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 5629 unique FHS participants (5123 Gen II and 506 Omni 1) within this dataset[*], with a total of 1570 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 6th 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 5th 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. Due to COVID-19 restrictions, Gen 2 (Exam 10) and Omni 1 (Exam 5) were impacted. 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. Refer to variable "Status_core10" for details.

7. For protocol descriptions and annotated forms of the primary datasets, refer to the respective documents of the individual source datasets.

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

9. One Gen 2 participant withdrew from the study as of 01/2025

10. Take note of the last verified date for outcome and mortality data:
    a. Dementia – 12/31/2024
    b. CVD/Stroke/AF – 12/31/2022
    c. Cancer – 12/31/2019
    d. Mortality/Last contact – 12/31/2021

11. Refer to Appendix for FHS core exam timeline (all cohorts)

* Depending on the source of the datasets, consent restrictions may affect the overall N.

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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 <u>within cohort</u>

> **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

Code or Value	Description
1	White
2	Black
3	Asian
4	Asian Indian/ Native Hawaiian/Pacific Islander
5	American Indian/Alaskan Native
6	Prefer not to answer/Others

ETHNICITY

Variable name: Ethnicity
Description: Ethnicity

Code or Value	Description
1	Not Hispanic or Latino
2	Hispanic or Latino
.	Unknown

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)

Demographics

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
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

Demographics

1	Grades 1 – 8
2	Grades 9 – 11
3	Completed high school (12th 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

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_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

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_CORE2, CREATININE_CORE5 — CREATININE_CORE10

Variable name: Creatinine_core2, Creatinine_core5 — Creatinine_core10
Description: Serum Creatinine at Exam 2, 5 — 10

> **Refer to publication:** Sun X, Ho JE, Gao H, Evangelou E, Yao C, Huan T, Hwang SJ, Courchesne P, Larson MG, Levy D, Ma J, Liu C. Associations of Alcohol Consumption with Cardiovascular Disease-Related Proteomic Biomarkers: The Framingham Heart Study. J Nutr. 2021 Sep 4;151(9):2574-2582. doi: 10.1093/jn/nxab186. PMID: 34159370; PMCID: PMC8417922.

BEERPERWEEK_CORE1 - BEERPERWEEK_CORE10

Variable name: beerperweek_core1 - beerperweek_core10
Description: Number of beers per week at exam 1 – 10

Code or Value	Description
0 – 9999	Range of values

WINEPERWEEK_CORE1 - WINEPERWEEK_CORE10

Variable name: wineperweek_core1 - wineperweek_core10
Description: Number of wines per week at exam 1 – 10

Code or Value	Description
0 – 9999	Range of values

Note: For exams 6 and 7, this variable is split into white and red wine.

WHITEPERWEEK_CORE6 - WHITEPERWEEK_CORE7

Variable name: whiteperweek_core6 - whiteperweek_core7
Description: Number of white wines per week at exam 6 and 7

Code or Value	Description
0 – 9999	Range of values

Note: This variable is only available for exams 6 and 7.

REDPERWEEK_CORE6 - REDPERWEEK_CORE7

Variable name: redperweek_core6 - redperweek_core7
Description: Number of red wines per week at exams 6 and 7

Code or Value	Description
0 – 9999	Range of values

Note: This variable is only available for exams 6 and 7.

LIQUORPERWEEK_CORE1 - LIQUORPERWEEK_CORE10

Variable name: liquorperweek_core1 - liquorperweek_core10
Description: Number of liquor drinks per week at exam 1 – 10

Code or Value	Description
0 – 9999	Range of values

DRINKSPERWEEK_CORE1 - DRINKSPERWEEK_CORE10

Variable name: drinksperweek_core1 - drinksperweek_core10
Description: Number of alcoholic drinks per week at exam 1 – 10

Code or Value	Description
0 – 9999	Range of values

GRAMSPERDAY_CORE1 - GRAMSPERDAY_CORE10

Variable name: gramsperday_core1 - gramsperday_core10
Description: Daily alcohol consumption, g/d at exam 1 – 10

Code or Value	Description
0 – 9999	Range of values

CURRDRINK_CORE1 - CURRDRINK_CORE10

Variable name: currdrink_core1 - currdrink_core10
Description: Current drinking status at exam 1 – 10

Code or Value	Description

0	Non-drinker currently
1	Drinker currently
.	Unknown/Did not attend exam

DRINKING_EVER_CORE2 - DRINKING_EVER_CORE10

Variable name: drinking_ever_core2 - drinking_ever_core10
Description: History of drinking at exam 2 – 10

Code or Value	Description
0	Never drinker
1	Current drinker
2	Previous drinker
.	Unknown/Did not attend exam

ALCCAT_CORE1 - ALCCAT_CORE10

Variable name: alccat_core1 - alccat_core10
Description: Alcohol consumption categories at exam 1 – 10

Code or Value	Description
0	Non-drinker
1	Moderate drinkers • 0.1–28 g/d in men • 0.1–14 g/d in women
2	At-risk drinkers • 28.1–42 g/d in men • 14.1–28 g/d in women
3	Heavy drinkers • >42 g/d in men • >28 g/d in women
.	Unknown/Did not attend exam

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

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

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)

TRAILSB_NP1 — TRAILSB_NP12

Variable name: trailsB_NP1 — trailsB_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_PAIRED_NP1 — INCIDENTAL_PAIRED_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_NP1

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**

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)

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

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

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

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**

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

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

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

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

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

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

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

fhscvd_core = age_fhscvd_core + hdl_fhscvd_core + tc_fhscvd_core + smoking_fhscvd_core + dm_fhscvd_core + 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 (Feale)
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

Code or Value	Description
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

Code or Value	Description
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

> fsrp_core = age_fsrp_core + sbp_fsrp_core + hrx_fsrp_core + dm_fsrp_core + smoking_fsrp_core + precvd_fsrp_core + preaf_fsrp_core + 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

> revised_fsrp_core = age_fsrp_core + sbp_fsrp_core + hrx_fsrp_core + dm_fsrp_core + smoking_fsrp_core + precvd_fsrp_core + 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 <u>first</u> 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)

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

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)

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

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

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.

NEUROPATH_AVAIL

Variable name: neuropath_avail
Description: Availability of brain autopsy data

Code or Value	Description
0	No
1	Yes

NPBRAAK_NEUROPATH

Variable name: NPBRAAK_NEUROPATH
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)
.	Missing

NIA_REAGAN_NEUROPATH

Variable name: NIA_REAGAN_NEUROPATH
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
.	Missing

AD_NEUROPATH

Variable name: AD_NEUROPATH
Description: Neuropathological presence of Alzheimer's disease

Code or Value	Description
0	No
1	Yes
.	Missing

RELATAUO_NEUROPATH

Variable name: RELATAUO_NEUROPATH
Description: Primary age-related tauopathy (PART; requires NFTs present with Braak stage <= IV, usually III or lower)

Code or Value	Description
0	Not present
1	Yes (Crary et al., 2014)
.	Missing

LBD_NEUROPATH

Variable name: LBD_NEUROPATH
Description: Neuropathological presence of Lewy body disease

Code or Value	Description
0	Not present
1	LBD Brainstem predominant
2	LBD limbic/neocortical
.	Missing

MND_NEUROPATH

Variable name: MND_NEUROPATH
Description: Neuropathological presence of ALS/Motor neuron disease

Code or Value	Description
0	Not present
1	Yes, with TDP-43 inclusions in motor neurons
2	Yes, with FUS inclusions in motor neurons
3	Yes, with SOD1 inclusions in motor neurons
4	Yes, with other inclusions
5	Yes, with no specific inclusions
8	Not assessed
.	Missing

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 • Coding Manual of Curated Gen 2/Omni 1 (NP) dataset • Dataset: curated_cohort17.sas7bdat
Feb 2021	Revision of August 2020 draft • Typo/grammatical/format corrections • Added more information to the introduction • Added variables "idtype", "id" and "sex" • Dataset has been renamed as "curated_cohort17_022021" • Available in both SAS and csv files
Sept 2021	Revision of Feb 2021 draft • Typo/grammatical/format corrections • Added race variable • Updated dementia review data, neuropsychological summary scores and date-related variables up to year 2019 • Dataset has been renamed as "curated17_09_16_2021" • Available in both SAS and csv files
Nov 2021	Revision of Sept 2021 draft • Typo/grammatical/format corrections
Jan 2023	Revision of Nov 2021 draft • Included data up to year 2022 • Simplify coding manual format to reduce the length • Renamed all NP test related variables using suffix "_NP" for clearer annotation • Added more clinical outcomes and related variables • Added neuropath section • Removed of selected medications and biomarker data till harmonized variables are created • Typo/grammatical/format corrections

	• Provided SAS code to include list of requested datasets to generate similar curated dataset format
March 2023	Revision of Feb 2023 draft • Updated neuropath section • Typo/grammatical/format corrections
April 2023	Revision of March 2023 draft • Included prevalence variables • Typo/grammatical/format corrections

May 2023	Revision of April 2023 draft
	• Included FHS CVD Risk Score FSRP
	• Updated the following section:
	    o NP summary scores
	    o Dementia Review
	    o Sequence of event (CHD, Stroke)
	    o Atrial Fibrillation
	    o Survival Information
	• Typo/grammatical/format corrections

July 2023	Revision of May 2023 draft • Correction of date format and missing EDDD values

Feb 2024	Revision of July 2023 draft
	• Major update to include Gen 2 Exam 10/Omni 1 Exam 5 data
	    o Demographics
	    o Anthropometric Measurements
	    o Smoking
	    o Blood Pressures/Hypertension
	    o Blood Glucose/Diabetes
	    o Lipid Profile/Hyperlipidemia
	    o Creatinine
	    o FHS CVD and Stroke Risk Scores
	    o MMSE
	    o CES-D
	• Major update to outcome and mortality data
	    o Sequence of event (CHD, Stroke)
	    o Atrial Fibrillation
	    o Survival Information

	o Prevalence • Added derived variable for Race • Added derived variable for Education • Added history of smoking derived variable • Added CES-D for interim Exam 8 for selected Gen 2/Omni 1 participants • Correction of matched dates and related variables for Omni 1 cohort • Typo/grammatical/format corrections
March 2024	Revision of Feb 2024 draft • Format correction to neuropath variables • Update of neuropath variables to include data up to 2023 • Typo/grammatical/format corrections of manual
April 2024	Revision of March 2024 draft • Update of dementia review variables to include data up to 2023
May 2024	Revision of April 2024 draft • Added information regarding consent restrictions in the foreword • Update of NP summary score variables to include data up to 2023
Sept 2024	Revision of May 2024 draft • Correction of dementia diagnosis of one observation • Update of "edu_all" variable for participants with more education information
Oct 2024	Revision of Sept 2024 draft • Addition of alcohol consumption variables • Adjustment to race variables • Typo correction in SAS code
May 2025	Revision of Oct 2024 draft • Update of race source dataset and correction for race and ethnicity variables • Update of dementia review source dataset to include data up to 2024

	- Update of neuropath source dataset to include data up to 2024 - Curated dataset SAS code now contains an additional section to create compatible version for external sharing