

## Coding Manual of Curated Gen 2/Omni 1 dataset

### Note:

1. This curated dataset contains information of Gen II and Omni 1 participants.
2. There are 5630 unique FHS participants (5124 Gen II and 506 Omni 1) within this dataset\*, with a total of 1484 variables.
3. Variables are generally grouped based on their origins (i.e., primary FHS dataset)
4. The format of the curated dataset is of wide format, with distinct variable names that allow users to tell the difference for repeated measurements of data of similar nature.
5. The first FHS core exam for Omni 1 participants started around the same time as the 6<sup>th</sup> FHS core exam for Gen II participants. However, the protocol that was used for the first FHS core exam for Omni 1 participants was that of Gen II's 5<sup>th</sup> FHS core exam. Hence, the baseline information extracted from the FHS core exams for all Omni 1 participants will have a suffix of "\_core5". The corresponding Omni 1 core exams used in this dataset is as follow:

Omni 1 core exam cycle	Suffix
1	_core5
2	_core7
3	_core8
4	_core9
5	_core10

6. For protocol descriptions and annotated forms of the primary datasets, refer to the respective documents of the individual source datasets.
7. Take note of the last verified date for outcome and mortality data:
  - a. Dementia – 12/31/2022
  - b. CVD/Stroke/AF – 12/31/2022
  - c. Cancer – 12/31/2019
  - d. Mortality/Last contact – 12/31/2021
8. Refer to [Appendix](#) for FHS core exam timeline (all cohorts)

*\*According to standard FHS practice, 1 Omni 1 participant is removed as they did not show up for the baseline FHS exam*

## Table of Contents

<a href="#"><u>Demographics</u></a>	3
<a href="#"><u>Anthropometric Measurements</u></a>	8
<a href="#"><u>Smoking</u></a>	9
<a href="#"><u>Blood Pressures, Heart Rate, Ventricular Hypertrophy and Antihypertensives</u></a>	10
<a href="#"><u>Blood glucose, Diabetes and Treatment</u></a>	12
<a href="#"><u>Lipid Panel and Hyperlipidemia Treatment</u></a>	14
<a href="#"><u>Creatinine</u></a>	16
<a href="#"><u>Neuropsychological assessments</u></a>	17
<a href="#"><u>Matching NP Dates with Core Exam Dates</u></a>	29
<a href="#"><u>Verified Outcomes</u></a>	
<a href="#"><u>Dementia and Related Variables</u></a>	30
<a href="#"><u>First Coronary Heart Disease (CHD) Event</u></a>	33
<a href="#"><u>First Stroke (CVA) Event</u></a>	34
<a href="#"><u>First Atrial Fibrillation (AF) Event</u></a>	35
<a href="#"><u>First Cancer and Related Variables</u></a>	36
<a href="#"><u>Survival Information</u></a>	39
<a href="#"><u>Prevalence</u></a>	40
<a href="#"><u>FHS CVD Risk Score</u></a>	44
<a href="#"><u>FHS Risk Stroke Profile</u></a>	47
<a href="#"><u>Mini-Mental State Examination (MMSE)</u></a>	51
<a href="#"><u>Center for Epidemiologic Studies Depression Scale (CES-D)</u></a>	52
<a href="#"><u>Neuropath Data and Availability</u></a>	59
<a href="#"><u>Appendix</u></a>	60
<a href="#"><u>Revisions</u></a>	61

## Demographics

### IDTYPE

**Variable name:** idtype

**Description:** Framingham Heart Study cohort identifier

Code or Value	Description	Count
1	Gen 2	5124
7	Omni 1	506

### ID

**Variable name:** id

**Description:** Framingham Heart Study participant identifier within cohort

**IDTYPE and ID must be used together to form a unique study participant identification number or use variable “framid” instead**

Code or Value	Description
0 – 9999	Range of values

**Note:** To preserve confidentiality, the exact range for the ID is not reflected in the coding manual.

### FRAMID

**Variable name:** Framid

**Description:** Framingham ID assigned to each participant

Code or Value	Description
80001 – 89999	Gen 2
700003 – 709999	Omni 1

**Note:** To preserve confidentiality, the exact range for the ID is not reflected in the coding manual.

### SEX

**Variable name:** sex

**Description:** Gender

## Demographics

Code or Value	Description
1	Male
2	Female

### RACE\_CODE

**Variable name:** RACE\_CODE

**Description:** RACE and ETHNICITY - Summary code string from combining primary codes given at different exams

### Information extracted from “vr\_raceall\_2008\_a\_0712”

Code or Value	Description
W	White
B	Black
H	Hispanic or Latino
E	Not Hispanic or Latino
A	Asian
P	Native Hawaiian or Pacific Islander
N	American Indian or Alaskan Native
X	Asian Indian or Pacific Islander
R	Prefer not to answer
O	Other
.	Unknown

**Note:** RACE\_CODE is constructed using primary codes W, B, H etc.

Race at different time points (exams) were combined to form RACE\_CODE to indicate all races reported by participant over time.

Example1: RACE\_CODE = 'EW' participant reported 'Not Hispanic or Latino' (H701) and 'White' (H702).

Example2: RACE\_CODE = 'HH' participant reported 'Hispanic or Latino' (RACEATOMNI1) and 'Hispanic or Latino' (H700).

Example3: RACE\_CODE = 'BEB' participant reported 'Black' (RACEATOMNI1), 'Not Hispanic or Latino' (H701) and 'Black' (H703).

Example4: RACE\_CODE = 'ER' participant reported 'Not Hispanic or Latino' (H701) and 'Prefer not to answer' (H707).

**All Gen 1, 2 and 3 participants with missing race code information are assumed as Non-Hispanic White**

Character variable

## Demographics

### RACE

**Variable name:** Race

**Description:** Race and ethnicity

Code or Value	Description
1	Non-Hispanic White
2	Black
3	Asian/Indian/Pacific Islander
4	Hispanic/Latino
5	Others

### DATE\_CORE1 — DATE\_CORE10

**Variable name:** date\_core1 — date\_core10

**Description:** Exam date of core exam 1 — 10 (MMDDYYYY)

**Note:** Date includes month, day and year

Offspring Exam 10/Omni 1 Exam 5 exams (date\_core10) were paused in March 2020 due to the COVID-19 pandemic. Hybrid Exam began in June 15, 2020 and consists of: (1) Televisit portion completed remotely through zoom or telephone (2) Onsite (Follow-up) portion completed onsite or offsite (began September 2020). Some participants requested to only complete the televisit portion of the exam, and did not do any in-person follow-up.

### DATE\_FU\_CORE10

**Variable name:** date\_FU\_core10

**Description:** Date of In-person Follow-up After Televisit for Exam 10 (MMDDYYYY)

**Note:** Date includes month, day and year

This variable represents the date of in-person follow-up (onsite or offsite) after the virtual telvisit was conducted at Offspring Exam 10/Omni 1 Exam 5 exams (date\_core10)

### STATUS\_CORE10

**Variable name:** Status\_core10

**Description:** Status of Offspring Exam 10/Omni 1 Exam 5 exams (date\_core10)

Code or Value	Description
---------------	-------------

## Demographics

1	Attended entire exam
2	Attended televisit only
.	Unknown

**Note:** Use this variable to separate full exams from those who had medical history and tech questions only with no in-person follow-up (televisit) for Offspring Exam 10/Omni 1 Exam 5 exams (date\_core10)

### AGE\_CORE1 — AGE\_CORE10

**Variable name:** Age\_core1 — Age\_core10

**Description:** Age at exam 1 — 10

### EDU\_CORE2

**Variable name:** edu\_core2

**Description:** Years of education (obtained from FHS core exam 2)

**Note:** This variable is only available for Gen II participants

Education information is also collected during NP testing. Refer to variable “education\_B1”, “education\_B2” and “educg”

### EDU\_CORE8

**Variable name:** edu\_core8

**Description:** What is the highest degree or level of school you have completed? (if currently enrolled, mark the highest grade completed, degree received)

Code or Value	Description
0	No schooling
1	Grades 1 – 8
2	Grades 9 – 11
3	Completed high school (12 <sup>th</sup> grade) or GED
4	Some college, but no degree
5	Technical school certificate
6	Associate degree (Junior college AA, AS)
7	Bachelor's degree (BA, AB, BS)
8	Graduate or professional degree (Master's, Doctorate, MD, etc.)
.	Unknown

## Demographics

**Note:** Education information is also collected during NP testing. Refer to variable “education\_B1”, “education\_B2” and “educg”

### EDU\_ALL

**Variable name:** edu\_all

**Description:** Highest education level attained

Code or Value	Description
0	High school did not graduate
1	High school graduate
2	Some college
3	College graduate
.	Unknown

**Note:**

This variable is derived from core exams, neuropsychological exams, and psychosocial questionnaires. Education level was determined by cohort based on available data, with the following priority order.

- Original cohort:
  1. Exam 1
  2. Psychosocial
  3. NP wave 2
  4. NP wave 1
- Offspring cohort
  1. NP wave 2
  2. NP wave 1
  3. Exam 2
  4. Psychosocial
  5. Exam 8 **(additional check on top the harmonized education protocol)**
- Omni 1 cohort
  1. NP wave 2
  2. NP wave 1
  3. Exam 3
- Generation 3, NOS, and Omni 2 cohorts
  1. Exam 2
  2. Exam 1
  3. NP wave 1

**HEIGHT\_CORE1 — HEIGHT\_CORE10**

**Variable name:** Height\_core1 — Height\_core10

**Description:** Height at exam 1 — 10

**WEIGHT\_CORE1 — WEIGHT\_CORE10**

**Variable name:** Weight\_core1 — Weight\_core10

**Description:** Weight at exam 1 — 10

**BMI\_CORE1 — BMI\_CORE10**

**Variable name:** BMI\_core1 — BMI\_core10

**Description:** Body mass index at exam 1 — 10

**Hip and waist circumferences were only available from core exam 4 onwards**

**HIP\_CORE4 — HIP\_CORE7, HIP\_CORE10**

**Variable name:** Hip\_core4 — Hip\_core7, Hip\_core10

**Description:** Hip girth at Exam 4 — 7, 9

**Note:** Hip girth was not measured for exam 8.

**WAIST\_CORE4 — WAIST\_CORE10**

**Variable name:** Waist\_core4 — Waist\_core10

**Description:** Waist girth at Exam 4 — 10



## Smoking

### SMOKING\_CORE1 — SMOKING\_CORE10

**Variable name:** Smoking\_core1 — Smoking\_core10

**Description:** Current smoking status at exam 1 — 10

Code or Value	Description
0	Not a current smoker
1	Current Smoker
.	Unknown

### SMOKING\_EVER\_CORE2 — SMOKING\_EVER\_CORE10

**Variable name:** Smoking\_ever\_core2 — Smoking\_ever\_core10

**Description:** History of smoking status at exam 2 — 10

Code or Value	Description
0	Non-smoker
1	Current Smoker
2	Ex-smoker
.	Unknown

### CPD\_CORE1 — CPD\_CORE10

**Variable name:** CPD\_core1 — CPD\_core10

**Description:** Cigarettes per day at Exam 1 — 10

#### **SBP\_CORE1 — SBP\_CORE10**

**Variable name:** SBP\_core1 — SBP\_core10

**Description:** Systolic blood pressure at exam 1 — 10

#### **DBP\_CORE1 — DBP\_CORE10**

**Variable name:** DBP\_core1 — DBP\_core10

**Description:** Diastolic blood pressure at exam 1 — 10

#### **VENT\_RT\_CORE1 — VENT\_RT\_CORE10**

**Variable name:** Vent\_rt\_core1 — Vent\_rt\_core10

**Description:** Ventricular beat by ECG at Exam 1 — 10

#### **DLVH\_CORE1 — DLVH\_CORE10**

**Variable name:** DLVH\_core1 — DLVH\_core10

**Description:** Definite left ventricular hypertrophy, Exam 1 — 10

Code or Value	Description
0	No
1	Yes
.	Unknown

#### **HRX\_CORE1 — HRX\_CORE10**

**Variable name:** HRX\_core1 — HRX\_core10

**Description:** Treated for hypertension at Exam 1 — 10

Code or Value	Description
0	No
1	Yes
.	Unknown

#### **HTNMED\_CORE10**

**Variable name:** HTNMED\_core10

**Description:** Taking blood pressure medication for any reason at Exam 10

Code or Value	Description
---------------	-------------

## Blood Pressures, Heart Rate, Ventricular Hypertrophy and Antihypertensives

0	No
1	Yes
.	Unknown

**Note:** HTNMED\_CORE10=1 when a participant had a hypertension medication on file at their exam even if the medication was not specifically to treat high blood pressure or hypertension. This variable was added for Gen 2 Exam 10/Omni 1 Exam 5 based on guidance from investigators.

**BG\_CORE1 — BG\_CORE10**

**Variable name:** BG\_core1 — BG\_core10

**Description:** Random blood glucose at Exam 1 — 10

**Fasting blood test were only available from core exam 3 onwards**

**FASTING\_BG\_CORE3 — FASTING\_BG\_CORE10**

**Variable name:** Fasting\_BG\_core3 — Fasting\_BG\_core10

**Description:** Fasting blood glucose at Exam 3 — 10

**DMRX\_CORE1 — DMRX\_CORE10**

**Variable name:** DMRX\_core1 — DMRX\_core10

**Description:** Treated for diabetes at Exam 1 — 10

Code or Value	Description
0	No
1	Yes
.	Unknown

**DMMED\_CORE10**

**Variable name:** DMMED\_core10

**Description:** Taking diabetes medication for any reason at Exam 10

Code or Value	Description
0	No
1	Yes
.	Unknown

**Note:** DMMED\_CORE10=1 when a participant had a diabetes medication on file at their exam even if the medication was not specifically to treat high blood sugar or diabetes. This variable was added for Gen 2 Exam 10/Omni 1 Exam 5 based on guidance from investigator.

**CURR\_DM\_CORE1 — CURR\_DM\_CORE10**

**Variable name:** Curr\_dm\_core1 — Curr\_dm\_core10

**Description:** Current Diabetes status, Exam 1 — 10

Code or Value	Description
0	No
1	Yes
.	Unknown or did not attend Exam 1 — 10

**HX\_DM\_CORE1 — HX\_DM\_CORE10**

**Variable name:** Hx\_dm\_core1 — Hx\_dm\_core10

**Description:** History of diabetes, Exam 1 — 10

Code or Value	Description
0	No
1	Yes
.	Unknown or did not attend Exam 1 — 10

**TC\_CORE1 — TC\_CORE10**

**Variable name:** TC\_core1 — TC\_core10

**Description:** Total cholesterol at Exam 1 — 10

**TRIGLYCERIDES\_CORE1 — TRIGLYCERIDES\_CORE10**

**Variable name:** Triglycerides\_core1 — Triglycerides\_core10

**Description:** Triglycerides at Exam 1 — 10

**CALC\_LDL\_CORE1 — CALC\_LDL\_CORE10**

**Variable name:** Calc\_LDL\_core1 — Calc\_LDL\_core10

**Description:** Calculated LDL-Cholesterol at Exam 1 — 10

**HDL\_CORE1 — HDL\_CORE10**

**Variable name:** HDL\_core1 — HDL\_core10

**Description:** HDL-Cholesterol at Exam 1 — 10

**LIPRX\_CORE1 — LIPRX\_CORE10**

**Variable name:** LIPRX\_core1 — LIPRX\_core10

**Description:** Treated for lipids at Exam 1 — 10

Code or Value	Description
0	No
1	Yes
.	Unknown

**Note:** From Exam 10 onwards, LIPRX variable is no longer used. Instead, the following variables have been added:

- LIPMED - Taking lipid lowering medication for any reason
- STATIN - Taking statin for any reason

Based on previous LIPRX protocol, LIPRX\_core10 is derived using the following logic to facilitate longitudinal data use:

If LIPMED\_core10 = 1 then LIPRX\_core10 = 1;  
Else if LIPMED\_core10 = 0 then LIPRX\_core10 = 0;  
Else LIPRX\_core10 = . ;

### LIPMED\_CORE10

**Variable name:** LIPMED\_core10

**Description:** Taking lipid lowering medication for any reason at Exam 10

Code or Value	Description
0	No
1	Yes
.	Unknown

**Note:** LIPMED\_CORE10=1 when a participant had a lipid lowering medication on file at their exam even if the medication was not specifically to treat high blood cholesterol or high triglycerides. This variable was added for Gen 2 Exam 10/Omni 1 Exam 5 based on guidance from investigators.

### STATIN\_CORE10

**Variable name:** STATIN\_core10

**Description:** Taking statin for any reason at Exam 10

Code or Value	Description
0	No
1	Yes
.	Unknown

**Note:** STATIN\_CORE10=1 when a participant had a statin medication on file at their exam even if the medication was not specifically to treat high blood cholesterol or high triglycerides. This variable was added for Gen 2 Exam 10/Omni 1 Exam 5 based on guidance from investigators.

## Creatinine

**CREATININE\_CORE2, CREATININE\_CORE5 — CREATININE\_CORE10**

**Variable name:** Creatinine\_core2, Creatinine\_core5 — Creatinine\_core10

**Description:** Serum Creatinine at Exam 2, 5 — 10



#### EXAMDATE\_NP1 — EXAMDATE\_NP12

**Variable name:** examdate\_NP1 — exam\_NP12  
**Description:** Date of the first — twelfth NP exam (MMDDYYYY)

#### AGE\_NP1 — AGE\_NP12

**Variable name:** age\_NP1 — age\_NP12  
**Description:** Age of participant at first — twelfth NP exam

#### BATTERY\_NP1 — BATTERY\_NP12

**Variable name:** battery\_NP1 — battery\_NP12  
**Description:** Form of the battery used for first — twelfth NP exam

Code or Value	Description
1	Short form
2	Long form
.	Unknown

#### MARITAL\_NP1 — MARITAL\_NP12

**Variable name:** marital\_NP1 — marital\_NP12  
**Description:** Current marital status, NP exam 1 — 12

Code or Value	Description
1	Single
2	Married
3	Widowed
4	Divorced
5	Separated
6	Other
.	Unknown

#### HANDEDNESS\_NP1 — HANDEDNESS\_NP12

**Variable name:** handedness\_NP1 — handedness\_NP12  
**Description:** Subject's handedness, NP Exam 1 — 12 (self-reporting)

Code or Value	Description
---------------	-------------

## Neuropsychological assessment

1	Right
2	Left
3	Ambidextrous
.	Unknown

### EMPLOYMENT\_NP1 — EMPLOYMENT\_NP12

**Variable name:** employment\_NP1 — employment\_NP12  
**Description:** Employment status at first — twelfth NP exam

Code or Value	Description
0	Works full time
1	Works part-time
2	Not working due to disability
3	Retired, no longer works
4	Unemployed (expects to return to work)
5	Never worked for pay outside home
6	Volunteer
7	Other
10	Full-time student
11	Homemaker, expects to return to work
.	Unknown

### EDUCATION\_B1\_NP1 — EDUCATION\_B1\_NP12

**Variable name:** education\_b1\_NP1 — education\_b1\_NP12  
**Description:** Highest Education Level Completed (Collected from NP battery1), NP Exam 1 — 12

Code or Value	Description
0	None
1	4th grade or less
2	5th, 6th, or 7th grades
3	Grade school graduate; no high school
4	High school, did not graduate
5	High school diploma
6	College, did not graduate
7	College graduate
8	Postgraduate school
10	High school and business college, nursing school, music school, or art school only

.	Unknown
---	---------

**EDUCATION\_B2\_NP1 — EDUCATION\_B2\_NP12**

**Variable name:** education\_b2\_NP1 — education\_b2\_NP12

**Description:** Highest Education Level Completed (Collected from NP battery2), NP Exam 1 — 12

Code or Value	Description
0	None
1	4th grade or less
2	5th, 6th, or 7th grades
3	Grade school graduate; no high school
4	High school, did not graduate
5	High school diploma
6	GED
7	Some college course-work for credit (no certificate or degree)
8	Junior college – earned certificate or degree (e.g., AD)
9	Business college, nursing school, music school, art school
10	Technical School (post-HS) – earned certificate
11	Four Year College, partial
12	Four Year College, graduate
13	Graduate School, partial (no Masters degree)
14	Graduate School (Masters)
15	Graduate School (Doctorate)
.	Unknown

**EDUCG\_NP1 — EDUCG\_NP12**

**Variable name:** educg\_NP1 — educg\_NP12

**Description:** Education group (derived variable), NP Exam 1 — 12

Code or Value	Description
0	High school did not graduate
1	High school graduate
2	Some college

## Neuropsychological assessment

3	College graduate
.	Unknown

### OCCUP\_B1\_NP1 — OCCUP\_B1\_NP12

**Variable name:** occup\_b1\_NP1 — occup\_b1\_NP12

**Description:** Occupation from NP battery1, NP Exam 1 — 12

Code or Value	Description
1	Major professionals
2	Business managers
3	Administrative personnel
4	Clerical and sales workers
5	Skilled manual employees
6	Semi-skilled employees
7	Unskilled employed
8	Never employed

### OCCUP\_B2\_NP1 — OCCUP\_B2\_NP12

**Variable name:** occup\_b2\_NP1 — occup\_b2\_NP12

**Description:** Occupation from NP battery2, NP Exam 1 — 12

Code or Value	Description
1	Professional, Technical and Related Occupations
2	Executive, Administrative, and Managerial Occupations
3	Sales Occupations
4	Administrative Support Occupations, Including Clerical
5	Precision Production, Craft, and Repair Occupations
6	Machine Operators, Assemblers, and Inspectors
7	Transportation and Material Moving Occupations
8	Handlers, Equipment Cleaners, Helpers, and Laborers
9	Service Occupations, Except Private Household

10	Never employed for pay (e.g., homemaker)
.	Unknown

#### LMI\_NP1 — LMI\_NP12

**Variable name:** lmi\_NP1 — lmi\_NP12

**Description:** Total number correct verbatim and paraphrases from “Logical Memories – Immediate Recall”, NP Exam 1 — 12 (Range: 0 – 23)

#### LMD\_NP1 — LMD\_NP12

**Variable name:** lmd\_NP1 — lmd\_NP12

**Description:** Total number correct verbatim and paraphrases from “Logical Memories – Delayed Recall”, NP Exam 1 — 12 (Range: 0 – 23)

#### LMR\_NP1 — LMR\_NP12

**Variable name:** lmr\_NP1 — lmr\_NP12

**Description:** Logical Memories – Recognition, NP Exam 1 — 12 (Range: 0 – 11)

#### LMI\_JOE\_NP1 — LMI\_JOE\_NP12

**Variable name:** lmi\_joe\_NP1 — lmi\_joe\_NP12

**Description:** Total number of correct verbatim and paraphrases from WMS-III “Logical Memory – Immediate Recall” (only for Joe Garcia), NP Exam 1 — 12 (Range: 0 – 23)

#### LMD\_JOE\_NP1 — LMD\_JOE\_NP2

**Variable name:** lmd\_joe\_NP1 — lmd\_joe\_NP2

**Description:** Total number of correct verbatim and paraphrases from WMS-III “Logical Memory – Delayed Recall” (only for Joe Garcia), NP Exam 1 — 12 (Range: 0 – 23)

#### LMR\_JOE\_NP1 — LMR\_JOE\_NP12

**Variable name:** lmr\_joe\_NP1 — lmr\_joe\_NP12

**Description:** Total number of correct verbatim and paraphrases from WMS-III “Logical Memory – Recognition” (only for Joe Garcia), NP Exam 1 — 12 (Range: 0 – 11)

#### LM\_STORY\_NP1 — LM\_STORY\_NP12

**Variable name:** LM\_story\_NP1 — LM\_story\_NP12

**Description:** Which logical memory story was administered? (NP Exam 1 — 12)

Code or Value	Description
1	Anna Thompson ONLY
2	Joe Garcia ONLY
3	Anna Thompson AND Joe Garcia
.	Neither story

#### VRI\_NP1 — VRI\_NP12

**Variable name:** vri\_NP1 — vri\_NP12  
**Description:** Total points scored from “Visual Reproductions – Immediate Recall”, NP Exam 1 — 12 (Range: 0 – 14)

#### VRD\_NP1 — VRD\_NP12

**Variable name:** vrd\_NP1 — vrd\_NP12  
**Description:** Total points scored from “Visual Reproductions – Delayed Recall”, NP Exam 1 — 12 (Range: 0 – 14)

#### VRR\_NP1 — VRR\_NP12

**Variable name:** vrr\_NP1 — vrr\_NP12  
**Description:** Total points scored from “Visual Reproductions – Recognition”, NP Exam 1 — 12 (Range: 0 – 4)

#### PASI\_NP1 — PASI\_NP12

**Variable name:** pasi\_NP1 — pasi\_NP12  
**Description:** Total Score from “Paired Associate Learning – Immediate Recall”, NP Exam 1 — 12 (Range 0 – 21)

#### PASI\_E\_NP1 — PASI\_E1\_NP2

**Variable name:** pasi\_e\_NP1 — pasi\_e\_NP12  
**Description:** Easy Score from “Paired Associate Learning – Immediate Recall”, NP Exam 1 — 12 (Range: 0 – 18)

#### PASI\_H\_NP1 — PASI\_H\_NP12

**Variable name:** pasi\_h\_NP1 — pasi\_h\_NP12

**Description:** Hard Score from “Paired Associate Learning – Immediate Recall”, NP Exam 1 — 12 (Range: 0 – 12)

**PASD\_NP1 — PASD\_NP12**

**Variable name:** pasd\_NP1 — pasd\_NP12

**Description:** Total Score from “Paired Associate Learning – Delayed Recall”, NP Exam 1 — 12 (Range: 0 – 10)

**PASD\_E\_NP1 — PASD\_E\_NP12**

**Variable name:** pasd\_e\_NP1 — pasd\_e\_NP12

**Description:** Easy Score from “Paired Associate Learning – Delayed Recall”, NP Exam 1 — 12 (Range: 0 – 6)

**PASD\_H\_NP1 — PASD\_H\_NP12**

**Variable name:** pasd\_h\_NP1 — pasd\_h\_NP12

**Description:** Hard Score from “Paired Associate Learning – Delayed Recall”, NP Exam 1 — 12 (Range: 0 – 4)

**PASR\_NP1 — PASR\_NP12**

**Variable name:** pasr\_NP1 — pasr\_NP12

**Description:** Total Score from “Paired Associate Learning - Recognition”, NP Exam 1 — 12 (Range: 0 – 10)

**DSF\_NP1 — DSF\_NP12**

**Variable name:** dsf\_NP1 — dsf\_NP12

**Description:** Highest string from “Digits Forward Span”, NP Exam 1 — 12 (Range: 0 – 9)

**DSB\_NP1 — DSB\_NP12**

**Variable name:** dsb\_NP1 — dsb\_NP12

**Description:** Highest string from “Digits Backward Span”, NP Exam 1 — 12 (Range: 0 – 8)

**TRAILSA\_NP1 — TRAILSA\_NP12**

**Variable name:** trailsA\_NP1 — trailsA\_NP12

**Description:** Time in minutes to finish “Trail A”, NP Exam 1 — 12 – capped at 7 minutes (Range: 0.10 – 7.0)

#### **TRAILS<sub>B</sub>\_NP1 — TRAILS<sub>B</sub>\_NP12**

**Variable name:** trails<sub>B</sub>\_NP1 — trails<sub>B</sub>\_NP12  
**Description:** Time in minutes to finish “Trail B”, NP Exam 1 — 12 — capped at 10 minutes (Range: 0.32 — 10.0)

#### **SIM\_NP1 — SIM\_NP12**

**Variable name:** sim\_NP1 — sim\_NP12  
**Description:** Total raw score from “Similarities Test”, NP Exam 1 — 12 (Range: 0 — 26)

#### **HVOT\_NP1 — HVOT\_NP12**

**Variable name:** hvot\_NP1 — hvot\_NP12  
**Description:** Total score from “Hooper Visual Organization Test”, NP Exam 1 — 12 (Range: 0 — 30)

#### **BNT10\_NP1 — BNT10\_NP12**

**Variable name:** bnt10\_NP1 — bnt10\_NP12  
**Description:** Correct score without cue from 10 items of “Boston Naming Test”, NP Exam 1 — 12 (Range: 0 — 10)

#### **BNT10\_SEMANTIC\_NP1 — BNT10\_SEMANTIC\_NP12**

**Variable name:** bnt10\_semantic\_NP1 — bnt10\_semantic\_NP12  
**Description:** Correct score with semantic cue from 10 items of “Boston Naming Test”, NP Exam 1 — 12 (Range: 0 — 10)

#### **BNT10\_PHONEMIC\_NP1 — BNT10\_PHONEMIC\_NP12**

**Variable name:** bnt10\_phonemic\_NP1 — bnt10\_phonemic\_NP12  
**Description:** Correct score with phonemic cue from 10 items of “Boston Naming Test”, NP Exam 1 (Range: 0 — 10)

#### **BNT30\_NP1 — BNT30\_NP12**

**Variable name:** bnt30\_NP1 — bnt30\_NP12  
**Description:** Correct score without cue from 30 items of “Boston Naming Test”, NP Exam 1 — 12 (Range: 0 — 30)

#### **BNT30\_SEMANTIC\_NP1 — BNT30\_SEMANTIC\_NP12**

**Variable name:** bnt30\_semantic\_NP1 — bnt30\_semantic\_NP12



**Description:** Correct score with semantic cue from 30 items of “Boston Naming Test”, NP Exam 1 — 12 (Range: 0 – 30)

**BNT30\_PHONEMIC\_NP1 — BNT30\_PHONEMIC\_NP12**

**Variable name:** bnt30\_phonemic\_NP1 — bnt30\_phonemic\_NP12

**Description:** Correct score with phonemic cue from 30 items of “Boston Naming Test”, NP Exam 1 — 12 (Range: 0 – 30)

**BNT36\_NP1 — BNT36\_NP12**

**Variable name:** bnt36\_NP1 — bnt36\_NP12

**Description:** Correct score without cue from 36 items of “Boston Naming Test”, NP Exam 1 — 12 (Range: 0 – 36)

**BNT36\_SEMANTIC\_NP1 — BNT36\_SEMANTIC\_NP12**

**Variable name:** bnt36\_semantic\_NP1 — bnt36\_semantic\_NP12

**Description:** Correct score with semantic cue from 36 items of “Boston Naming Test”, NP Exam 1 — 12 (Range: 0 – 36)

**BNT36\_PHONEMIC\_NP1 — BNT36\_PHONEMIC\_NP12**

**Variable name:** bnt36\_phonemic\_NP1 — bnt36\_phonemic\_NP12

**Description:** Correct score with phonemic cue from 36 items of “Boston Naming Test”, NP Exam 1 — 12 (Range: 0 – 36)

**FINGTAPR\_NP1 — FINGTAPR\_NP12**

**Variable name:** FingTapR\_NP1 — FingTapR\_NP12

**Description:** Mean of five trials of “Finger-tapping” of right hand, NP Exam 1 — 12

**FINGTAPL\_NP1 — FINGTAPL\_NP12**

**Variable name:** FingTapL\_NP1 — FingTapL\_NP12

**Description:** Mean of five trials of “Finger-tapping” of left hand, NP Exam 1 — 12

**WRAT\_NP1 — WRAT\_NP12**

**Variable name:** wrat\_NP1 — wrat\_NP12

**Description:** Raw Score from “Wide Range Achievement Test –Reading”, NP Exam 1 — 12 (Range: 15 – 57)

**FAS\_NP1 — FAS\_NP12**

**Variable name:** fas\_NP1 — fas\_NP12

**Description:** The total words from the Controlled Oral Word Association Test, NP Exam 1 — 12

#### **FAS\_ANIMAL\_NP1 — FAS\_ANIMAL\_NP12**

**Variable name:** fas\_animal\_NP1 — fas\_animal\_NP12

**Description:** The total words from the animal part of the Category Naming Test, NP Exam 1 — 12

**Note:** this variable only available on “NP battery2”

#### **BD\_NP1 — BD\_NP12**

**Variable name:** bd\_NP1 — bd\_NP12

**Description:** Total Score from “Block Design”, NP Exam 1 — 12 (Range: 0 – 26)

#### **WAIS\_NP1 — WAIS\_NP12**

**Variable name:** wais\_NP1 — wais\_NP12

**Description:** Total correct answers from “WAIS test”, NP Exam 1 — 12 (Range: 0 – 29)

#### **CODING\_CORRECT\_NP1 — CODING\_CORRECT\_NP12**

**Variable name:** coding\_correct\_NP1 — coding\_correct\_NP12

**Description:** Total correct from WAIS-IV Coding, NP Exam 1 — 12

#### **CODING\_INCORRECT\_NP1 — CODING\_INCORRECT\_NP12**

**Variable name:** coding\_incorrect\_NP1 — coding\_incorrect\_NP12

**Description:** Total incorrect from WAIS-IV Coding, NP Exam 1 — 12

#### **INCIDENTAL\_PAISED\_NP1 — INCIDENTAL\_PAISED\_NP12**

**Variable name:** Incidental\_paired\_NP1 — Incidental\_paired\_NP12

**Description:** Total correct from Paired Incidental Learning (Given the number from Coding, the participant had to draw the appropriate symbol associated with that number; each number is presented twice), NP Exam 1 — 12

#### **INCIDENTAL\_FREE\_NP1 — INCIDENTAL\_FREE\_NP12**

**Variable name:** Incidental\_free\_NP1 — Incidental\_free\_NP12

**Description:** Total correct from Free Recall Incidental Learning (The participant was asked to draw all the symbols they remember from the Coding task, without having to identify which number accompanied the symbol), NP Exam 1 — 12

**MATH\_CORRECT\_NP1 — MATH\_CORRECT\_NP12**

**Variable name:** Math\_correct\_NP1 — Math\_correct\_NP12

**Description:** Total correct responses for Math Fluency, NP Exam 1 — 12

**MATH\_INCORRECT\_ADD\_NP1 — MATH\_INCORRECT\_ADD\_NP12**

**Variable name:** Math\_incorrect\_add\_NP1 — Math\_incorrect\_add\_NP12

**Description:** Incorrect responses for addition problems, NP Exam 1 — 12

**MATH\_INCORRECT\_SUB\_NP1 — MATH\_INCORRECT\_SUB\_NP12**

**Variable name:** Math\_incorrect\_sub\_NP1 — Math\_incorrect\_sub\_NP12

**Description:** Incorrect responses for subtraction problems, NP Exam 1 — 12

**MATH\_INCORRECT\_MUL\_NP1 — MATH\_INCORRECT\_MUL\_NP12**

**Variable name:** Math\_incorrect\_mul\_NP1 — Math\_incorrect\_mul\_NP12

**Description:** Incorrect responses for multiplication problems, NP Exam 1 — 12

**RIGHT\_OPEN\_NP1 — RIGHT\_OPEN\_NP12**

**Variable name:** right\_open\_NP1 — right\_open\_NP12

**Description:** Seconds from balance test on right leg with eyes open (maximum time is set at 30 seconds), NP Exam 1 — 12

**LEFT\_OPEN\_NP1 — LEFT\_OPEN\_NP12**

**Variable name:** left\_open\_NP1 — left\_open\_NP12

**Description:** Seconds from balance test on left leg with eyes open (maximum time is set at 30 seconds), NP Exam 1 — 12

**RIGHT\_CLOSE\_NP1 — RIGHT\_CLOSE\_NP12**

**Variable name:** right\_close\_NP1 — right\_close\_NP12

**Description:** Seconds from balance test on right leg with eyes closed (maximum time is set at 30 seconds), NP Exam 1 — 12

**LEFT\_CLOSE\_NP1 — LEFT\_CLOSE\_NP12**

**Variable name:** left\_close\_NP1 — left\_close\_NP12

**Description:** Seconds from balance test on left leg with eyes closed (maximum time is set at 30 seconds), NP Exam 1 — 12

#### MRI352\_NP1 — MRI352\_NP12

**Variable name:** mri352\_NP1 — mri352\_NP12

**Description:** Tester's impression of participant's dementia status (Not verified), NP Exam 1 — 12

Code or Value	Description
0	Not demented
0.25	Not demented/MCI
0.5	Mild Cognitive Impairment
1	Mildly Demented
1.5	Mild – Moderately Demented
2	Moderately Demented
2.5	Moderately – Severely Demented
3	Severely Demented
5	Non-progressive impairment
.	Unknown

#### TEST\_LANGUAGE\_NP1 — TEST\_LANGUAGE\_NP12

**Variable name:** test\_language\_NP1 — test\_language\_NP12

**Description:** Language used during NP Exam 1 — 12

Code or Value	Description
1	English
2	Spanish

### NP\_CLOSEST\_EXAM\_DATE1 — NP\_CLOSEST\_EXAM\_DATE12

**Variable name:** np\_closest\_exam\_date1 — np\_closest\_exam\_date12  
**Description:** FHS core exam date that was closest to the first — twelfth NP test

### NP\_DAYS\_APART1 — NP\_DAYS\_APART12

**Variable name:** np\_days\_apart1 — np\_days\_12  
**Description:** The number of days between the FHS core exam date that was closest to the first — twelfth NP test and the first — twelfth NP test date.

**Note:** A negative value means that the FHS core exam that was closest to the NP test occurred prior to the NP test, while a positive value means that the closest FHS core exam occurred after the NP test.

### NP\_EXAM\_CYCLE1 — NP\_EXAM\_CYCLE12

**Variable name:** np\_exam\_cycle1 — np\_exam\_cycle12  
**Description:** FHS core exam cycle that was closest to the first — twelfth NP test

Code or Value	Description
1	Core Exam 1
2	Core Exam 2
3	Core Exam 3
4	Core Exam 4
5	Core Exam 5
6	Core Exam 6
7	Core Exam 7
8	Core Exam 8
9	Core Exam 9
10	Core Exam 10
.	Unknown

#### **NORMAL\_DATE**

**Variable name:** normal\_date

**Description:** Last date documented to be cognitively intact

**Note:** In event that the day and/or month of onset are uncertain, the day is default to 15 and the month is default to 6. The year of onset is always certain for all non-missing values.

#### **IMPAIRMENT\_DATE**

**Variable name:** impairment\_date

**Description:** Date of cognitive impairment onset

**Note:** In event that the day and/or month of onset are uncertain, the day is default to 15 and the month is default to 6. The year of onset is always certain for all non-missing values.

#### **MILD\_DATE**

**Variable name:** mild\_date

**Description:** Date of diagnosis of mild dementia

**Note:** In event that the day and/or month of onset are uncertain, the day is default to 15 and the month is default to 6. The year of onset is always certain for all non-missing values.

#### **MODERATE\_DATE**

**Variable name:** moderate\_date

**Description:** Date of diagnosis of moderate dementia

**Note:** In event that the day and/or month of onset are uncertain, the day is default to 15 and the month is default to 6. The year of onset is always certain for all non-missing values.

#### **SEVERE\_DATE**

**Variable name:** severe\_date

**Description:** Date of diagnosis of severe dementia

**Note:** In event that the day and/or month of onset are uncertain, the day is default to 15 and the month is default to 6. The year of onset is always certain for all non-missing values.

#### **EDDD**

**Variable name:** eddd

**Description:** Earliest documented date of Dementia

**Note:** This date variable is an estimated onset date for dementia using the earliest dates of various supporting resources and/or derived from earliest documented date variables of “mild\_date”, “moderate\_date” and “severe\_dates”. In certain situations, the “EDDD” may precede those derived using “mild\_date”, “moderate\_date” and “severe\_dates”.

#### DEMRV046

**Variable name:** demrv046

**Description:** Probable Dementia present

Code or Value	Description
0	No
1	Yes
.	Unknown

**Note:** This variable refers to all-cause dementia.

#### DEMRV103

**Variable name:** demrv103

**Description:** Dementia subtype

Code or Value	Description
0	None
1	Alzheimer’s disease without stroke
2	Alzheimer’s disease with stroke
3	Vascular dementia without Alzheimer’s disease
4	Mixed dementia type (Alzheimer’s disease + vascular dementia)
5	Frontotemporal dementia
6	Dementia with Lewy bodies
7	Dementia that does not fit any other Category (progressive)
8	Dementia that does not fit any other category (non-progressive)

## Verified Outcomes – Dementia and Related Variables

9	Cognitive Impairment – No Dementia
10	Dementia – Uncertain
.	Unknown

**Note:** Value “9” refers to Cognitive impairment without Dementia. These subjects are verified to have mild cognitive impairment (MCI). However, it is also possible that participants, who had not yet been screened by the dementia consensus panel, may also suffer from mild cognitive impairment. Hence, if the research outcome of interest is mild cognitive impairment, it is advisable to also consider the psychometric results of the study population as part of the outcome evaluation.



## FIRST\_CHD\_DATE

**Variable name:** first\_chd\_date

**Description:** Date of first Coronary Heart Disease (CHD) Event

**Note:** This variable is derived from the Sequence of Event (SoE) dataset, using the following values in (1, 2, 3, 4, 5, 6, 7, 8, 21, 22, 23, 24) for the variable “EVENT”

### Event Values in SoE Dataset      Description

1	MI recognized, with diagnostic ECG
2	MI recognized, without diagnostic ECG, with enzymes and history
3	MI recognized, without diagnostic ECG, with autopsy evidence, new event (see also code 9)
4	MI unrecognized, silent
5	MI unrecognized, not silent
6	AP, first episode only
7	CI, definite by both history and ECG
8	Questionable MI at exam 1
21	Death, CHD sudden, within 1 hour
22	Death, CHD, 1 - 23 hours, nonsudden
23	Death, CHD, 24-47 hours, non sudden
24	Death, CHD, 48 hours or more, non sudden
.	No record in SoE dataset

### Abbreviations:

MI – Myocardial Infarction

ECG – Electrocardiogram

AP – Angina Pectoris

CI – Coronary Insufficiency

## FIRST\_STROKE\_DATE

**Variable name:** first\_stroke\_date

**Description:** Date of first Stroke (CVA) Event

**Note:** This variable is derived from the Sequence of Event (SoE) dataset, using the following values in (10, 11, 13, 14, 15, 16, 17, 19) for the variable “EVENT”

### Event Values in SoE Dataset      Description

10	Definite CVA at exam 1, but questionable type
11	ABI (Atherothrombotic Infarction of brain)
13	Cerebral embolism
14	Intracerebral hemorrhage
15	Subarachnoid hemorrhage
16	Other CVA
17	CVA, definite CVA, type unknown
19	Questionable CVA at exam 1
.	No record in SoE dataset

Abbreviations:

CVA – Cerebrovascular Accident

ABI – Atherothrombotic Infarction of Brain

## Verified Outcomes – First Atrial Fibrillation (AF) Event

### FIRST\_AF\_DATE

**Variable name:** first\_af\_date

**Description:** Date for first Atrial Fibrillation (AF) Event

**Note:** This variable is derived from the verified Atrial Fibrillation (AF) dataset, using the values in (1, 2, 3) for the variable “RHYTHM”

Rhythm Values in AF Dataset	Description
-----------------------------	-------------

1	Atrial fibrillation
2	Atrial flutter
3	Atrial fibrillation / atrial flutter
.	No record in AF dataset

## FIRST\_CANCER\_DATE

**Variable name:** first\_cancer\_date

**Description:** First diagnosis date of tumor or cancer

**Note:** This variable is derived from the verified Cancer dataset, using the variable “D\_DATE”

## TOPO\_CANCER

**Variable name:** topo\_cancer

**Description:** Topography - describes site - corresponds to first three digits of topography code WHO ICD-O

**Note:** This variable is derived from the verified Cancer dataset, using the variable “TOPO”

Rhythm Values in AF Dataset	Description
140	Lip
141	Tongue
142	Major salivary gland
143	Gum
144	Floor of mouth
145	Other and unspecified parts of mouth
146	Oropharynx
147	Nasopharynx
148	Hypopharynx
149	Pharynx and ill-defined sites in lip, oral cavity and pharynx
150	Esophagus
151	Stomach
152	Small intestine
153	Colon
154	Rectum, rectosigmoid junction, anal canal and anus, not otherwise specified
155	Liver and intrahepatic bile ducts
156	Gallbladder and extrahepatic bile ducts
157	Pancreas
158	Retroperitoneum and peritoneum
159	Other and ill-defined sites within digestive organs and peritoneum
160	Nasal cavities, accessory sinuses, middle ear and inner ear
161	Larynx
162	Trachea bronchus, and lung
163	Pleura

## Verified Outcomes – First Cancer and Related Variables

164	Thymus, heart and mediastinum
165	Other and ill-defined sites within respiratory system and intrathoracic organs
169	Hematopoietic and reticuloendothelial systems
170	Bones, joints and articular cartilage
171	Connective, subcutaneous and other soft tissues
173	Skin (excludes skin of labia majora, skin of vulva, skin of penis and skin of scrotum)
174	Female breast (excludes skin of breast)
175	Male breast (excludes skin of breast)
179	Uterus, not otherwise specified
180	Cervix uteri
181	Placenta
182	Corpus uteri or endometrium
183	Ovary, fallopian tube and broad ligament
184	Other and unspecified female genital organs
185	Prostate gland
186	Testis
187	Penis and other male genital organs
188	Urinary bladder
189	Kidney and other urinary organs
190	Eye and lacrimal gland
191	Brain
192	Other and unspecified parts of the nervous system (excludes 4 peripheral nerves, sympathetic and parasympathetic nerves and ganglia)
193	Thyroid gland
194	Other endocrine glands
195	Other ill-defined sites
196	Lymph nodes
199	Unknown primary site
.	No record in Cancer dataset

### LOCATION\_CANCER

**Variable name:** location\_cancer

**Description:** Location - describes subdivision of site - corresponds to fourth digit of topography code WHO ICD-O

**Note:** This variable is derived from the verified Cancer dataset, using the variable “LOCATION”

Code or Value	Description
---------------	-------------

## Verified Outcomes – First Cancer and Related Variables

0 – 9	Range of values
-------	-----------------

### HIST\_CANCER

**Variable name:** hist\_cancer

**Description:** Histology or morphology - describes cell histopathology - corresponds to four digit morphology code WHO ICD-O

**Note:** This variable is derived from the verified Cancer dataset, using the variable “HIST”

Code or Value	Description
8000 – 9990	Range of values

## Survival Information

### Last\_contact\_date

**Variable name:** Last\_contact\_date

**Description:** Date of last contact (This is the last time the participant was known to be alive)

**Note:** This date is censored to be the last day of 2020 if the last contact date was after the last day of 2020.

### Death\_date

**Variable name:** Death\_date

**Description:** Date of death

**PREVALENT\_CHD\_CORE1 – PREVALENT\_CHD\_CORE10****Variable name:** prevalent\_chd\_core1 – prevalent\_chd\_core10**Description:** History of CHD present at core exam 1 – 10

Code or Value	Description
0	No
1	Yes
.	Did not attend core exam

**Note:** This variable is derived using the variable “first\_chd\_date” and the respective FHS core exam date variables “date\_core”.

**PREVALENT\_STROKE\_CORE1 – PREVALENT\_STROKE\_CORE10****Variable name:** prevalent\_stroke\_core1 – prevalent\_stroke\_core10**Description:** History of stroke present at core exam 1 – 10

Code or Value	Description
0	No
1	Yes
.	Did not attend core exam

**Note:** This variable is derived using the variable “first\_stroke\_date” and the respective FHS core exam date variables “date\_core”.

**PREVALENT\_AF\_CORE1 – PREVALENT\_AF\_CORE10****Variable name:** prevalent\_af\_core1 – prevalent\_af\_core10**Description:** History of AF present at core exam 1 – 10

Code or Value	Description
0	No
1	Yes
.	Did not attend core exam

**Note:** This variable is derived using the variable “first\_af\_date” and the respective FHS core exam date variables “date\_core”.



**PREVALENT\_DEMENTIA\_CORE1 – PREVALENT\_DEMENTIA\_CORE9**

**Variable name:** prevalent\_dementia\_core1 – prevalent\_dementia\_core10

**Description:** History of dementia present at core exam 1 – 10

Code or Value	Description
0	No
1	Yes
.	Did not attend core exam

**Note:** This variable is derived using the variable “eddd” and the respective FHS core exam date variables “date\_core”.

**PREVALENT\_CANCER\_CORE1 – PREVALENT\_CANCER\_CORE10**

**Variable name:** prevalent\_cancer\_core1 – prevalent\_cancer\_core10

**Description:** History of cancer present at core exam 1 – 10

Code or Value	Description
0	No
1	Yes
.	Did not attend core exam

**Note:** This variable is derived using the variable “first\_cancer\_date” and the respective FHS core exam date variables “date\_core”.

**PREVALENT\_CHD\_NP1 – PREVALENT\_CHD\_NP12****Variable name:** prevalent\_chd\_np1 – prevalent\_chd\_np12**Description:** History of CHD present at NP test 1 – 12

Code or Value	Description
0	No
1	Yes
.	Did not attend NP test

**Note:** This variable is derived using the variable “first\_chd\_date” and the respective NP test date variables “examdate\_np”.

**PREVALENT\_STROKE\_NP1 – PREVALENT\_STROKE\_NP12****Variable name:** prevalent\_stroke\_np1 – prevalent\_stroke\_np12**Description:** History of stroke present at NP test 1 – 12

Code or Value	Description
0	No
1	Yes
.	Did not attend NP test

**Note:** This variable is derived using the variable “first\_stroke\_date” and the respective NP test date variables “examdate\_np”.

**PREVALENT\_AF\_NP1 – PREVALENT\_AF\_NP12****Variable name:** prevalent\_af\_np1 – prevalent\_af\_np12**Description:** History of AF present at NP test 1 – 12

Code or Value	Description
0	No
1	Yes
.	Did not attend NP test

**Note:** This variable is derived using the variable “first\_af\_date” and the respective NP test date variables “examdate\_np”.

**PREVALENT\_DEMENTIA\_NP1 – PREVALENT\_DEMENTIA\_NP12****Variable name:** prevalent\_dementia\_np1 – prevalent\_dementia\_np12**Description:** History of dementia present at NP test 1 – 12

Code or Value	Description
0	No
1	Yes
.	Did not attend NP test

**Note:** This variable is derived using the variable “eddd” and the respective NP test date variables “examdate\_np”.

**PREVALENT\_CANCER\_NP1 – PREVALENT\_CANCER\_NP12****Variable name:** prevalent\_cancer\_np1 – prevalent\_cancer\_np12**Description:** History of cancer present at NP test 1 – 12

Code or Value	Description
0	No
1	Yes
.	Did not attend NP test

**Note:** This variable is derived using the variable “first\_cancer\_date” and the respective NP test date variables “examdate\_np”.

**Refer to publication:** D’Agostino Sr, R. B., Vasan, R. S., Pencina, M. J., Wolf, P. A., Cobain, M., Massaro, J. M., & Kannel, W. B. (2008). General cardiovascular risk profile for use in primary care: the Framingham Heart Study. *Circulation*, 117(6), 743-753.

**AGE\_FHSCVD\_CORE1 – AGE\_FHSCVD\_CORE10**

**Variable name:** age\_fhscvd\_core1 – age\_fhscvd\_core10

**Description:** Age component for FHS CVD risk score at exam 1 – 10

Code or Value	Description
0 – 15	Range of values
.	Did not attend core exam or out of bounds

**HDL\_FHSCVD\_CORE1 – HDL\_FHSCVD\_CORE10**

**Variable name:** hdl\_fhscvd\_core1 – hdl\_fhscvd\_core10

**Description:** HDL component for FHS CVD risk score at exam 1 – 10

Code or Value	Description
-2 – 2	Range of values
.	Did not attend core exam or out of bounds

**TC\_FHSCVD\_CORE1 – TC\_FHSCVD\_CORE10**

**Variable name:** tc\_fhscvd\_core1 – tc\_fhscvd\_core10

**Description:** TC (Total Cholesterol) component for FHS CVD risk score at exam 1 – 10

Code or Value	Description
0 – 5	Range of values
.	Did not attend core exam or out of bounds

**SMOKING\_FHSCVD\_CORE1 – SMOKING\_FHSCVD\_CORE10****Variable name:** smoking\_fhscvd\_core1 – smoking\_fhscvd\_core10**Description:** Current smoker component for FHS CVD risk score at exam 1 – 10

Code or Value	Description
0	No
3	Yes (Female)
4	Yes (Male)
.	Did not attend core exam or out of bounds

**DM\_FHSCVD\_CORE1 – DM\_FHSCVD\_CORE10****Variable name:** dm\_fhscvd\_core1 – dm\_fhscvd\_core10**Description:** History of diabetes component for FHS CVD risk score at exam 1 – 10

Code or Value	Description
0	No
3	Yes (Male)
4	Yes (Female)
.	Did not attend core exam or out of bounds

**SBP\_FHSCVD\_CORE1 – SBP\_FHSCVD\_CORE10****Variable name:** sbp\_fhscvd\_core1 – sbp\_fhscvd\_core10**Description:** Systolic blood pressure component for FHS CVD risk score at exam 1 – 10

Code or Value	Description
-3 – 7	Range of values
.	Did not attend core exam or out of bounds

**FHSCVD\_CORE1 –FHSCVD\_CORE10****Variable name:** fhscvd\_core1 – fhscvd\_core10**Description:** FHS CVD risk score at exam 1 – 10

$\text{fhscvd\_core} = \text{age\_fhscvd\_core} + \text{hdl\_fhscvd\_core} + \text{tc\_fhscvd\_core} + \text{smoking\_fhscvd\_core} + \text{dm\_fhscvd\_core} + \text{sbp\_fhscvd\_core}$
---

Code or Value	Description
-5 – 36	Range of values
.	Did not attend core exam or out of bounds

**Note:** This derived variable is only available if all components of the FHS CVD risk score are available. Refer to publication for more information

**Refer to publications:**

Wolf, P. A., D'Agostino, R. B., Belanger, A. J., & Kannel, W. B. (1991). Probability of stroke: a risk profile from the Framingham Study. *Stroke*, 22(3), 312-318.

Dufouil, C., Beiser, A., McLure, L. A., Wolf, P. A., Tzourio, C., Howard, V. J., ... & Seshadri, S. (2017). Revised Framingham stroke risk profile to reflect temporal trends. *Circulation*, 135(12), 1145-149.

**AGE\_FSRP\_CORE1 – AGE\_FSRP\_CORE10**

**Variable name:** age\_fsrp\_core1 – age\_fsrp\_core10

**Description:** Age component for FSRP at exam 1 – 10

Code or Value	Description
0 – 10	Range of values
.	Did not attend core exam or out of bounds

**SBP\_FSRP\_CORE1 – SBP\_FSRP\_CORE10**

**Variable name:** sbp\_fsrp\_core1 – sbp\_fsrp\_core10

**Description:** Systolic blood pressure component for FSRP at exam 1 – 10

Code or Value	Description
0 – 10	Range of values
.	Did not attend core exam or out of bounds

**HRX\_FSRP\_CORE1 – HRX\_FSRP\_CORE10**

**Variable name:** hrx\_fsrp\_core1 – hrx\_fsrp\_core10

**Description:** Anti-hypertensive medications usage component for FSRP at exam 1 – 10

Code or Value	Description
0	No
2	Yes (Male)
0 – 6	Yes (Female)
.	Did not attend core exam or out of bounds

**DM\_FSRP\_CORE1 – DM\_FSRP\_CORE10**

**Variable name:** dm\_fsrp\_core1 – dm\_fsrp\_core10

**Description:** History of diabetes component for FSRP at exam 1 – 10

Code or Value	Description
0	No
2	Yes (Male)
3	Yes (Female)
.	Did not attend core exam or out of bounds

**SMOKING\_FSRP\_CORE1 – SMOKING\_FSRP\_CORE10**

**Variable name:** smoking\_fsrp\_core1 – smoking\_fsrp\_core10

**Description:** Current smoker component for FSRP at exam 1 – 10

Code or Value	Description
0	No
3	Yes
.	Did not attend core exam or out of bounds

**PRECVD\_FSRP\_CORE1 – PRECVD\_FSRP\_CORE10**

**Variable name:** precvd\_fsrp\_core1 – precvd\_fsrp\_core10

**Description:** History of CVD component for FSRP at exam 1 – 10

Code or Value	Description
0	No
2	Yes (Female)
3	Yes (Male)
.	Did not attend core exam or out of bounds

**Note:**

*The definition of CVD is not the same as that of the variable “first\_chd\_date”.*

*This variable includes the following conditions:*

- *Myocardial Infarction*
- *Angina Pectoris*
- *Coronary Heart Disease*



- **Cardiovascular Disease**
- **Coronary Insufficiency**
- **Intermittent Claudication**
- **Congestive Heart Failure**

***This aligns with the code values of (1, 2, 3, 4, 5, 6, 7, 8, 9, 21, 22, 23, 24, 26, 30, 39, 40, 41, 49) for variable “event” in the verified Sequence of Events (SOE) Cardiovascular Endpoints dataset.***

***Refer to publication for more information***

#### **PREAF\_FSRP\_CORE1 – PREAF\_FSRP\_CORE10**

**Variable name:** preaf\_fsrp\_core1 – preaf\_fsrp\_core10

**Description:** History of AF component for FSRP at exam 1 – 10

<b>Code or Value</b>	<b>Description</b>
0	No
4	Yes (Male)
6	Yes (Female)
.	Did not attend core exam or out of bounds

#### **DLVH\_FSRP\_CORE1 – DLVH\_FSRP\_CORE10**

**Variable name:** dlvh\_fsrp\_core1 – dlvh\_fsrp\_core10

**Description:** Ventricular hypertrophy component for FSRP at exam 1 – 10

<b>Code or Value</b>	<b>Description</b>
0	No
4	Yes (Female)
6	Yes (Male)
.	Did not attend core exam or out of bounds

**FSRP\_CORE1 – FSRP\_CORE10****Variable name:** fsrp\_core1 – fsrp\_core10**Description:** FSRP at exam 1 – 10
$$\text{fsrp\_core} = \text{age\_fsrp\_core} + \text{sbp\_fsrp\_core} + \text{hrx\_fsrp\_core} + \text{dm\_fsrp\_core} + \text{smoking\_fsrp\_core} + \text{precvd\_fsrp\_core} + \text{preaf\_fsrp\_core} + \text{dlvh\_fsrp\_core}$$

Code or Value	Description
0 – 44	Range of values
.	Did not attend core exam or out of bounds

**Note:** This derived variable is only available when all components of the FSRP are available. Refer to publication for more information

**REVISED\_FSRP\_CORE1 – REVISED\_FSRP\_CORE10****Variable name:** revised\_fsrp\_core1 – revised\_fsrp\_core10**Description:** Revised FSRP at exam 1 – 10
$$\text{revised\_fsrp\_core} = \text{age\_fsrp\_core} + \text{sbp\_fsrp\_core} + \text{hrx\_fsrp\_core} + \text{dm\_fsrp\_core} + \text{smoking\_fsrp\_core} + \text{precvd\_fsrp\_core} + \text{preaf\_fsrp\_core}$$

Code or Value	Description
0 – 44	Range of values
.	Did not attend core exam or out of bounds

**Note:** This derived variable is only available when all components of the FSRP are available. Refer to publication for more information

**MMSE were only available from core exam 5 onwards**

**COGSCR\_CORE5 — COGSCR\_CORE10**

**Variable name:** cogscr\_core5 – cogscr\_core10

**Description:** Total score for MMSE cognitive function test (at exam 5 — 10)

Code or Value	Description
0 – 30	Range of values
.	Unknown

**MAXCOG\_CORE5 — MAXCOG\_CORE10**

**Variable name:** maxcog\_core5 – maxcog\_core10

**Description:** Maximum score based on the questions answered (at exam 5 — 10)

Code or Value	Description
17 – 30	Range of values
.	Unknown

**CES-D were only available from core exam 6 onwards**

**TAKE NOTE:** CES-D was not part of the FHS Gen 2 exam 8 / Omni 1 exam 3 questionnaires. It was however included for selected participants who volunteered for NP testing during the period from year 2005 to 2009. For CESD\_CORE8 related variables, only the first set of CES-D assessment was included. Refer to the source dataset “q\_cesd\_2009\_m\_0570” for in-depth information.

**CESD\_CORE6\_1 — CESD\_CORE10\_1**

**Variable name:** CESD\_core6\_1 — CESD\_core10\_1

**Description:** CESD: I was bothered by things that usually don't bother me (at exam 6 — 10)

Code or Value	Description
0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

**CESD\_CORE6\_2 — CESD\_CORE10\_2**

**Variable name:** CESD\_core6\_2 — CESD\_core10\_2

**Description:** CESD: I did not feel like eating: my appetite was poor (at exam 6 — 10)

Code or Value	Description
0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

**CESD\_CORE6\_3 — CESD\_CORE10\_3**

**Variable name:** CESD\_core6\_3 — CESD\_core10\_3

**Description:** CESD: I felt that I could not shake off the blues, even with the help of family and friends (at exam 6 — 10)

# Center for Epidemiologic Studies Depression Scale (CES-D)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

## CESD\_CORE6\_4 — CESD\_CORE10\_4

**Variable name:** CESD\_core6\_4 — CESD\_core10\_4

**Description:** CESD: I felt that I was just as good as other people (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

## CESD\_CORE6\_5 — CESD\_CORE10\_5

**Variable name:** CESD\_core6\_5 — CESD\_core10\_4

**Description:** CESD: I had trouble keeping my mind on what I was doing (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

## CESD\_CORE6\_6 — CESD\_CORE10\_6

**Variable name:** CESD\_core6\_6 — CESD\_core10\_6

**Description:** CESD: I felt depressed (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

### CESD\_CORE6\_7 — CESD\_CORE10\_7

**Variable name:** CESD\_core6\_7 — CESD\_core10\_7

**Description:** CESD: I felt that everything I did was an effort (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

### CESD\_CORE6\_8 — CESD\_CORE10\_8

**Variable name:** CESD\_core6\_8 — CESD\_core10\_8

**Description:** CESD: I felt hopeful about the future (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

### CESD\_CORE6\_9 — CESD\_CORE10\_9

**Variable name:** CESD\_core6\_9 — CESD\_core10\_9

**Description:** CESD: I thought my life had been a failure (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

### CESD\_CORE6\_10 — CESD\_CORE10\_10

**Variable name:** CESD\_core6\_10 — CESD\_core10\_10

**Description:** CESD: I felt fearful (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days

Center for Epidemiologic Studies Depression Scale (CES-D)

3	5 – 7 days
.	Unknown

**CESD\_CORE6\_11 — CESD\_CORE10\_11**

**Variable name:** CESD\_core6\_11 — CESD\_core10\_11

**Description:** CESD: My sleep was restless (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

**CESD\_CORE6\_12 — CESD\_CORE10\_12**

**Variable name:** CESD\_core6\_12 — CESD\_core10\_12

**Description:** CESD: I was happy (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

**CESD\_CORE6\_13 — CESD\_CORE10\_13**

**Variable name:** CESD\_core6\_13 — CESD\_core10\_13

**Description:** CESD: I talked less than usual (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

**CESD\_CORE6\_14 — CESD\_CORE10\_14**

**Variable name:** CESD\_core6\_14 — CESD\_core10\_14

**Description:** CESD: I felt lonely (at exam 6 — 10)

Center for Epidemiologic Studies Depression Scale (CES-D)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

**CESD\_CORE6\_15 — CESD\_CORE10\_15**

**Variable name:** CESD\_core6\_15 — CESD\_core10\_15

**Description:** CESD: People were unfriendly (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

**CESD\_CORE6\_16 — CESD\_CORE10\_16**

**Variable name:** CESD\_core6\_16 — CESD\_core10\_16

**Description:** CESD: I enjoyed life (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

**CESD\_CORE6\_17 — CESD\_CORE10\_17**

**Variable name:** CESD\_core6\_17 — CESD\_core10\_17

**Description:** CESD: I had crying spells (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

**CESD\_CORE6\_18 — CESD\_CORE10\_18**



Center for Epidemiologic Studies Depression Scale (CES-D)

**Variable name:** CESD\_core6\_18 — CESD\_core10\_18

**Description:** CESD: I felt sad (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

**CESD\_CORE6\_19 — CESD\_CORE10\_19**

**Variable name:** CESD\_core6\_19 — CESD\_core10\_19

**Description:** CESD: I felt that people disliked me (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

**CESD\_CORE6\_20 — CESD\_CORE10\_20**

**Variable name:** CESD\_core6\_20 — CESD\_core10\_20

**Description:** CESD: I could not "get going" (at exam 6 — 10)

0	<1 day
1	1 – 2 days
2	3 – 4 days
3	5 – 7 days
.	Unknown

**CESD\_TOTAL\_CORE6 — CESD\_TOTAL\_CORE10**

**Variable name:** CESD\_total\_core6 — CESD\_total\_core10

**Description:** CESD total score at exam 6 — 10

**Note:** The total CES-D scores are calculated for participants who answered all 20 questions.

**CESD\_DATE\_CORE8**

**Variable name:** CESD\_date\_core8

## Center for Epidemiologic Studies Depression Scale (CES-D)

**Description:** Date of the CESD assessment during exam 8 interim (MMDDYYYY)

**Note:** TAKE NOTE: CES-D was not part of the FHS Gen 2 exam 8 / Omni 1 exam 3 questionnaires. It was however included for selected participants who volunteered for NP testing during the period from year 2005 to 2009. For CESD\_CORE8 related variables, **only the first set of CES-D assessment was included**. Refer to the source dataset “q\_cesd\_2009\_m\_0570” for in-depth information.

**NPBRAAK****Variable name:** NPBRAAK**Description:** Braak stage for neurofibrillary degeneration (B score). Use standard blocks to assign phase.

Code or Value	Description
0	Stage 0: AD-type neurofibrillary degeneration not present (B0)
1	Stage I (B1)
2	Stage II (B2)
3	Stage III (B3)
4	Stage IV (B4)
5	Stage V (B5)
6	Stage VI (B6)

**NPNIT****Variable name:** NPNIT**Description:** Derived NIA-Reagan Criteria

Code or Value	Description
1	High likelihood dementia due to AD
2	Intermediate likelihood dementia due to AD
3	Low likelihood dementia due to AD
4	Criteria not met

**NEUROPATH\_AVAIL****Variable name:** neuropath\_avail**Description:** Availability of brain autopsy data

Code or Value	Description
0	No
1	Yes

## Appendix

Offspring Cohort (idtype=1)				
Exam #	Exam Date Range	Age Range	Mean Age	Total # of Participants
1	1971-1975	5-70	36	5124
2	1979-1983	17-77	44	3863
3	1983-1987	18-77	48	3873
4	1987-1991	22-81	52	4019
5	1991-1995	26-84	55	3799
6	1995-1998	29-86	59	3532
7	1998-2001	33-90	62	3539
8	2005-2008	40-93	67	3021
9	2011-2014	46-98	71	2430
10	2019-2022	55-102	77	1501

Omni 1 Cohort (idtype=7)				
Exam #	Exam Date Range	Age Range	Mean Age	Total # of Participants
1	1994-1998	27-78	52	506
2	1999-2001	33-83	55	405
3	2007-2008	39-89	62	298
4	2011-2014	44-88	66	301
5	2019-2022	52-96	72	197

Revisions	
August 2020	Original Draft <ul style="list-style-type: none"> <li>Coding Manual of Curated Gen 2/Omni 1 (NP) dataset</li> <li>Dataset: curated_cohort17.sas7bdat</li> </ul>
Feb 2021	Revision of August 2020 draft <ul style="list-style-type: none"> <li>Typo/grammatical/format corrections</li> <li>Added more information to the introduction</li> <li>Added variables “idtype”, “id” and “sex”</li> <li>Dataset has been renamed as “curated_cohort17_022021”</li> <li>Available in both SAS and csv files</li> </ul>
Sept 2021	Revision of Feb 2021 draft <ul style="list-style-type: none"> <li>Typo/grammatical/format corrections</li> <li>Added race variable</li> <li>Updated dementia review data, neuropsychological summary scores and date-related variables up to year 2019</li> <li>Dataset has been renamed as “curated17_09_16_2021”</li> <li>Available in both SAS and csv files</li> </ul>
Nov 2021	Revision of Sept 2021 draft <ul style="list-style-type: none"> <li>Typo/grammatical/format corrections</li> </ul>
Jan 2023	Revision of Nov 2021 draft <ul style="list-style-type: none"> <li>Included data up to year 2022</li> <li>Simplify coding manual format to reduce the length</li> <li>Renamed all NP test related variables using suffix “_NP” for clearer annotation</li> <li>Added more clinical outcomes and related variables</li> <li>Added neuropath section</li> <li>Removed of selected medications and biomarker data till harmonized variables are created</li> <li>Typo/grammatical/format corrections</li> </ul>

	<ul style="list-style-type: none"> <li>• Provided SAS code to include list of requested datasets to generate similar curated dataset format</li> </ul>
March 2023	Revision of Feb 2023 draft <ul style="list-style-type: none"> <li>• Updated neuropath section</li> <li>• Typo/grammatical/format corrections</li> </ul>
April 2023	Revision of March 2023 draft <ul style="list-style-type: none"> <li>• Included prevalence variables</li> <li>• Typo/grammatical/format corrections</li> </ul>
May 2023	Revision of April 2023 draft <ul style="list-style-type: none"> <li>• Included FHS CVD Risk Score FSRP</li> <li>• Updated the following section: <ul style="list-style-type: none"> <li>○ NP summary scores</li> <li>○ Dementia Review</li> <li>○ Sequence of event (CHD, Stroke)</li> <li>○ Atrial Fibrillation</li> <li>○ Survival Information</li> </ul> </li> <li>• Typo/grammatical/format corrections</li> </ul>
July 2023	Revision of May 2023 draft <ul style="list-style-type: none"> <li>• Correction of date format and missing EDDD values</li> </ul>
Feb 2024	Revision of July 2023 draft <ul style="list-style-type: none"> <li>• Major update to include Gen 2 Exam 10/Omni 1 Exam 5 data <ul style="list-style-type: none"> <li>○ Demographics</li> <li>○ Anthropometric Measurements</li> <li>○ Smoking</li> <li>○ Blood Pressures/Hypertension</li> <li>○ Blood Glucose/Diabetes</li> <li>○ Lipid Profile/Hyperlipidemia</li> <li>○ Creatinine</li> <li>○ FHS CVD and Stroke Risk Scores</li> <li>○ MMSE</li> <li>○ CES-D</li> </ul> </li> <li>• Major update to outcome and mortality data <ul style="list-style-type: none"> <li>○ Sequence of event (CHD, Stroke)</li> <li>○ Atrial Fibrillation</li> <li>○ Survival Information</li> </ul> </li> </ul>

	<ul style="list-style-type: none"><li>○ Prevalence</li><li>• Added derived variable for Race</li><li>• Added derived variable for Education</li><li>• Added history of smoking derived variable</li><li>• Added CES-D for interim Exam 8 for selected Gen 2/Omni 1 participants</li><li>• Correction of matched dates and related variables for Omni 1 cohort</li><li>• Typo/grammatical/format corrections</li></ul>
--	---