Rush Alzheimer's Disease Center

Codebook for data set 685

Generated: 10-01-2018

This codebook contains 70 variables.

Longitudinal cycle explanation

All longitudinal data sets are organized by projid + visit or fu_year

visit	fu_year	explanation
00	0.0	Baseline
01	1.0	1st year follow-up
02	2.0	2nd year follow-up
03	3.0	3rd year follow-up
04	4.0	4th year follow-up
XX	XX.0	XXth year follow-up

variable suffix	type	explanation
_bl	cross-sectional	baseline cycle score; for medical history questions, the score may cover the period from prior to study participation to baseline visit.
_ever	cross-sectional	reported in any cycle at least one time
_l	cross-sectional	last cycle score
_lv	cross-sectional	last valid score

_cum	longitudinal	reported in past history or in at least one follow-up cycle up to this cycle

None

time2ad

ApoE and TOMM40

ApoE and TOMM40 > ApoE

anye4   Any E4

```
                                ApoE


Apolipoprotein E genotyping was done blinded to all other study data using methods
adapted from Hixson and Vernier, as previously described. In all analyses, individuals
were dichotomized into those with at least one copy of the ε4 allele (i.e., ε2/4,
ε3/4, or ε4/4) versus those without a copy (i.e., ε2/2, ε2/3, or ε3/3).




value  coding
1      E2E4, E3E4, or E4E4
0      noE4 allele


Data updated 6/23/2015
 All APOE data were generated by Polymorphic DNA Technologies as part of a collaboration with Al
    http://www.polymorphicdna.com/
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References

Apolipoprotein E e4 allele is associated with more rapid motor decline in older persons.
Buchman AS, Boyle PA, Wilson RS, Beck TL, Kelly JF, Bennett DA
Journal: Alzheimer disease and associated disorders 2009 Jan-Mar; 23(1) 63-9

The APOE epsilon4 allele is associated with incident mild cognitive impairment among community-dwelling older persons.
Boyle PA, Buchman AS, Wilson RS, Kelly JF, Bennett DA
Journal: Neuroepidemiology 2010; 34(1) 43-9

Analysis of postmortem ventricular cerebrospinal fluid from patients with and without dementia indicates association of vitamin E with neuritic plaques and specific measures of cognitive performance.
Hensley K, Barnes LL, Christov A, Tangney C, Honer WG, Schneider JA, Bennett DA, Morris MC
Journal: Journal of Alzheimer's disease : JAD 2011; 24(4) 767-74

ApoE genotype : apoe_genotype

Apolipoprotein E genotype

Apolipoprotein E (APOE) genotype

value	coding
22	E2E2
23	E2E3
24	E2E4
33	E3E3
34	E3E4
44	E4E4

DNA was extracted from PBMCs or brain. Genotyping was performed by Agencourt Bioscience Corporation utilizing high-throughput sequencing of codon 112 (position 3937) and codon 158 (position 4075) of exon 4 of the APOE gene on chromosome 19.

Data updated 6/23/2015

Participants were genotyped for APOE alleles by Polymorphic DNA Technologies.

All APOE data were generated by Polymorphic DNA Technologies as part of a collaboration with Allan Roses and Zinfandel. http://www.polymorphicdna.com/ (http://www.polymorphicdna.com/)

References

TOMM40'523 variant and cognitive decline in older persons with APOE ?3/3 genotype.
Yu L, Lutz MW, Wilson RS, Burns DK, Roses AD, Saunders AM, Gaiteri C, De Jager PL, Barnes LL, Bennett DA
Journal: Neurology 2017 Feb 14; 88(7) 661-668

Clinical Diagnosis

Clinical Diagnosis > Dementia

Age at first AD dx : age_first_ad_dx	Age at cycle where first Alzheimer's disease diagnosis was given
	The **age at first Alzheimer's disease (AD) diagnosis (dx)** variable represents the age at the first cycle where an AD diagnosis was rendered. This is calculated using the variables age at visit (/radc /var/displayVariable.htm?id=617) and clinical diagnosis summary (/radc/var/displayVariable.htm?id=349) (value = 4 or 5). This is the best approximation of "age at onset of AD" available, as most participants are seen on a yearly basis. This measure is not available for participants that were demented at baseline cycle.

age_first_dem_dx	Age - First Dx of Dementia

```
                              Float variable for age at cycle where first dementia dx was give

A variable which calculates age at each cycle (see age_at_visit) is utilized to locate
the age at the first cycle where a demenita dx was rendered via the variable, dcfdx
(dementia = dcfdx = 4, 5, or 6).   Most participants are seen on a yearly basis, so
this is the best approximation of age at onset of dementia.  This measure is not available for
participants that were demented at baseline cycle.



dcfdx - Clinical Dx by cycle


dementia        value   coding
    NO           1      NCI - No cognitive impairment
    NO           2      MCI - Mild cognitive impairment
    NO           3      MCI+ - Mild cognitive impairment and other Dx
   YES           4      AD - Alzheimer's disease
   YES           5      AD+ - Alzheimer's disease and other Dx
   YES           6      Other - Other Dx
                Other   Unknown



age_at_visit - Float variable for age at cycle


date_ce is used to computed this age which is determined by the
    first date found for a  valid form in the following hierarchy:


    1. cognitive date
    2. clinical evaluation date (neurological exam, med hx, meds)
    3. interview date
    4. dcf date   (diagnostic classification form)
    5. neuropsychologist impression date
```

Clinical cognitive diagnosis summary :	Clinical diagnosis of cognitive status (AD, other dementia, MCI, or no impairment)
	A **clinical diagnosis of cognitive status** is rendered at every assessment based on a three-stage process

dcfdx

including computer scoring of cognitive tests, clinical judgment by a neuropsychologist, and diagnostic classification by a clinician.

All participants undergo a uniform, structured, clinical evaluation including a battery of 19 cognitive tests. These tests were scored by computer using a decision tree designed to mimic clinical judgment and a rating of severity of impairment was given for 5 cognitive domains. A neuropsychologist, blinded to participant demographics, reviews the impairment ratings and other clinical information and renders a clinical judgment regarding the presence of impairment and dementia. A clinician (neurologist, geriatrician, or geriatric nurse practitioner) then reviews all available data and examines the participant and renders a final diagnostic classification.

Clinical diagnosis of dementia and clinical Alzheimer's disease (AD) are based on criteria of the joint working group of the National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's Disease and Related Disorders Association (NINCDS/ADRDA). The diagnosis of AD requires evidence of a meaningful decline in cognitive function relative to a previous level of performance with impairment in memory and at least one other area of cognition.

Diagnosis of mild cognitive impairment (MCI) is rendered for persons who are judged to have cognitive impairment by the neuropsychologist but are judged to not meet criteria for dementia by the clinician.

Persons diagnosed with MCI or AD may also be diagnosed with another condition that contributes to their cognitive impairment (CI).

Persons without dementia or mild cognitive impairment (MCI) are categorized as having no cognitive impairment (NCI).

Value	Coding
1	NCI: No cognitive impairment
2	MCI: Mild cognitive impairment, no other condition contributing to CI
3	MCI+: Mild cognitive impairment AND another condition contributing to CI
4	AD: Alzheimer's disease dementia, no other condition contributing to CI (NINCDS/ADRDA Probable AD)
5	AD+: Alzheimer's disease dementia AND other condition contributing to CI (NINCDS/ADRDA Possible AD)
6	Other dementia: Other primary cause of dementia, no clinical evidence of AD

Other Forms : _l, _lv, _bl

References

Natural history of mild cognitive impairment in older persons.
Bennett DA, Wilson RS, Schneider JA, Evans DA, Beckett LA, Aggarwal NT, Barnes LL, Fox JH, Bach J
Journal: Neurology 2002 Jul 23; 59(2) 198-205

Decision rules guiding the clinical diagnosis of Alzheimer's disease in two community-based cohort studies compared to standard practice in a clinic-based cohort study.
Bennett DA, Schneider JA, Aggarwal NT, Arvanitakis Z, Shah RC, Kelly JF, Fox JH, Cochran EJ, Arends D, Treinkman AD, Wilson RS
Journal: Neuroepidemiology 2006; 27(3) 169-76

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dementia   Dementia Diagnosis

```
                            Dementia Dx  (see r_dement variable)


0 = no dementia present (possible or not present)
1 = dementia present  (highly probable or probable)


Through review of self report questions, neurological exam (when available),
cognitive testing, and interview of participant, clinician renders a diagnosis.
The clinician is first presented with algorithmic diagnosis and has the ability to
modify if necessary.


Dementia Dx  value      coding
dementia      1         Highly Probable
dementia      2         Probable
--------------------------------------------------
no dementia   3         Possible
no dementia   4         Not Present

```

Other Forms : _l, _lv, _bl, _ever

References

Mixed brain pathologies account for most dementia cases in community-dwelling older persons.
Nandigam RN
Journal: Neurology 2008 Mar 4; 70(10) 816; author reply 81

Family history of dementia is a risk factor for Lewy body disease.

Woodruff BK, Graff-Radford NR, Ferman TJ, Dickson DW, DeLucia MW, Crook JE, Arvanitakis Z, Brassler S,
Waters C, Barker W, Duara R

Journal: Neurology 2006 Jun 27; 66(12) 1949-50

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incad   Incident AD

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                              Incidence of AD (no AD Dx at baseline)


value    coding:
0        No   (did not receive AD Dx while in study)
1        Yes  (received AD Dx at some point in study, Highly
                  probable or probable AD - r_ad variable)


9        Missing
```

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q1cc   Cognitive Complaints - present

```
                            Memory Complaints - self report

table1
value     coding
1         Very often
2         Often
3         Sometimes
4         Rarely
5         Never
8         REFUSAL
9         DON'T KNOW


variable     coding     question
q1cc         table1     People find that they sometimes have more trouble remembering things as
                        they get older. About how often do you have trouble remembering things?


Wang L, van Belle G, Crane PK, et al. Subjective memory deterioration and future dementia in
people aged 65 and older. J Am Geriatr Soc 2004;52:2045-2051. Bunch TJ, White RD, Smith GE, et
al. Long-term subjective memory function in ventricular fibrillation out-of-hospital cardiac
arrest survivors resuscitated by early defibrillation. Resuscitation 2004;60:189-195.
```

q2cc   Cognitive Complaints - compared to past

```
                          Memory Complaints - self report



 table2
value     coding
1      much worse
2      a little worse
3      the same
4      a little better
5      much better
8      refusal
9      don't know


variable     coding     question
q2cc         table2     Compared to 10 years ago, would you say that your memory is much worse,
                         a little worse, the same, a little better or much better?


Wang L, van Belle G, Crane PK, et al. Subjective memory deterioration and future dementia in
people aged 65 and older. J Am Geriatr Soc 2004;52:2045-2051. Bunch TJ, White RD, Smith GE, et
al. Long-term subjective memory function in ventricular fibrillation out-of-hospital cardiac
arrest survivors resuscitated by early defibrillation. Resuscitation 2004;60:189-195.
```

Clinical Diagnosis > MCI

Mild cognitive impairment : mci

Mild cognitive impairment

Individuals with **mild cognitive impairment** (MCI) have memory or other cognitive abilities that are not normal but do not meet conventional criteria for dementia.

A clinical diagnosis of MCI is rendered by a neuropsychologist based on a review of self-report questions, neurological exam (when available), cognitive testing, and interview of participant. A neuropsychologist reviews a summary of the participant's cognitive battery and agrees or disagrees with the impairment level of the 5 cognitive domains.

Persons who did not meet criteria for dementia but who show evidence of impairment in at least one cognitive domain are classified as MCI.

Criteria for dementia is based on the joint working group of the National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's Disease and Related Disorders Association (NINCDS/ADRDA).

Value	Coding
0	No cognitive impairment or meets criteria for dementia
1	Meets criteria for MCI

Data is available at baseline (_bl), last (_l) and last valid (_lv) levels.

Other Forms : _l, _lv, _bl, _ever

References

Natural history of mild cognitive impairment in older persons.
Bennett DA, Wilson RS, Schneider JA, Evans DA, Beckett LA, Aggarwal NT, Barnes LL, Fox JH, Bach J
Journal: Neurology 2002 Jul 23; 59(2) 198-205

Cognition

Cognition > Test scores

cts_animals   Category Fluency - Animals - 2014

Category fluency - animals is a modified version of the CERAD verbal fluency measure (Morris et al., 1989). Participants are asked to generate exemplars from each of 2 categories (animals, fruits and vegetables) within a 60-second time limit. This variable is the number of unique animals named.

Similar measures have been shown to be impaired in Alzheimer's disease .

Scoring: The total number of animals named is recorded. Repetitions are omitted.

Range
  0-75 = animals named
  98 = REFUSAL
  99 = DON'T KNOW

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cts_bname   Boston Naming - 2014

SUMMARY: BOSTON NAMING, NUMBER OF ITEMS CORRECT

This test is used in the calculation of semantic memory domain (cogn_se).

This measure of visual confrontation naming, from the widely used Boston Naming Test, include 15 items from the CERAD version of the test. Participants are shown pictures of certain objects. Then they are requested to name the objects. The primary measure of performance is the number of pictures correctly named.

Short term temporal stability and internal consistency of the CERAD version are excellent. Longitudinal change in visual naming in Alzheimer's disease has been previously demonstrated.

The Boston Naming Test (BNT) represents a measure of object naming from line drawings. Items have been rank ordered in terms of their ability to be named, which is thought to be correlated with their frequency. This type of picture-naming vocabulary test is useful in the examination of children with learning disabilities and the evaluation of brain-injured adults.

Ref: Weintraub, S., *The Psychological Corporation.*

Range
 00 - 15

variable	coding	question
tree	0-error/1-correct	1. Tree
bed	0-error/1-correct	2. Bed
whistle	0-error/1-correct	3. Whistle
flower	0-error/1-correct	4. Flower
house	0-error/1-correct	5. House
canoe	0-error/1-correct	6. Canoe
toothbr	0-error/1-correct	7. Toothbrush
volcano	0-error/1-correct	8. Volcano
mask	0-error/1-correct	9. Mask
camel	0-error/1-correct	10. Camel
harmon	0-error/1-correct	11. Harmonica
tongs	0-error/1-correct	12. Tongs
hammock	0-error/1-correct	13. Hammock
funnel	0-error/1-correct	14. Funnel

variable	coding	question
domino	0-error/1-correct	15. Domino

cts_catflu

Category Fluency - 2014

Category fluency is a modified version of the CERAD verbal fluency measure (Morris et al., 1989). Participants are asked to generate exemplars from each of 2 categories (animals, fruits and vegetables) within a 60-second time limit per category. This variable is the sum of unique exemplars generated from both categories. If one of the category scores is missing, the remaining valid score is multiplied by 2.

Similar measures have been shown to be impaired in Alzheimer's disease.

This test is used in the calculation of semantic memory domain (cogn_se).

Range: 00 - 150

cts_db

Digits Backwards - 2014

Digit span backwards is a test in which sequences of increasing length are read to participants, one at a time. Participants are then asked to repeat each sequence backwards. Testing stops after two consecutive errors at a given sequence length. The primary measure of performance is the number of digit sequences correctly recalled.

The psychometric properties are well documented. It has been used in prior epidemiologic and longitudinal studies of Alzheimer's disease.

This test is used in the calculation of working memory domain (cogn_wo).

Range: 00 - 12

Variable	Coding	Sequence	Answer key
digbak1a	0-error/1-correct	1a. 5-1?	15
digbak1b	0-error/1-correct	1b. 3-8?	83
digbak2a	0-error/1-correct	2a. 4-9-3?	394
digbak2b	0-error/1-correct	2b. 5-2-6?	625
digbak3a	0-error/1-correct	3a. 3-8-1-4?	4183
digbak3b	0-error/1-correct	3b. 1-7-9-5?	5971
digbak4a	0-error/1-correct	4a. 6-2-9-7-2?	27926

Variable	Coding	Sequence	Answer key
digbak4b	0-error/1-correct	4b. 4-8-5-2-7?	72584
digbak5a	0-error/1-correct	5a. 7-1-5-2-8-6?	682517
digbak5b	0-error/1-correct	5b. 8-3-1-9-6-4?	469138
digbak6a	0-error/1-correct	6a 4-7-3-9-1-2-8?	8219374
digbak6b	0-error/1-correct	6b. 8-1-2-9-3-6-5?	5639218

Note: This is one of two forms of Digit Span. See digit span forwards (/radc/var/displayVariable.htm?id=1160).

cts_delay   Logical Memory IIa - 2014

Logical memory IIa - delayed recall is a measure from the Wechsler Memory Scale - Revised, 1987. A brief story is read to the participant, then the participant is asked to retell the story from memory immediately after it is read and again following an approximately 30 minute delay. This measure is the number of story units (out of 25) recalled after the delay.

Inter rater reliability and short term temporal stability are excellent. It has been used in epidemiological and numerous clinical studies of Alzheimer's disease.

This test is used in the calculation of episodic memory domain (cogn_ep).

Range: 00 to 25

cts_df   Digits Forwards - 2014

Digit span forward is a test in which sequences of increasing length are read to participants, one at a time. Participants are then asked to repeat each sequence. Testing stops after two consecutive errors at a given sequence length.The primary measure of performance is the number of digit sequences correctly recalled.

This test is used in the calculation of working memory domain (cogn_wo).

Range: 00 - 12

Variable	Coding	Sequence	Answer key
digFor1a	0-error/1-correct	1a. 6-2-9?	629
digFor1b	0-error/1-correct	1b. 3-7-5?	375
digFor2a	0-error/1-correct	2a. 5-4-1-7?	5417

Variable	Coding	Sequence	Answer key
digFor2b	0-error/1-correct	2b. 8-3-9-6?	8396
digFor3a	0-error/1-correct	3a. 3-6-9-2-5?	36925
digFor3b	0-error/1-correct	3b. 6-9-4-7-1?	69471
digFor4a	0-error/1-correct	4a. 9-1-8-4-2-7?	918427
digFor4b	0-error/1-correct	4b. 6-3-5-4-8-2?	635482
digFor5a	0-error/1-correct	5a. 1-2-8-5-3-4-6?	1285346
digFor5b	0-error/1-correct	5b. 2-8-1-4-9-7-5?	2814975
digFor6a	0-error/1-correct	6a. 3-8-2-9-5-1-7-4?	38295174
digFor6b	0-error/1-correct	6b. 5-9-1-8-2-6-4-7?	59182647

cts_doperf

Digit Ordering - 2014

The **digit ordering** test is modified from procedures used by Cooper, Sagar, Jordan, Harvey, and Sullivan (1991). A series of numbers are read aloud to the participants, one series at a time. After each series, participants are asked to order the digits in the series from smallest number to largetst number. Each correct answer is scored. The test is administered from 2 to 8 digit length pairs. If both pairs of a certain length are not ordered properly, testing stops.

This test is used in the calculation of working memory domain (cogn_wo).

Range
00 - 14

Variable	Coding	Sequence	Answer key
item1	0-error/1-correct	1. 4-1?	14
item2	0-error/1-correct	2. 9-8?	89
item3	0-error/1-correct	3. 1-0-4?	014
item4	0-error/1-correct	4. 2-6-3?	236
item5	0-error/1-correct	5. 2-4-1-3?	1234
item6	0-error/1-correct	6. 4-2-1-6?	1246
item7	0-error/1-correct	7. 3-7-5-7-0?	03577
item8	0-error/1-correct	8. 7-9-2-1-0?	01279

Variable	Coding	Sequence	Answer key
item9	0-error/1-correct	9. 9-5-6-2-7-2?	225679
item10	0-error/1-correct	10. 9-6-3-0-1-9?	013699
item11	0-error/1-correct	11. 8-9-5-7-9-1-4?	1457899
item12	0-error/1-correct	12. 8-5-4-7-5-3-6?	3455678
item13	0-error/1-correct	13. 2-8-9-1-8-6-9-5?	12568899
item14	0-error/1-correct	14. 6-3-5-3-4-0-9-6?	03345669

cts_ebdr   East Boston Story - delayed recall - 2014

East Boston Memory Test - Delayed Recall is a measure from the East Boston studies of cognitive function. A three-sentence story is read to the participant. Participants are then asked to immediately recall as much of the story as possible (see East Boston Memory Test - Immediate Recall (/radc/var/displayVariable.htm?id=1163)) and again after a delay of approximately 3 minutes. The score is the number of story units (out of 12) correctly recalled after the delay.

This test is used in the calculation of episodic memory domain (cogn_ep).

Range: 00 - 12

Variable	Coding	Story unit
q1ebdr	1-present/0-absent/7-defer	1. Three
q2ebdr	1-present/0-absent/7-defer	2. Children
q3ebdr	1-present/0-absent/7-defer	3. House
q4ebdr	1-present/0-absent/7-defer	4. On fire
q5ebdr	1-present/0-absent/7-defer	5. Fireman
q6ebdr	1-present/0-absent/7-defer	6. Climbed in
q7ebdr	1-present/0-absent/7-defer	7. Children
q8ebdr	1-present/0-absent/7-defer	8. Rescued
q9ebdr	1-present/0-absent/7-defer	9. Minor
q10ebdr	1-present/0-absent/7-defer	10. Injuries
q11ebdr	1-present/0-absent/7-defer	11. Everyone
q12ebdr	1-present/0-absent/7-defer	12. Well

cts_ebmt — East Boston Story - immediate - 2014

East Boston Memory Test - Immediate Recall is a measure from the East Boston studies of cognitive function. A three-sentence story is read to the participant. Participants are then asked to immediately recall as much of the story as possible The score is the number of story units (out of 12) correctly recalled. See East Boston Memory Test - Delayed Recall (/radc/var/displayVariable.htm?id=1162) for the delayed recall portion of this test.

This test is used in the calculation of episodic memory domain (cogn_ep).

Range: 00 - 12

Variable	Coding	Story Unit
q1ebmt	1-present/0-absent/7-defer	1. Three
q2ebmt	1-present/0-absent/7-defer	2. Children
q3ebmt	1-present/0-absent/7-defer	3. House
q4ebmt	1-present/0-absent/7-defer	4. On fire
q5ebmt	1-present/0-absent/7-defer	5. Fireman
q6ebmt	1-present/0-absent/7-defer	6. Climbed in
q7ebmt	1-present/0-absent/7-defer	7. Children
q8ebmt	1-present/0-absent/7-defer	8. Rescued
q9ebmt	1-present/0-absent/7-defer	9. Minor
q10ebmt	1-present/0-absent/7-defer	10. Injuries
q11ebmt	1-present/0-absent/7-defer	11. Everyone
q12ebmt	1-present/0-absent/7-defer	12. Well

cts_fruits — Category Fluency - Fruits - 2014

This is a measure of verbal fluency or semantic memory in which participant is asked to generate exemplars from that category fruits/vegetables in successive 1 minute trials. The primary performance measure is the number of unique exemplars generated. Similar measures have been shown to be impaired in Alzheimer's disease. The CERAD implementation of this test is used with this item which adds to the reliability.

Range
 0-75
Scoring

The total number of fruits/vegetables named is recorded. Repetitions are omitted.

cts_idea

Complex Ideational Material

Score, Complex Ideational Material, a tests of auditory comprehension. This is a measure of verbal comprehension from the Boston Diagnostic aphasic Examination. The first eight items are used. Each item is a simple question read aloud to the participant. The participant is requested to answer with a 'yes or 'no.

For all variables below, 1 point is added for each response that matches the coding.

Range
 0-8

Codebook variable	Coding	Calc	Codebook Question
sink1	Yes/No	No = +1	1. Will a board sink in water?
sink2	Yes/No	Yes = +1	2. Will a stone sink in water?
hammer1	Yes/No	No = +1	3. Is a hammer good for cutting wood?
hammer2	Yes/No	Yes = +1	4. Can you use a hammer to pound nails?
flour1	Yes/No	Yes = +1	5. Do two pounds of flour weigh more than one?
flour2	Yes/No	No = +1	6. Is one pound of flour heavier than two?
boots1	Yes/No	No = +1	7. Will water go through a good pair of rubber boots?
boots2	Yes/No	Yes = +1	8. Will a good pair of rubber boots keep water out?

Ref for test

Goodglass & Kaplan, 1983. *The assessment of aphasia and related disorders, 2nd edition.* Philadelpha: Lea & Febiger

As described, for example, in Wilson et al. 2002, Psychology and Aging, vol 17, no2, 179-193, for ROS: the distribution is very skew; this test was not included in composite scores

This variable name was created in 2014, and replaces SCIDEA. When data was available for SCIDEA, CTS_IDEA has the same value. CTS_IDEA contains data collected since the testing battery was unified in October, 2013.

cts_lopair

Line Orientation - 2014

The **line orientation** test is a 15-item version of the Judgment of Line Orientation Test, Form V (Benton, Hamsher, Varney, & Spreen, 1983, Benton, Varney, & Hamsher, 1978; Benton, Hannay, & Barney, 1975). Participants are asked to judge the angle of orientation of pairs of lines in a match-to-sample format.

Participants are asked the following question for each pair of lines:

Which two lines in the key point in the same direction as the lines up here?

The score is based upon the number of line pairs correctly judged. The test has proven to be a sensitive measure of visual spatial perception in early Alzheimer's disease.

This test is used in the calculation of perceptual orientation domain (cogn_po).

Range: 00 - 15

Table 1

Value	Code	Value	Code
1	line 1	7	line 7
2	line 2	8	line 8
3	line 3	9	line 9
5	line 4	10	line 10
5	line 5	11	line 11
6	line 6	12	line 12

Data

Variable pairs	Coding	Question	Answer key
line1a, line1b	table1	choose line pairs that match angle	2,6
line2a, line2b	table1	choose line pairs that match angle	8,3
line3a, line3b	table1	choose line pairs that match angle	10,1
line4a, line4b	table1	choose line pairs that match angle	11,8
line5a, line5b	table1	choose line pairs that match angle	4,1
line6a, line6b	table1	choose line pairs that match angle	9,2
line7a, line7b	table1	choose line pairs that match angle	5,2
line8a, line8b	table1	choose line pairs that match angle	10,7
line9a, line9b	table1	choose line pairs that match angle	3,1

Variable pairs	Coding	Question	Answer key
line10a, line10b	table1	choose line pairs that match angle	10,5
line11a, line11b	table1	choose line pairs that match angle	9,1
line12a, line12b	table1	choose line pairs that match angle	11,9
line13a, line13b	table1	choose line pairs that match angle	8,5
line14a, line14b	table1	choose line pairs that match angle	11,3
line15a, line15b	table1	choose line pairs that match angle	10,6

MMSE : cts_mmse30　　　　　　Mini-Mental State Exam, 30 item

The **Mini Mental State Examination (MMSE)** is a widely used, 30 item, standardized screening measure of dementia severity. It has previously been used in many epidemiologic studies and is a component of the CERAD protocol. Short term temporal stability is excellent and scores are highly correlated with those on other scales of severity of dementia. This test provides a global measure of cognitive function useful for descriptive purposes. The initial ten items provide a psychometric measure of orientation.

Participants are asked a series of questions to assess orientation to time and place, recall ability, short-term memory, and arithmetic ability.

The MMSE form includes the test of spelling WORLD backwards.

Other Forms : _l, _lv, _bl

References

"Mini-mental state". A practical method for grading the cognitive state of patients for the clinician.
Folstein MF, Folstein SE, McHugh PR
Journal: Journal of psychiatric research 1975 Nov; 12(3) 189-98

cts_nccrtd　　　　　　　　　　Number Comparison - 2014

The **number comparison** test is used in the calculation of perceptual speed domain (cogn_ps).

Participants are presented with pairs of three- to ten-digit sequences. Some of the pairs are exactly the same while others do not match. Participants are asked to identify pairs as "same" or "different" with a 90-second time limit. Each correct answer is scored.

Corrected score: number of items correctly identified minus the total number of wrong answers including don't

know and refused responses.

Range: 0 - 48

Table 1

Value	Code
s	same
d	different
8	don't know
9	refusal

Variable	Coding	Question	Answer key
Page3-item1	table1	420__460	different
Page3-item2	table1	13897143_13897145	different
Page3-item3	table1	4327__4327	same
Page3-item4	table1	519605__519605	same
Page3-item5	table1	3201859__3201859	same
Page3-item6	table1	13603__17603	different
Page3-item7	table1	621532992__621532992	same
Page3-item8	table1	2570665292__2570665292	same
Page4-item9	table1	4821__9821	different
Page4-item10	table1	5327010538__5327010538	same
Page4-item11	table1	236__936	different
Page4-item12	table1	5911306__5911306	same
Page4-item13	table1	49471307__47471307	different
Page4-item14	table1	341798301__341798701	different
Page4-item15	table1	347820__349820	different
Page4-item16	table1	60971__60971	same
Page5-item17	table1	925660752__925660752	same
Page5-item18	table1	5930582136__5730582136	different
Page5-item19	table1	27109__27109	same

Variable	Coding	Question	Answer key
Page5-item20	table1	4951__4951	same
Page5-item21	table1	3821043__3821043	same
Page5-item22	table1	39471307__39471507	different
Page5-item23	table1	414982__415982	different
Page5-item24	table1	618__618	same
Page6-item25	table1	5471075693__5471075683	different
Page6-item26	table1	647107569__647107569	same
Page6-item27	table1	17906__17906	same
Page6-item28	table1	705__708	different
Page6-item29	table1	24179830__24179830	same
Page6-item30	table1	619605__619505	different
Page6-item31	table1	7215__7915	different
Page6-item32	table1	4714306__4715306	different
Page7-item33	table1	65382__65382	same
Page7-item34	table1	6082649875__6082647875	different
Page7-item35	table1	289414__283414	different
Page7-item36	table1	7361408__7361708	different
Page7-item37	table1	16253948__16253948	same
Page7-item38	table1	7573__7573	same
Page7-item39	table1	639__637	different
Page7-item40	table1	370543141__370543141	same
Page8-item41	table1	705731195__705731195	same
Page8-item42	table1	5082__1082	different
Page8-item43	table1	4930582136__4930582136	same
Page8-item44	table1	43210573__43710573	different
Page8-item45	table1	710__710	same
Page8-item46	table1	4573043__4573043	same
Page8-item47	table1	923452__927452	different

Variable	Coding	Question	Answer key
Page8-item48	table1	80537__80737	different

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cts_pmat

Progressive Matrices - 2014

The **progressive matrices** measure is a subset of items from the Standard Progressive Matrices (Raven, Court, & Raven, 1992). Participants are shown a series of 16 visual images, one at a time, with one element missing. Participants are then asked to identify the missing element form an array of six to eight alternatives. The measure of performance is the number of items correctly completed.

This test is used in the calculation of perceptual orientation domain (cogn_po).

Range: 0-16

Table 1

Value	Code
1	figure 1
2	figure 2
3	figure 3
4	figure 4
5	figure 5
6	figure 6

Variable	Coding	Question	Answer key
a2	table1	complete the pattern	figure 5
a4	table1	complete the pattern	figure 2
a5	table1	complete the pattern	figure 6
a6	table1	complete the pattern	figure 3
a7	table1	complete the pattern	figure 6
a8	table1	complete the pattern	figure 2
a11	table1	complete the pattern	figure 4
a12	table1	complete the pattern	figure 5
b1	table1	complete the pattern	figure 2

Variable	Coding	Question	Answer key
b2	table1	complete the pattern	figure 6
b3	table1	complete the pattern	figure 1
b4	table1	complete the pattern	figure 2
b5	table1	complete the pattern	figure 1
b6	table1	complete the pattern	figure 3
b8	table1	complete the pattern	figure 6
b10	table1	complete the pattern	figure 3

Note: This harmonized version of this test was began in 2014. The same 16 items are used in ROS, MAP, and MARS.

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cts_pmsub

Progressive Matrices (subset) - 2014

Progressive Matrices - subset

This test is used in the calculation of perceptual orientation domain (cogn_po).

The participant is shown a series of visual images and asked to identify the pattern below which would complete the pattern on top. A total of sixteen patterns are shown. 'Tell me which piece below [POINT] would complete the pattern on top [POINT]'

This harmonized version of this test was started in 2014. ROS, MAP, and MARS now all use the same 16 items. This subset contains 9 of the 16 items.

Range
 0-9

Table 1

value	code
1	figure 1
2	figure 2
3	figure 3
4	figure 4

value	code
5	figure 5
6	figure 6

variable	coding	question	answer key
a2	table1	complete the pattern	figure 5
a4	table1	complete the pattern	figure 2
a8	table1	complete the pattern	figure 2
b1	table1	complete the pattern	figure 2
b2	table1	complete the pattern	figure 6
b3	table1	complete the pattern	figure 1
b4	table1	complete the pattern	figure 2
b5	table1	complete the pattern	figure 1
b6	table1	complete the pattern	figure 3

cts_read_nart

Reading Test - NART - 2014

The **National Adult Reading Test** is a measure of the ability to pronounce words. Participants are asked to read aloud a series of 10 words of increasing difficulty. The score is the number of words pronounced correctly.

This test is used in the calculation of semantic memory domain (cogn_se).

Range: 0 to 10

Variable	Coding	Question
nart_ach	0-Error/1-Correct	1. Ache
nart_ind	0-Error/1-Correct	2. Indict
nart_deb	0-Error/1-Correct	3. Debt
nart_sie	0-Error/1-Correct	4. Sieve
nart_pla	0-Error/1-Correct	5. Placebo
nart_fac	0-Error/1-Correct	6. Facade
nart_imp	0-Error/1-Correct	7. Impugn
nart_bla	0-Error/1-Correct	8. Blatant

Variable	Coding	Question
nart_cav	0-Error/1-Correct	9. Caveat
nart_cab	0-Error/1-Correct	10. Cabal

Note: This test was included in the harmonized cognitive battery in 2014 and is a new test for the MARS study. It had previously been included in ROS and MAP.

Reference: McGurn, B; Starr, JM; Topfer, JA; Pattie, A; Whiteman, MC; Lemmon, HA; Whalley, LJ; Deary, IJ (2004). *Pronunciation of irregular wor ds is preserved in dementia, validating premorbid IQ estimation.* Neurology 62 (7): 1184–1186. PMID 15079021

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cts_sdmt   Symbol Digit Modalities - 2014

The **symbol digit modalities** test, developed by Aaron Smith, PhD in 1973, is a measure of the speed of perceptual processing. Participants are presented with a series of abstract symbols and a coding key consisting of the nine abstract symbols, each paired with a number. Participants are asked to identify and call out the numbers corresponding to each symbol, as quickly as possible. The total score is the number of correctly identified symbols.

This test is used in the calculation of perceptual speed domain (cogn_ps).

Range: 0 - 110

Variable	Coding	Question
row1	2161246125	10 symbols displayed
row2	6341269438	10 symbols displayed
row3	4578137485	10 symbols displayed
row4	2934724516	10 symbols displayed
row5	4156798364	10 symbols displayed
row6	9583674523	10 symbols displayed
row7	7928169723	10 symbols displayed
row8	6491725684	10 symbols displayed
row9	2879378519	10 symbols displayed
row10	2143652164	10 symbols displayed
row11	2169735489	10 symbols displayed

Reference: Smith A. (1982). *Symbol Digits Modalities Test manual - revised.* Los Angeles: Western
Psychological Services.

| cts_story | Logical Memory Ia - immediate - 2014 |

Logical memory - immediate recall is a measure from the Wechsler Memory Scale - Revised, 1987. A brief story is read to the participant, then the participant is asked to retell the story from memory immediately after it is read and again following an approximately 30 minute delay. This measure is the number of story units (out of 25) recalled immediately after the story is read.

Inter rater reliability and short term temporal stability are excellent. It has been used in epidemiological and numerous clinical studies of Alzheimer's disease.

This test is used in the calculation of episodic memory domain (cogn_ep).

Range: 00 to 25

Coding:
77 = DEFERRED
98 = REFUSAL
99 = DON'T KNOW

| cts_stroop_cname | Stroop - Color Naming - 2014 |

The **Stroop color test** is a measure of executive functioning and capacity to direct attention. Participants are asked to name aloud the color of ink that each word in the list is printed in as quickly as they can. The score is the number of colors correctly named within a 30 second limit.

This test is used in the calculation of perceptual speed domain (cogn_ps).

Reference: Trenerry MR, Crosson B, DeBoe J, Leber WR: The Stroop Neorupsychological Screening Test. Odesssa, Physchological Assessment Resources, 1989.

| cts_stroop_wread | Stroop - Word Reading - 2014 |

The **Stroop word test** is a measure of executive functioning and capacity to direct attention. Participants are asked to read aloud a list of words as quickly as they can, within a 30 second limit. The score is the number of words read correctly.

This test is used in the calculation of perceptual speed domain (cogn_ps).

Reference: Trenerry MR, Crosson B, DeBoe J, Leber WR: *The Stroop Neorupsychological Screening Test.*
Odesssa, Physchological Assessment Resources, 1989.

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cts_wli

Word List I - immediate - 2014

The **word list memory test** (trials 1-3) is a measure from the CERAD neuropsychological performance tests. Participants are asked to read 10 words presented one at a time in a booklet and immediately asked to recall the words. Three trials are given. The primary measur eof performance is the total number of words recalled in all 3 trials.

This test is used in the calculation of episodic memory domain (cogn_ep).

Range: 00 - 30

Trial 1

Variable	Coding	Word
wordt1_1	0-error/1-correctly recalled	1. butter
wordt1_2	0-error/1-correctly recalled	2. arm
wordt1_3	0-error/1-correctly recalled	3. shore
wordt1_4	0-error/1-correctly recalled	4. letter
wordt1_5	0-error/1-correctly recalled	5. queen
wordt1_6	0-error/1-correctly recalled	6. cabin
wordt1_7	0-error/1-correctly recalled	7. pole
wordt1_8	0-error/1-correctly recalled	8. ticket
wordt1_9	0-error/1-correctly recalled	9. grass
wordt1_x	0-error/1-correctly recalled	10. engine

Trial 2

Variable	Coding	Word
wordt2_1	0-error/1-correctly recalled	1. ticket
wordt2_2	0-error/1-correctly recalled	2. cabin
wordt2_3	0-error/1-correctly recalled	3. butter

Variable	Coding	Word
wordt2_4	0-error/1-correctly recalled	4. shore
wordt2_5	0-error/1-correctly recalled	5. engine
wordt2_6	0-error/1-correctly recalled	6. arm
wordt2_7	0-error/1-correctly recalled	7. queen
wordt2_8	0-error/1-correctly recalled	8. letter
wordt2_9	0-error/1-correctly recalled	9. pole
wordt2_x	0-error/1-correctly recalled	10. grass

Trial 3

Variable	Coding	Word
wordt3_1	0-error/1-correctly recalled	1. queen
wordt3_2	0-error/1-correctly recalled	2. grass
wordt3_3	0-error/1-correctly recalled	3. arm
wordt3_4	0-error/1-correctly recalled	4. cabin
wordt3_5	0-error/1-correctly recalled	5. pole
wordt3_6	0-error/1-correctly recalled	6. shore
wordt3_7	0-error/1-correctly recalled	7. butter
wordt3_8	0-error/1-correctly recalled	8. engine
wordt3_9	0-error/1-correctly recalled	9. ticket
wordt3_x	0-error/1-correctly recalled	10. letter

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cts_wlii   Word List II - delayed - 2014

WORD LIST RECALL, DELAYED RECALL

The participant is asked to read a list of ten words one at a time. They are presented with 3 trials with the words in different order for each trial. A few minutes later the participant is asked to identify as many words as they can recall. Each identified word is scored as correct.

This test is used in the calculation of episodic memory domain (cogn_ep).

Range

00 - 10

variable	coding	question
recall_1	0-error/1-correctly recalled	1. butter
recall_2	0-error/1-correctly recalled	2. arm
recall_3	0-error/1-correctly recalled	3. shore
recall_4	0-error/1-correctly recalled	4. letter
recall_5	0-error/1-correctly recalled	5. queen
recall_6	0-error/1-correctly recalled	6. cabin
recall_7	0-error/1-correctly recalled	7. pole
recall_8	0-error/1-correctly recalled	8. ticket
recall_9	0-error/1-correctly recalled	9. grass
recall_x	0-error/1-correctly recalled	10. engine

cts_wliii

Word List III - recognition - 2014

The **word recognition - delayed recognition** test is a modification of the CERAD Word List Recognition measure (Morris et al. 1989). Participants are shown ten sets of four words, one set at a time, and asked to select the word from each set that they were shown previously. The primary measure of performance is the number of target words correctly identified.

This test is used in the calculation of episodic memory domain (cogn_ep).

Range: 00 - 10

Variable	Coding	Words (correct answer is capitalized)
wordrec1	0-error/1-correctly identified	1. Palace, Dollar, LETTER, Railroad.
wordrec2	0-error/1-correctly identified	2. Book, River, Stone, POLE
wordrec3	0-error/1-correctly identified	3. Animal, Village, ENGINE, Diamond
wordrec4	0-error/1-correctly identified	4. Garden, ARM, Rock, Coffee
wordrec5	0-error/1-correctly identified	5. Church, QUEEN, Temple, Ocean
wordrec6	0-error/1-correctly identified	6. CABIN, Boy, Fire, Street
wordrec7	0-error/1-correctly identified	7. Machine, Officer, String, TICKET

Variable	Coding	Words (correct answer is capitalized)
wordrec8	0-error/1-correctly identified	8. Sky, BUTTER, Hotel, Party
wordrec9	0-error/1-correctly identified	9. GRASS, Mountain, Clock, Camp
wordrecx	0-error/1-correctly identified	10. Troops, Pipe, SHORE, Coin

Demographics

Age at visit : age_at_visit

Age at visit (longitudinal)

Age at visit is calculated by subtracting the date of birth from the date of the visit and dividing the difference by days per year (365.25).

The date of the visit is defined as the first valid date in the following hierarchy:

1. cognitive date
2. clinical evaluation date (neurological exam, med hx, meds)
3. interview date
4. DCF date (diagnostic classification form)
5. neuropsychologist impression date

References

Purpose in Life Is Associated With a Reduced Risk of Incident Disability Among Community-Dwelling Older Persons.
Boyle PA, Buchman AS, Bennett DA
Journal: The American journal of geriatric psychiatry : official journal of the American Association for Geriatric Psychiatry 2010 Jun 10; 18(12) 1093-102

Age at baseline : age_bl

Age at baseline assessment

The **age at baseline assessment** is calculated from subtracting the date of birth from the date of the baseline assessment and dividing by days per year (365.25).

The date of the baseline assessment is defined as the the first valid date in the following hierarchy:

1. cognitive date
2. clinical evaluation date (neurological exam, med hx, meds)
3. interview date

4. DCF date (diagnostic classification form)
5. neuropsychologist impression date

Age at death : age_death

Age at death

Age of death is calculated from subtracting date of birth from date of death and dividing the difference by days per year (365.25).

For participants in autopsy cohorts, the exact date of death is known for most participants as it is the day an autopsy was performed. In all cohorts, in addition to annual evaluations, participants are also contacted quarterly to determine vital status and changes in health, and death is occasionally learned of during quarterly contacts.

Education : educ

Years of education

The **years of education** variable is based on the number of years of regular school reported at baseline cognitive testing.

References

Education modifies the association of amyloid but not tangles with cognitive function.
Bennett DA, Schneider JA, Wilson RS, Bienias JL, Arnold SE
Journal: Neurology 2005 Sep 27; 65(6) 953-5

Sex : msex

Sex

Self-reported **sex**, with "1" indicating male sex.

Allowable codes
1 = Male
0 = Female

Race : race

Racial group

With which group do you most closely identify yourself?

value	coding
1	White

value	coding
2	Black, Negro, African-American
3	Native American, Indian
4	Eskimo
5	Aleut
6	Asian or Pacific Island
.	Missing

References

Biracial population study of mortality in mild cognitive impairment and Alzheimer disease.

Wilson RS, Aggarwal NT, Barnes LL, Bienias JL, Mendes de Leon CF, Evans DA

Journal: Archives of neurology 2009 Jun; 66(6) 767-72

A population-based study of hemoglobin, race, and mortality in elderly persons.

Dong X, Mendes de Leon C, Artz A, Tang Y, Shah R, Evans D

Journal: The journals of gerontology. Series A, Biological sciences and medical sciences 2008 Aug; 63(8) 873-8

Spanish ethnicity :
spanish

Spanish/Hispanic/Latino origin

Are you of **Spanish**/Hispanic/Latino origin?

value	coding
1	Yes
2	No

Depression

Depressive symptoms :
cesdsum

Measure of depressive symptoms (Modified CESD)

Depressive symptoms are assessed with a modified, 10-item version of the Center for Epidemiologic Studies Depression scale (CES-D)*. Participants are asked whether or not they experienced each of ten symptoms much of the time in the past week. The score is the total number of symptoms experienced. Items 4 and 7 are reverse coded so the response is consistent with depressive symptom =1.

Participants are presented with the following items:

Item no.	Item	Calc	Item no. in 20-item CES-D*
1	I felt depressed.	Yes=1	6
2	I felt that everything I did was an effort.	Yes=1	7
3	My sleep was restless.	Yes=1	11
4	I was happy.	No=1	12
5	I felt lonely.	Yes=1	14
6	People were unfriendly.	Yes=1	15
7	I enjoyed life.	No=1	16
8	I felt sad.	Yes=1	18
9	I felt that people disliked me.	Yes=1	19
10	I could not get going.	Yes=1	20

Note on missing data: The score is rescaled to be out of 10 by averaging the non-missing item values and multiplying by 10. For example, if only 8 questions are answered, and the sum is 6, then 6/8 = 0.75, multiplied by 10 results in a score of 7.5. This is only done if less than 5 items are missing.

*Reference for full 20-item CES-D: Radloff LS: The CES-D Scale: a self-report depression scale for research in the general population. Applied Psychological Measurement 1:385-401, 1977.

References

Depressive symptoms, cognitive decline, and risk of AD in older persons.
Wilson RS, Barnes LL, Mendes de Leon CF, Aggarwal NT, Schneider JS, Bach J, Pilat J, Beckett LA, Arnold SE, Evans DA, Bennett DA
Journal: Neurology 2002 Aug 13; 59(3) 364-70

Two shorter forms of the CES-D (Center for Epidemiological Studies Depression) depression symptoms index.
Kohout FJ, Berkman LF, Evans DA, Cornoni-Huntley J
Journal: Journal of aging and health 1993 May; 5(2) 179-93

Disabilities

Instrumental activities of daily living : iadlsum   Instrumental activities of daily living - Sum of 8 items

Instrumental activities of daily living (IADL) is a composite measure of disability using a sum of 8 items adapted from the Duke Older Americans Resources and Services project. The scale measures IADLs such as household management and self-care functions, which are required for independent living:

1. telephone use
2. meal preparation
3. light housekeeping
4. heavy housekeeping
5. handling medications
6. handling finances
7. shopping
8. traveling within the community

Participants are asked to report need for help/assistance in performing the IADLs. Responses are then dichotomized into 0 = no help and 1 = requires help or unable to do (see below). The composite measure ranges from 0 to 8 and is the sum of the number of items for which participants report the need for help/assistance, with higher scores indicating greater disability.

Participants are asked the following 8 questions:

Are you able to [insert 1-8 below] completely by yourself or does someone else help you?
1. use the telephone - including looking up numbers and dialing
2. prepare your own meals
3. do routine light housekeeping
4. do periodic heavy housekeeping
5. take your own prescribed medicines
6. take care of your own finances - including paying bills, writing checks, keeping track of income (but not necessarily preparing your own taxes)
7. travel around in your community to the places you might want to go, like the church or just to be outside
8. do your own personal shopping, like for clothes, for personal things, or for household needs

Response choices for each item:

Response	Response code	Dichotomized value
No help	1	0
Help	2	1
Unable to do	3	1

Other Forms : _lv, _bl

References

Assessment of older people: self-maintaining and instrumental activities of daily living.
Lawton MP, Brody EM
Journal: The Gerontologist 1969 Autumn; 9(3) 179-86

Physical activity is associated with incident disability in community-based older persons.
Boyle PA, Buchman AS, Wilson RS, Bienias JL, Bennett DA
Journal: Journal of the American Geriatrics Society 2007 Feb; 55(2) 195-201

Basic activities of daily living : katzsum	Basic activities of daily living - Sum of 6 items

Basic activities of daily living (ADL) is a composite measure of disability, measured with the Katz Activities of Daily Living Scale. The scale measures six basic physical abilities: walking across a small room, bathing, dressing, eating, getting from bed to chair, and toileting.

Participants are asked to report need for help/assistance in performing the ADLs. Responses are then dichotomized into 0 = no help and 1 = requires help or unable to do (see below). The composite measure ranges from 0 to 6 and is the sum of the number of items for which participants report the need for help/assistance, with higher scores indicating greater disability.

Participants are asked the following six questions:

Do you need help, either from another person or a special equipment or device…
1. walking across a small room?
2. bathing, either a sponge bath, tub bath or shower?
3. dressing, like putting on a shirt, buttoning and zipping, or putting on shoes?
4. eating, like holding a fork, cutting food, or drinking from a glass?
5. getting from a bed to chair?
6. using the toilet?

Response choices for each item:

Response	Response code	Dichotomized value
No help	1	0
Help	2	1
Unable to do	3	1

Other Forms : _lv, _bl

References

A measure of primary sociobiological functions.
Katz S, Akpom CA
Journal: International journal of health services : planning, administration, evaluation 1976; 6(3) 493-508

Physical activity is associated with incident disability in community-based older persons.
Boyle PA, Buchman AS, Wilson RS, Bienias JL, Bennett DA
Journal: Journal of the American Geriatrics Society 2007 Feb; 55(2) 195-201

Mobility disability :
rosbsum

Mobility disability - Sum of 3 items (Rosow-Breslau scale)

The Rosow-Breslau scale is a composite measure of **mobility disability**. The scale measures ability to do 3 activities: doing heavy work around the house, walking up and down stairs, and walking half a mile without help.

Participants are asked to report need for help/assistance in performing the activities. Responses are then dichotomized into 0 = no help and 1 = requires help or unable to do (see below). The composite measure ranges from 0 to 3 and is the sum of the number of items for which participants report the need for help/assistance, with higher scores indicating greater disability.

Participants are asked the following 3 questions:

Are you able to…
1. do heavy work around the house, like washing windows, walls, or floors without help?
2. walk up and down stairs to the second floor without help?
3. walk half a mile without help?

Response choices for each item:

Response	Response code	Dichotomized value
No help	1	0
Help	2	1
Unable to do	3	1

Other Forms : _lv, _bl

References

A Guttman health scale for the aged.
Rosow I, Breslau N

Journal: Journal of gerontology 1966 Oct; 21(4) 556-9

Pulmonary function, muscle strength, and incident mobility disability in elders.
Buchman AS, Boyle PA, Leurgans SE, Evans DA, Bennett DA
Journal: Proceedings of the American Thoracic Society 2009 Dec 1; 6(7) 581-7

Lifestyle

Lifestyle > Alcohol and tobacco use

Alcohol use : alcohol_g_bl　　　Grams of alcohol used per day at baseline

Grams of alcohol per day at baseline is a measure of how much alcohol (beer, wine, and liquor) a participant consumed in the past 12 months. Participants are first asked whether or not they consumed at least 12 drinks ever and in the last 12 months. Individuals who answer "no" to both questions were given a total alcohol consumption of 0. Those who respond "yes" to consuming at least 12 drinks in the past 12 months are then asked to estimate the quantity consumed of each of the following alcoholic beverages: beer, wine, and liquor. A value is applied to each response choice based on the table below. The number of drinks value is then multiplied by grams of alcohol per drink type and then summed across all drink types to determine total grams of alcohol consumed. Totals range from 0 to 234.6g, with higher values indicating greater alcohol consumption.

Participants are asked the following questions:

1. In your entire life, have you had at least 12 drinks of alcoholic beverage?
2. In the past 12 months, did you have at least 12 drinks of any kind of alcoholic beverage?
3. During the past 12 months, on average, how much beer did you drink?
4. During the past 12 months, on average, how much wine did you drink?
5. During the past 12 months, on average, how much liquor did you drink?

Response choices for each item:

Response	Response code	Value
6+ drinks/glasses per day	1	6.0
4-5 drinks/glasses per day	2	4.5
2-3 drinks/glasses per day	3	2.5
1 drinks/glasses per day	4	1.0
5-6 drinks/glasses per week	5	0.8

Response	Response code	Value
2-4 drinks/glasses per week	6	0.4
1 drink/glass per week	7	0.2
1-3 drink/glass per month	8	0.1
Less than one drink/glass per month	9	0.0

Grams of alcohol per drink/glass:

Drink type	Grams of alcohol
Beer	13.2
Wine	10.8
Liquor	15.1

Note: This variable is not normally distributed, with the majority of values with at 0 and some high values.

References

Negative affect and mortality in older persons.

Wilson RS, Bienias JL, Mendes de Leon CF, Evans DA, Bennett DA

Journal: American journal of epidemiology 2003 Nov 1; 158(9) 827-35

Lifetime daily alcohol intake : ldai_bl

Self-reported lifetime daily alcohol intake - baseline

Lifetime Daily Alcohol Intake (LDAI) at baseline is a measure of the amount of alcoholic drinks (beer, wine, or liquor) consumed per day during the period the participants drank the most in their lifetime.

Participants are asked the following questions:

1. In your entire life, have you had at least 12 drinks of any kind of alcoholic beverage?
2. In your entire life, when you drank the most, about how often did you drink any type of alcoholic beverage, including beer, wine and liquor?

If a participant replies "no" to item 1, LDAI is categorized as less than one drink per month (response code = 9).

Response choices for item 2:

Response	Response code	Value
6+ drinks per day	1	6.0

Response	Response code	Value
4-5 drinks per day	2	4.5
2-3 drinks per day	3	2.5
1 drink per day	4	1.0
5-6 drinks per week	5	0.8
2-4 drinks per week	6	0.4
1 drink per week	7	0.2
1-3 drinks per month	8	0.1
Less than one drink per month	9	0.0

References

Negative affect and mortality in older persons.

Wilson RS, Bienias JL, Mendes de Leon CF, Evans DA, Bennett DA

Journal: American journal of epidemiology 2003 Nov 1; 158(9) 827-35

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q3smo_bl   Smoking quantity - baseline

```
                         Question:  During that period of your life when you were smoking
            cigarettes a day did you usually smoke? [ENTER NUMBER OF CIGARETTES: 1
            PACK = 20 CIGARETTES]
      Label:    Q3smo
      Length:   3
      Position:  N/A (see SAS Input Stmt)
      Coding:    Integer


        998 = REFUSAL (blaise code)
        999 = DON'T KNOW (blaise code)


Comment:  Answered in combination with variable: q4smo.
```

---

q4smo_bl   Smoking duration - baseline

```
                                Question:  Altogether, about how many years did you smoke this m
             [ENTER YEARS: 01 = 1 YEAR OR LESS]
      Label:     Q4smo
      Length:    3
      Position:  N/A (see SAS Input Stmt)
      Coding:    Integer


        998 = REFUSAL (blaise code)
        999 = DON'T KNOW (blaise code)


 Comment:  Answered in combination with variable: q3smo.
```

Smoking : smoking

Smoking status at baseline

Smoking status at baseline is measured with smoking-related data gathered at the baseline interview. Current and former smoking habits are assessed using the following questions:

1. Do you smoke cigarettes now?
2. Did you ever smoke cigarettes regularly?

Question 1 is used to determine current smokers, and question 2 identifies previous smokers. Participants who answer "no" to both questions are categorized as "never smoked" (see below).

Value	Response
0	Never smoked
1	Former smoker (does not currently smoke)
2	Current smoker

Note: Categories are mutually exclusive.

References

The relation of cigarette smoking to incident Alzheimer's disease in a biracial urban community population.
Aggarwal NT, Bienias JL, Bennett DA, Wilson RS, Morris MC, Schneider JA, Shah RC, Evans DA
Journal: Neuroepidemiology 2006; 26(3) 140-6

Medical Conditions

Medical Conditions > Blood pressure

History of hypertension : hypertension_cum

Self-reported history of hypertension

History of hypertension is based on self-report. For any given cycle, this variable indicates reported hypertension in past history or in at least one follow-up cycle up to and including that cycle. Participants are asked to respond "yes", "suspect or possible", or "no" to the following question:

Since your interview on [date of last interview], have you been told by a doctor, nurse, or therapist that you had high blood pressure?

Value	Coding
0	No history of hypertension
1	History of hypertension - Reported prior to or in the given cycle

Notes: At baseline interview, the question reads: Have you ever been told by a doctor, nurse, or therapist that you had high blood pressure?

The provided references describe the baseline version of this variable.

References

Religious Orders Study and Rush Memory and Aging Project.
Bennett DA, Buchman AS, Boyle PA, Barnes LL, Wilson RS, Schneider JA
Journal: Journal of Alzheimer's disease : JAD 2018 May 26; 64(s1) S161-S189

Medical Conditions > Cancer

cancer_cum

Medical Conditions - cancer - cumulative

```
                         Medical Conditions - Cancer - cumulative


value     coding
0         never reported in past history or in follow-up cycle
           up to this cycle (includes suspect or possible)
1         reported in past history or in at least 1 follow-up cycle up to this cycle



Baseline (visit = 00)
          1. Have you ever been told by a doctor, nurse or therapist that
                 you had cancer, malignancy or tumor of any type?


Follow-up (visit other than 00)
          1.  Since your last interview on (date of last evaluation), have
                 you ever been told by a doctor, nurse or therapist that
                 you had cancer, malignancy or tumor of any type?



                   1 = Yes
                   2 = Suspect or possible
                   3 = No
                   8 = REFUSAL (blaise code)
                   9 = DON'T KNOW (blaise code)
```

References

Participation in cognitively stimulating activities and risk of incident Alzheimer disease.
Wilson RS, Mendes De Leon CF, Barnes LL, Schneider JA, Bienias JL, Evans DA, Bennett DA
Journal: JAMA : the journal of the American Medical Association 2002 Feb 13; 287(6) 742-8

Depressive symptoms, cognitive decline, and risk of AD in older persons.
Wilson RS, Barnes LL, Mendes de Leon CF, Aggarwal NT, Schneider JS, Bach J, Pilat J, Beckett LA, Arnold SE,
Evans DA, Bennett DA
Journal: Neurology 2002 Aug 13; 59(3) 364-70

Negative affect and mortality in older persons.

Medical Conditions > Diabetes

diabetes_sr_rx   Medical History - diabetes

```
                         Medical History - Diabetes


value coding
0      Answered No on all Hx questions related to diabetes and
          never indicated taking a diabetes med
1      Answered Yes to one or more Hx questions related to diabetes or
          reported taking a diabetes med



Code-book variables:


q: Have you ever been told by a doctor, nurse or therapist that
    you had Diabetes, or sugar in the urine, or high blood sugar?



q: Has a doctor, nurse or therapist, ever told you to take insulin or
    injections for your high blood sugar?


q: Has a doctor, nurse, or therapist ever told you to take medicine by
     mouth for your high blood sugar?


Allowable codes:


    * 1 = Yes
    * 2 = Suspect or possible
    * 3 = No
    * 8 = REFUSAL
    * 9 = DON'T KNOW

  Taking medication for diabetes (diabetesrx): 270000
```

Other Forms : _bl, _ever

History of diabetes : dm_cum

Self-reported history of diabetes

History of diabetes is based on self-report. For any given cycle, this value indicates reported hypertension in past history or in at least one follow-up cycle up to and including that cycle. Participants are asked to respond

"yes", "suspect or possible", or "no" to each of the following questions:

1. Have you ever been told by a doctor, nurse, or therapist that you had diabetes, or sugar in the urine, or high blood sugar?
2. Has a doctor, nurse, or therapist ever told you to take insulin or injections for your high blood sugar?
3. Has a doctor, nurse, or therapist ever told you to take medicine by mouth for your blood sugar?

Value	Coding
0	No history of diabetes - Answered "no" or "suspect or possible" to all questions, in all cycles
1	History of diabetes - Answered "yes" to one or more questions or reported taking a diabetes medicine prior to or in the given cycle

References

Independent and Interactive Impacts of Hypertension and Diabetes Mellitus on Verbal Memory: A Coordinated Analysis of Longitudinal Data From England, Sweden, and the United States.
Kelly A, Calamia M, Koval A, Terrera GM, Piccinin AM, Clouston S, Hassing LB, Bennett DA, Johansson B, Hofer SM
Journal: Psychology and aging 2016 Feb 25; 31(3) 262-73

Medical Conditions > Head injury

headinjrloc_cum   Medical History - Head injury with loss of consciousness - cumulative

```
                                    Medical History - Head injury with loss of consciousness  - cumu

value   coding
0       never reported in past history or in follow-up cycle
            up to this cycle (includes suspect or possible)
1       reported in past history or in at least 1 follow-up cycle up to this cycle


Codebook questions
Baseline (visit = 00)
Q:Have you EVER had a head injury?
     Allowable codes:
        1 = Yes   (then branch to next question)
        2 = No
        8 = REFUSAL
        9 = DON'T KNOW


           IF YES then
               Q:Have you EVER lost consciousness because of a head injury?
                   Allowable codes:
                       1 = Yes
                       2 = Suspect or possible
                       3 = No
                       8 = REFUSAL
                       9 = DON'T KNOW



Follow-up (visit other than 00)
Q: Since (date of last evaluation), have you had a head injury?
       Allowable codes:
          1 = Yes
          2 = No
          8 = REFUSAL (blaise code)
          9 = DON'T KNOW (blaise code)

             IF YES then
                Q: Have you lost consciousness because of a head
                    injury that occurred since (date of last evaluation)?
```

```
                        Allowable codes:
                         1 = Yes
                         2 = Suspect or possible
                         3 = No
                         8 = REFUSAL (blaise code)
                         9 = DON'T KNOW (blaise code)
```

References

Participation in cognitively stimulating activities and risk of incident Alzheimer disease.
Wilson RS, Mendes De Leon CF, Barnes LL, Schneider JA, Bienias JL, Evans DA, Bennett DA
Journal: JAMA : the journal of the American Medical Association 2002 Feb 13; 287(6) 742-8

Depressive symptoms, cognitive decline, and risk of AD in older persons.
Wilson RS, Barnes LL, Mendes de Leon CF, Aggarwal NT, Schneider JS, Bach J, Pilat J, Beckett LA, Arnold SE, Evans DA, Bennett DA
Journal: Neurology 2002 Aug 13; 59(3) 364-70

Negative affect and mortality in older persons.
Wilson RS, Bienias JL, Mendes de Leon CF, Evans DA, Bennett DA
Journal: American journal of epidemiology 2003 Nov 1; 158(9) 827-35

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lostcons   Lost consciousness

```
                    HEAD INJURY


 Q:Have you EVER lost consciousness because of a head injury?


     Allowable codes:
        1 = Yes
        2 = Suspect or possible
        3 = No
        8 = REFUSAL
        9 = DON'T KNOW
```

Other Forms : _ever

Medical Conditions > Summary measures

med_con_sum_cum   History of medical condition - cumulative

This variable is the number of conditions reported
1. hypertension
2. diabetes
3. heart disease
4. cancer
5. thyroid disease
6. head injury with loss of consciousness.
7. stroke

```
value   coding
0       No conditions present
1       1 condition present
2       2 conditions present
3       3 conditions present
4       4 conditions present
5       5 conditions present
6       6 conditions present
7       7 conditions present
```

Seven medical conditions were present in at least 5 percent of persons
at baseline. We classified hypertension, diabetes, heart disease, cancer,
thyroid disease, and head injury with loss of consciousness based on
self-report that a physician previously identified the condition. A clinical
diagnosis of stroke was based on the history plus the neurologic examination.
We used the total number of conditions present at baseline as an index of
chronic illness, as previously described.

This variables covers the time period from prior to current cycle.

References

Participation in cognitively stimulating activities and risk of incident Alzheimer disease.
Wilson RS, Mendes De Leon CF, Barnes LL, Schneider JA, Bienias JL, Evans DA, Bennett DA
Journal: JAMA : the journal of the American Medical Association 2002 Feb 13; 287(6) 742-8

Depressive symptoms, cognitive decline, and risk of AD in older persons.
Wilson RS, Barnes LL, Mendes de Leon CF, Aggarwal NT, Schneider JS, Bach J, Pilat J, Beckett LA, Arnold SE,
Evans DA, Bennett DA
Journal: Neurology 2002 Aug 13; 59(3) 364-70

Negative affect and mortality in older persons.
Wilson RS, Bienias JL, Mendes de Leon CF, Evans DA, Bennett DA
Journal: American journal of epidemiology 2003 Nov 1; 158(9) 827-35

Medical Conditions > Thyroid

thyroid_cum   Medical Conditions - thyroid disease - cumulative

```
                            Medical History:  THYROID DISEASE - cumulative


value  coding
0      never reported in past history or in follow-up cycle
          up to this cycle (includes suspect or possible)
1      reported in past history or in at least 1 follow-up cycle up to this cycle



Baseline (visit = 00)
Q: Have you ever been told by a doctor, nurse or therapist that
    you had thyroid disease?


Follow-up (visit other than 00)
Q:Since your interview on (insert date of last evaluation), have you been
  told by a doctor, nurse or therapist that you had thyroid disease?


        Allowable codes:
            1 = Yes
            2 = Suspect or possible
            3 = No
            8 = REFUSAL
            9 = DON'T KNOW
```

References

Participation in cognitively stimulating activities and risk of incident Alzheimer disease.
Wilson RS, Mendes De Leon CF, Barnes LL, Schneider JA, Bienias JL, Evans DA, Bennett DA
Journal: JAMA : the journal of the American Medical Association 2002 Feb 13; 287(6) 742-8

Depressive symptoms, cognitive decline, and risk of AD in older persons.
Wilson RS, Barnes LL, Mendes de Leon CF, Aggarwal NT, Schneider JS, Bach J, Pilat J, Beckett LA, Arnold SE,
Evans DA, Bennett DA
Journal: Neurology 2002 Aug 13; 59(3) 364-70

Negative affect and mortality in older persons.
Wilson RS, Bienias JL, Mendes de Leon CF, Evans DA, Bennett DA
Journal: American journal of epidemiology 2003 Nov 1; 158(9) 827-35

Medical Conditions > Vascular

History of congestive
heart failure : chf_cum

Self-reported history of congestive heart failure

History of congestive heart failure (CHF) is based on self-report. For any given cycle, this variable indicates reported CHF in past history or in at least one follow-up cycle up to and including that cycle. Participants are asked to respond "yes", "suspect or possible", or "no" to the following question:

Since your last interview on [date of last interview], have you been told by a doctor, nurse, or therapist that you had congestive heart failure?

Value	Coding
0	No history of CHF
1	History of CHF - Reported prior to or in the given cycle

Note: At baseline interview, the question reads: Have you ever been told by a doctor, nurse, or therapist that you had congestive heart failure?

References

Religious Orders Study and Rush Memory and Aging Project.
Bennett DA, Buchman AS, Boyle PA, Barnes LL, Wilson RS, Schneider JA
Journal: Journal of Alzheimer's disease : JAD 2018 May 26; 64(s1) S161-S189

History of claudication : claudication_cum

Self-reported history of claudication

History of claudication is a marker of peripheral vascular disease and is based on self-report. For any given cycle, this variable indicates reported claudication in past history or in at least one follow-up cycle up to and including that cycle. Participants are asked the following questions:

1. Do you get pain in either leg while walking? [Yes/No]
2. If yes, in what part of your leg do you feel it? [Open-ended]

Value	Coding
0	No history of claudication - Never reported pain in legs or only reported pain that did not include the calves
1	History of claudication - Reported pain in calves while walking prior to or in the given cycle

References

Religious Orders Study and Rush Memory and Aging Project.
Bennett DA, Buchman AS, Boyle PA, Barnes LL, Wilson RS, Schneider JA
Journal: Journal of Alzheimer's disease : JAD 2018 May 26; 64(s1) S161-S189

History of heart conditions : heart_cum

Self-reported history of heart conditions

History of heart conditions is based on self-report. For any given cycle, this variable indicates reported heart conditions in past history or in at least one follow-up cycle up to and including that cycle. Participants are asked to respond "yes", "suspect or possible", or "no" to the following question:

Since your last interview on [date of last interview], have you been told by a doctor, nurse, or therapist that you had a heart attack or coronary, coronary thrombosis, coronary occlusion, or myocardial infarction?

Value	Coding
0	No history of heart conditions
1	History of heart conditions - reported prior to or in the given cycle

Notes: At baseline interview, the question reads: Have you ever been told by a doctor, nurse, or therapist that you had a heart attack or coronary, coronary thrombosis, coronary occlusion, or myocardial infarction?

The provided references describe the baseline version of this variable.

References

Religious Orders Study and Rush Memory and Aging Project.
Bennett DA, Buchman AS, Boyle PA, Barnes LL, Wilson RS, Schneider JA
Journal: Journal of Alzheimer's disease : JAD 2018 May 26; 64(s1) S161-S189

History of stroke :
stroke_cum

History of stroke based on clinician review

History of stroke is based on clinician review of self-report questions, neurological exam (when available), cognitive testing, and interview of participant. The clinician is first presented with an algorithmic diagnosis and has the ability to modify if necessary. For any given cycle, this variable indicates diagnosis of stroke in past history or in at least one follow-up cycle up to and including that cycle.

Clinician diagnosis of stroke:

Value	Coding
1	Highly probable
2	Probable
3	Possible
4	Not present

The clinician rating is then dichotomized into history of stroke = 1 or no history of stroke = 0.

Value	Coding
0	No history of stroke - Diagnosis of possible or not present in all cycles
1	History of stroke - Diagnosis of highly probable or probable in at least one cycle prior to or in the given cycle

Note: The provided references describe the baseline version of this variable.

References

Religious Orders Study and Rush Memory and Aging Project.
Bennett DA, Buchman AS, Boyle PA, Barnes LL, Wilson RS, Schneider JA
Journal: Journal of Alzheimer's disease : JAD 2018 May 26; 64(s1) S161-S189

Vascular disease burden -
3 items : vasc_3dis_sum

Cumulative vascular disease burden - Average of 3 items (ROS/MAP/MARS)

Vascular disease burden is computed using self-report questions for the following 3 items*:

1. Claudication (/radc/var/displayVariable.htm?id=547)
2. Stroke (/radc/var/displayVariable.htm?id=549)*
3. Heart conditions (/radc/var/displayVariable.htm?id=546)

Each item is given a value of 0 or 1 (see response options below). The cumulative score for vascular disease burden ranges from 0 to 3 and is the mean of the 3 individual scores multiplied by 3. Higher scores indicate greater vascular disease burden. The score for vascular disease burden is calculated if at least 2/3 of the questions are answered.

*In addition to self-report, evaluation of stroke is also based on neurological exam (when available), cognitive testing, and interview of participant, with which the physician may render a diagnosis of stroke.

Response values for each item:

Claudication

Value	Response
0	Never reported pain in legs or any reported pain that did not include the calves, from baseline to this cycle
1	Reported pain in legs while walking which includes calves, in at least one cycle from baseline to this cycle

Stroke

Value	Response
0	Stroke not present (Possible stroke dx or stroke not present), in all cycles, from baseline to this cycle
1	Stroke present (Highly probable or probable stroke dx) reported in at least one cycle from baseline to this cycle

Heart condition

Value	Response
0	Never reported in past history or in follow-up cycle up to this cycle (includes suspect or possible)
1	Reported in past history or in at least 1 follow-up cycle up to this cycle

Note: A 4-item version (/radc/var/displayVariable.htm?id=507) of this variable includes CHF questions and is available for MAP/MARS only.

References

Association of muscle strength with the risk of Alzheimer disease and the rate of cognitive decline in community-dwelling older persons.

Boyle PA, Buchman AS, Wilson RS, Leurgans SE, Bennett DA

Journal: Archives of neurology 2009 Nov; 66(11) 1339-44

Vascular disease burden - 4 items : vasc_4dis_sum

Cumulative vascular disease burden - Average of 4 items (MAP/MARS only)

Vascular disease burden is computed using self-report questions for the following 4 items*:

1. Claudication (/radc/var/displayVariable.htm?id=547)
2. Stroke (/radc/var/displayVariable.htm?id=549)*
3. Heart conditions (/radc/var/displayVariable.htm?id=546)
4. Congestive heart failure (/radc/var/displayVariable.htm?id=550)

Each item is given a value of 0 or 1 (see response options below). The cumulative score for vascular disease burden ranges from 0 to 4 and is the mean of the 4 individual scores multiplied by 4. Higher scores indicate greater vascular disease burden.

*In addition to self-report, evaluation of stroke is also based on neurological exam (when available), cognitive testing, and interview of participant, with which the physician may render a diagnosis of stroke.

Response values for each item:

Claudication

Value	Response
0	Never reported pain in legs or any reported pain that did not include the calves, from baseline to this cycle
1	Reported pain in legs while walking which includes calves, in at least one cycle from baseline to this cycle

Stroke

Value	Response
0	Stroke not present (Possible stroke dx or stroke not present), in all cycles, from baseline to this cycle
1	Stroke present (Highly probable or probable stroke dx) reported in at least one cycle from baseline to this cycle

Heart condition

Value	Response
0	Never reported in past history or in follow-up cycle up to this cycle (includes suspect or possible)
1	Reported in past history or in at least 1 follow-up cycle up to this cycle

Congestive Heart Failure

Value	Response
0	Never reported in past history or in follow-up cycle up to this cycle (includes suspect or possible)
1	Reported in past history or in at least 1 follow-up cycle up to this cycle

Note: This variable is available in MAP/MARS. ROS does not have CHF questions. Please use the 3-item version (/radc/var/displayVariable.htm?id=506) of this variable for analyses involving ROS.

References

Association of muscle strength with the risk of Alzheimer disease and the rate of cognitive decline in community-dwelling older persons.
Boyle PA, Buchman AS, Wilson RS, Leurgans SE, Bennett DA
Journal: Archives of neurology 2009 Nov; 66(11) 1339-44

Vascular disease risk factors : vasc_risks_sum	Cumulative vascular disease risk factors - Average of 3 items
	Vascular Disease Risk Factors is a composite measure of vascular risk burden. The variable is computed using self-report questions on the following 3 items: 1. Hypertension (/radc/var/displayVariable.htm?id=545) 2. Diabetes (/radc/var/displayVariable.htm?id=544) 3. Smoking history* Each item is given a value of 0 or 1 (see response options below). The score covers a time frame from baseline, including any past history, to the current cycle (i.e., cumulative). The cumulative score for vascular disease risk factors ranges from 0 to 3 and is the mean of the 3 individual scores multiplied by 3. Higher scores indicate higher vascular risk burden. Response values for each item: Hypertension

Value	Response

Value	Response
0	Never reported in past history or in follow-up cycle up to this cycle (includes suspect or possible)
1	Reported in past history or in at least 1 follow-up cycle up to this cycle

Diabetes

Value	Response
0	Never reported in past history or in follow-up cycle up to this cycle (includes suspect or possible)
1	Reported in past history or in at least 1 follow-up cycle up to this cycle

History of smoking

Value	Response
0	Never smoked
1	Former or current smoker

*Smoking history (smoke_hx) is based off smoking (/radc/var/displayVariable.htm?id=405) (never smoked vs. former smoker vs. current smoker).

References

The relation of cigarette smoking to incident Alzheimer's disease in a biracial urban community population.
Aggarwal NT, Bienias JL, Bennett DA, Wilson RS, Morris MC, Schneider JA, Shah RC, Evans DA
Journal: Neuroepidemiology 2006; 26(3) 140-6

Motor and Gait

Motor function : motor10   Motor function composite - Average of 10 tests

Motor and gait is a composite measure of global motor function calculated using the following items:

1. Purdue Pegboard Test (no. of pegs)
2. Finger-tapping test (taps/10 seconds)
3. Time to cover a distance of 8 feet (seconds)
4. Number of steps required to cover 8 feet (steps)
5. 360 degree turn time (seconds)
6. Number of steps to complete a 360 degree turn (steps)

7. Leg stand (seconds)
8. Toe stand (seconds)
9. Grip strength (kilograms)
10. Pinch strength (kilograms)

The composite measure is constructed by converting the performance score for each motor measure to a score using the mean from all participants at baseline and averaging all the motor tests together.

Notes: The listed reference (Buchman et al., J Experimental Gerontology, 2015) includes a tandem walk test which is not included in this version of the motor function composite variable.

The individual components of this variable are available upon request.

Other Forms : _l, _lv, _bl

References

Change in Motor Function and Adverse Health Outcomes in Older African Americans.
Buchman AS, Wilson RS, Leurgans SE, Bennett DA, Barnes LL
Journal: Experimental gerontology 2015 Jul 21; 7071-77

Motor dexterity :
motor_dexterity

Motor function partial composite: Dexterity

Motor dexterity is a composite measure of 2 motor tests: Purdue pegboard test and finger-tapping test.

Motor dexterity is measured bilaterally using the Purdue pegboard and an electronic tapper (Western Psychological Services, Los Angeles, California). Participants are asked to perform each test twice with each hand. The average of these 4 trials for the Purdue pegboard test represents a performance score, in number of pegs correctly inserted into the pegboard. The average of the 4 trials for the finger-tapping test represents a performance score, in number of finger taps.

The performance scores are then converted to a z-score, using the baseline mean and standard deviation of all study participants. The z-scores for the Purdue pegboard test and the finger-tapping test are then averaged to yield a composite measure of motor dexterity.

Other Forms : _l, _lv, _bl

References

Change in Motor Function and Adverse Health Outcomes in Older African Americans.
Buchman AS, Wilson RS, Leurgans SE, Bennett DA, Barnes LL
Journal: Experimental gerontology 2015 Jul 21; 7071-77

Motor gait : motor_gait

Motor function partial composite: Gait

Motor gait is a composite measure of gait created using 2 tests of lower extremity function: walking and turning 360 degrees.

Participants are asked to walk a distance of 8 feet twice, and to turn 360 degrees twice. Time and number of steps required to walk the distance or turn 360 degrees is recorded. The measures of time (in seconds) and number of steps are reciprocated (1 / 'original value') so that larger values indicate less time and fewer steps. The two values of each trial are then averaged to obtain the following performance scores: walking time, walking steps, turning time, and turning steps.

The 4 performance scores are then converted to a z-score, using the baseline mean and standard deviation of all study participants. Finally, the 4 z-scores are averaged to yield a composite measure of motor gait*.

*Motor gait score only calculated if two or more of the performance scores are nonmissing.

Other Forms : _l, _lv, _bl

References

Change in Motor Function and Adverse Health Outcomes in Older African Americans.
Buchman AS, Wilson RS, Leurgans SE, Bennett DA, Barnes LL
Journal: Experimental gerontology 2015 Jul 21; 7071-77

Motor hand strength : motor_handstreng

Motor function partial composite: Hand strength

Motor hand strength is a composite measure of 2 tests: grip and pinch strength.

Grip and pinch strength are measured bilaterally using the Jamar hydraulic hand and pinch dynamometers (Lafayette Instruments, Lafayette, Indiana). Participants are asked to perform each test twice with each hand. The average of these 4 trials for each test represent the performance scores for grip and for pinch strength, in pounds of pressure.

The performance scores are then converted to a z-score, using the baseline mean and standard deviation of all study participants, with men and women scaled separately. The z-scores for grip strength and pinch strength are then averaged to yield a composite measure of hand strength.

Other Forms : _l, _lv, _bl

References

Change in Motor Function and Adverse Health Outcomes in Older African Americans.

Buchman AS, Wilson RS, Leurgans SE, Bennett DA, Barnes LL
Journal: Experimental gerontology 2015 Jul 21; 7071-77