visits 5, 6, 7, 8, 9, MP, and 11, plus the ACHIEVE randomized controlled trial and the ACHIEVE-HIFU/BHFU ancillary study.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor

score was computed if one or more tests were completed during an in-person or phone-based assessment.

Source variable(s): WFTFC5, WFTAC5, WFTSC5, ANSC5, BNTC5, WFTFC6, WFTAC6, WFTSC6, ANSC6, BNTC6, WFTFC7, WFTAC7, WFTSC7, ANSC7, BNTC7, WFTFC8, WFTAC8, WFTSC8, ANSC8, BNTC8, TWFTFC8, TWFTAC8, TANSC8, WFTFC9, WFTAC9, WFTSC9, ANSC9, BNTC9, TWFTFC9, TWFTAC9, TANSC9, WFTFC11, WFTAC11, WFTSC11, ANSC11, BNTC11

4.17 LANGUAGEFS6 (Language domain factor score (phone) from continuous indicators (ver6))

Description: A language domain factor score computed based on standardized versions of neurocognitive tests from Visit 8 plus the ACHIEVE randomized controlled trial.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a methodology documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during a phone-based assessment.

Source variable(s): TWFTFS8, TWFTAS8, TANSS8, TWFTFS9, TWFTAS9, TANSS9

4.18 LANGUAGEFS7 (Language domain factor score (phone) from categorical indicators (ver7))

Description: A language domain factor score computed based on discretized versions of neurocognitive tests from Visit 8 plus the ACHIEVE randomized controlled trial.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a methodology documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during a phone-based assessment.

Source variable(s): TWFTFC8, TWFTAC8, TANSC8, TWFTFC9, TWFTAC9, TANSC9

4.19 EXECFUNCFS1 (Executive functioning domain factor score (in person) from categorical indicators (ver1))

Description: An executive function domain factor score computed based on discretized versions of neurocognitive tests from Visits 5, 6, 7, 8, 9, MP, and 11, plus the ACHIEVE randomized controlled trial and the ACHIEVE-HIFU/BHFU ancillary study.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during an in-person assessment.

Source variable(s): DSSC5, TMTAC5, TMTBC5, DSSC6, TMTAC6, TMTBC6, DSSC7, TMTAC7, TMTBC7, DSSC8, TMTAC8, TMTBC8, DSSC9, TMTAC9, TMTBC9, DSSC11, TMTAC11, TMTBC11

4.20 EXECFUNCFS6 (Executive functioning domain factor score (phone) from continuous indicators (ver6))

Description: An executive function domain factor score computed based on standardized versions of neurocognitive tests from Visit 8 plus the ACHIEVE randomized controlled trial.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a methodology documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during a phone-based assessment.

Source variable(s): TTMTAS8, TTMTBS8, TTMTAS9, TTMTBS9

4.21 EXECFUNCFS7 (Executive functioning domain factor score (phone) from categorical indicators (ver7))

Description: An executive function domain factor score computed based on discretized versions of neurocognitive tests from Visit 8 plus the ACHIEVE randomized controlled trial.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a methodology documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during a phone-based assessment.

Source variable(s): TTMTAC8, TTMTBC8, TTMTAC9, TTMTBC9

4.22 MEMORYFS1 (Memory domain factor score (in person) from categorical indicators (ver1))

Description: A memory domain factor score computed based on discretized versions of neurocognitive tests from Visits 5, 6, 7, 8, 9, MP, and 11, plus the ACHIEVE randomized controlled trial and the ACHIEVE-HIFU/BHFU ancillary study.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a model documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during an in-person assessment.

Source variable(s): DWRC5, ILRPC5, LMTTC5, DWRC6, ILRPC6, LMTTC6, DWRC7, ILRPC7, LMTTC7, DWRC8, ILRPC8, LMTTC8, DWRC9, ILRPC9, LMTTC9, DWRC11, ILRPC11, LMTTC11

4.23 MEMORYFS6 (Memory domain factor score (phone) from continuous indicators (ver6))

Description: A memory domain factor score computed based on standardized versions of neurocognitive tests from Visit 8 plus the ACHIEVE randomized controlled trial.

Type: Numeric

Algorithm: Factor scores were computed from the source variables listed below utilizing a methodology documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during a phone-based assessment.

Source variable(s): TCRDAS8, TCRDBS8, TCRDCS8, TCRDDS8, TCRDAS9, TCRDBS9, TCRDCS9, TCRDDS9

4.24 MEMORYFS7 (Memory domain factor score (phone) from categorical indicators (ver7))

<u>Description:</u>	A memory domain factor score computed based on discretized versions of neurocognitive tests from Visit 8 plus the ACHIEVE randomized controlled trial.
<u>Type:</u>	Numeric
<u>Algorithm:</u>	Factor scores were computed from the source variables listed below utilizing a methodology documented in ARIC Manual 30. A factor score was computed if one or more tests were completed during a phone-based assessment.
<u>Source variable(s):</u>	TCRDAC8, TCRDBC8, TCRDCC8, TCRDDC8, TCRDAC9, TCRDBC9, TCRDCC9, TCRDDC9

5. SUPPLEMENTAL SEMI-ANNUAL FOLLOW-UP ASSESSMENTS

During semi-annual follow-up assessments, participants were administered a phone-based version of the Six Item Cognitive Screener (SIS) (Callahan, Unverzagt, Hui, Perkins, & Hendrie, 2002). If the participant did not have the cognitive capacity to complete the SIS, an Ascertain Dementia Eight Item Informant Questionnaire (AD8) (Galvin, et al., 2005) was conducted. Both the SIS and AD8 are frequently used by analysts as auxiliary variables when imputing missing neurocognitive z scores and factor scores. Consequently, SIS and AD8 assessments completed during or after Visit 6 have been provided to aid analysts. If the SIS or AD8 was administered multiple times during a specific visit, then the assessment closest to the completion of neurocognitive tests was selected. If neither in-person nor phone-based neurocognitive tests were completed but the SIS or AD8 was administered, then the last measurement performed during a visit was selected. For additional details about the use of these variables when performing multiple imputation, please refer to Manual 30.

5.1 SIS (Six-item cognitive screener closest to cognitive assessment date)

<u>Description:</u>	A prorated version of participant responses from the Six Item Cognitive Screener.
<u>Type:</u>	Numeric
<u>Algorithm:</u>	The sum of correct responses from SIS3 through SIS8. The sum is then multiplied by six and divided by the number of non-missing responses.
<u>Source variable(s):</u>	[SISALL]SIS3, SIS4, SIS5, SIS6, SIS7, SIS8

5.2 SISDATE_FollowUpDays (Days of follow up from visit 1 to Date of six-item cognitive screener closest to cognitive assessment date)

Description: A variable reflecting the days of follow up from visit 1 to the date the Six Item Cognitive Screener was administered.

Type: Numeric

Algorithm: SISDATE_FollowUpDays is the number of days between visit 1 and SIS date.

Source variable(s): visit 1 date, SIS date

5.3 SISDATE_year (Year of Date of six-item cognitive screener closest to cognitive assessment date)

Description: A variable reflecting the year the Six Item Cognitive Screener was administered.

Type: Numeric

Algorithm: SISDATE_year is the year of the SIS date.

Source variable(s): SIS date

5.4 ADS (Eight-item informant questionnaire closest to cognitive assessment date)

Description: A rating of the participant based on informant responses from the Ascertain Dementia Eight Item Informant Questionnaire.

Type: Numeric

Algorithm: Equal to ADS11.

Source variable(s): [ADS]ADS11

5.5 ADSDATE_FollowUpDays (Days of follow up from visit 1 to Date of eight item informant questionnaire closest to cognitive assessment date)

Description: A variable reflecting the days of follow up from visit 1 to the date the Ascertain Dementia Eight Item Informant Questionnaire was administered.

Type: Numeric

Algorithm: ADSDATE_FollowUpDays is the number of days between visit 1 and ADS date.

Source variable(s): visit 1 date, ADS date

5.6 ADSDATE_year (Year of Date of eight item informant questionnaire closest to cognitive assessment date)

Description: A variable reflecting the year the Ascertain Dementia Eight Item Informant Questionnaire was administered.

Type: Numeric

Algorithm: ADSDATE_year is the year of the ADS date.

Source variable(s): ADS date

6. REFERENCES

- Benton, A., & Hamsher, K. (1976). *Multilingual Aphasia Examination*. Iowa City, IA: University of Iowa.
- Callahan, C., Unverzagt, F., Hui, S., Perkins, A., & Hendrie, H. (2002). Six-item screener to identify cognitive impairment among potential subjects for clinical research. *Medical Care*, 40(9), 771-781. doi:10.1097/00005650-200209000-00007
- Galvin, J., Roe, C., Powlishta, K., Coats, M., Muich, S., Grant, E., . . . Morris, J. (2005). The AD8: a brief informant interview to detect dementia. *Neurology*, 65(4), 559-564. doi:10.1212/01.wnl.0000172958.95282.2a
- Gross, A., Jones, R., Fong, T., Tommet, D., & Inouye, S. (2014). Calibration and validation of an innovative approach for estimating general cognitive performance. *Neuroepidemiology*, 42(3), 144-153. doi:10.1159/000357647
- Gross, A., Power, M., Albert, M., Deal, J., Gottesman, R., Griswold, M., . . . Bandeen-Roche, K. (2015). Application of latent variable methods to the study of cognitive decline when tests change over time. *Epidemiology*, 26(6), 878-887.
- Morris, J., Mohs, R., Rogers, H., Fillenbaum, G., & Heyman, A. (1988). Consortium to establish a registry for Alzheimer's disease (CERAD) clinical and neuropsychological assessment of Alzheimer's disease. *Psychopharmacology Bulletin*, 24(4), 641-652.

- Rawlings, A., Bandeen-Roche, K., Gross, A., Gottesman, R., Coker, L., Penman, A., . . . Mosley, T. (2016). Factor structure of the ARIC-NCS Neuropsychological Battery: An evaluation of invariance across vascular factors and demographic characteristics. *Psychological Assessment*, 28(12), 1674-1683.
- Reitan, R. (1958). Validity of the trail making test as an indicator of organic brain damage. *Perceptual and Motor Skills*, 8, 271-276.
- Ryan, J., & Lopez, S. (2001). Wechsler adult intelligence scale-III. In W. Dorfman, & M. Hersen, *Understanding psychological assessment. Perspectives on individual differences*. New York, NY: Kluwer Academic/Plenum Publishers.
- Wechsler, D. (1987). *Wechsler Memory Scale-Revised*. San Antonio, Texas: Psychological Corporation.
- Williams, B., Mack, W., & Henderson, V. (1989). Boston naming test in Alzheimer's disease. *Neuropsychologia*, 27(8), 1073-1079.