BioAge Codebook

NHANES III and NHANES 1999-2018

June 14, 2020

| **Variable Name** | **Description** | **C/N** | **Format** | **Comments** |
| --- | --- | --- | --- | --- |
| **Demographic** | | | | |
| sampleID | NHANES ID | Character | ‘NHANES conducted year\_seqn‘  Because NHANES III and NHANES IV seqn is duplicated | 1988-1994  1999-2018 |
| year | NHANES conducted year | Character | ‘1991’  ‘1999’  ‘2001’    ‘2017’ | 1988-1994  1999-2018 |
| wave | Recoded year | Numeric | 0: 1998-1994  1: 1999-2000  2: 2001-2002    10: 2017-2018 | 1988-1994  1999-2018 |
| gender | Gender of the sample person | Numeric | 1: male  2: female | 1988-1994  1999-2018 |
| age | Age at screening | Numeric | 20-90 | 1998-1994  1999-2018 |
| annual\_income | Annual family income | Numeric | 1: $0 to $4,999  2: $5,000 to $9,999  3: $10,000 to $14,999  4: $15,000 to $19,999  5: $20,000 to $24,999  6: $25,000 to $34,999  7: $35,000 to $44,999  8: $45,000 to $54,999  9: $55,000 to $64,999  10: $65,000 to $74,999  11: $75,000 and over | 1999-2018 |
| income\_recode | Recoded Annual family income | Numeric | 1: $0 to $4,999  2: $5,000 to $9,999  3: $10,000 to $14,999  4: $15,000 to $19,999  5: $20,000 to $24,999  6: $25,000 to $34,999  7: $35,000 to $44,999  8: $45,000 and over | 1998-1994  1999-2018 |
| education | The highest degree received | Numeric | 1: less than 9th grade  2: 9-11th grade  3: high school graduate/GED  4: some college  5: college graduate or higher | 1998-1994  1999-2018 |
| edu | Recoded education | Numeric | 1: less than high school  2: high school graduate  3: some college  4: bachelor’s degree or higher | 1998-1994  1999-2018 |
| ethnicity | Reported ethnicity and race information | Numeric | 1: non-Hispanic white  2: non-Hispanic black  3: Mexican American  4: other | 1998-1994  1999-2018 |
| race | Recoded ethnicity | Numeric | 1: white  2: black  3: Hispanic and other | 1998-1994  1999-2018 |
| poverty\_ratio | Poverty income ratio (PIR) - a ratio of family income to poverty threshold | Numeric |  | 1998-1994  1999-2018 |
| pregnant | Currently pregnant | Numeric | 0: not pregnant  1: pregnant | 1998-1994  1999-2018 |
| adl | Activities of daily livings | Numeric |  | 1999-2018 |
| bmi | Body mass index (kg/m2) | Numeric |  | 1998-1994  1999-2018 |
| height | Standing height (cm) | Numeric |  | 1998-1994  1999-2018 |
| waist | Waist circumference (cm) | Numeric |  | 1998-1994  1999-2018 |
| weight | Weight (kg) | Numeric |  | 1998-1994  1999-2018 |
| btotpf | Estimated percent body fat (%) | Numeric |  | 1999-2004 |
| ffm | Estimated fat-free mass (kg) | Numeric |  | 1999-2004 |
| fm | Estimated fat mass (kg) | Numeric |  | 1999-2004 |
| fev | Forced Expiratory Volume in the first 1.0 second (mL) | Numeric |  | 1998-1994  2007-2012 |
| fev\_1000 | FEV1/1000 (mL) | Numeric |  | 1998-1994  1999-2018 |
| grip\_r | Grip strength, right hand (kg) | Numeric |  | 2001-2004 |
| grip\_l | Grip strength, left hand (kg) | Numeric |  | 2001-2004 |
| grip\_d | Grip strength, dominant hand (kg) | Numeric |  | 2001-2004 |
| grip\_scaled | Grip strength, dominant hand, scale by gender (kg) | Numeric |  | 2001-2004 |
| health | Self-rated health | Numeric | 1: excellent  2: very good  3: good  4: fair  5: poor | 1998-1994  2001-2018 |
| lnwalk | Log (time to complete 20ft walk) (seconds) | Numeric |  | 1999-2002 |
| vomeas | Estimated VO2 max (ml/kg/min) | Numeric |  | 1999-2004 |
| **Biomarkers** | | | | |
| albumin | Albumin (g/dL) | Numeric |  | 1998-1994  1999-2018 |
| albumin\_gL | Albumin (g/L) | Numeric |  | 1998-1994  1999-2018 |
| alp | Alkaline phosphatase (U/L) | Numeric |  | 1998-1994  1999-2018 |
| bun | Blood urea nitrogen (mg/dL) | Numeric |  | 1998-1994  1999-2018 |
| creat | Creatinine (mg/dL) | Numeric |  | 1998-1994  1999-2018 |
| creat\_umol | Creatinine (umol/L) | Numeric |  | 1998-1994  1999-2018 |
| lncreat | Log (creatinine) (mg/dL) | Numeric |  | 1998-1994  1999-2018 |
| lncreat\_umol | Log (creatinine) (umol/L) | Numeric |  | 1998-1994  1999-2018 |
| glucose | Serum glucose (mg/dL) | Numeric |  | 1998-1994  1999-2018 |
| glucose\_mmol | Serum glucose (mmol/L) | Numeric |  | 1998-1994  1999-2018 |
| ttbl | Total bilirubin (mg/dL) | Numeric |  | 1998-1994  1999-2018 |
| uap | Uric acid (mg/dL) | Numeric |  | 1998-1994  1999-2018 |
| bap | Bone alkaline phosphatase (ug/L) | Numeric |  | 1999-2004 |
| basopa | Basophils percent (%) | Numeric |  | 1999-2018 |
| eosnpa | Eosinophils percent (%) | Numeric |  | 1999-2018 |
| lymph | Lymphocyte percent (%) | Numeric |  | 1998-1994  1999-2018 |
| mcv | Mean cell volume (fL) | Numeric |  | 1998-1994  1999-2018 |
| monopa | Monocyte percent (%) | Numeric |  | 1998-1994  1999-2018 |
| neut | Segmented neutrophils percent (%) | Numeric |  | 1999-2018 |
| rbc | Red blood cell count (million cells/uL) | Numeric |  | 1998-1994  1999-2018 |
| rdw | Red cell distribution width (%) | Numeric |  | 1998-1994  1999-2018 |
| wbc | White blood cell count (1000 cells/uL) | Numeric |  | 1998-1994  1999-2018 |
| cadmium | Cadmium (nmol/L) | Numeric |  | 1998-1994  1999-2016 |
| crp | C-reactive protein (mg/dL) | Numeric |  | 1998-1994  1999-2010  2015-2018 |
| crp\_cat | Dichotomous c-reactive protein (mg/dL) | Numeric | 0: crp 3  1: crp 3 | 1998-1994  1999-2010  2015-2018 |
| lncrp | Log (c-reactive protein) (mg/dL) | Numeric |  | 1998-1994  1999-2010  2015-2018 |
| cyst | Cystatin C (mg/L) | Numeric |  | 1988-1994  1999-2002 |
| dbp | Diastolic blood pressure (mm Hg) | Numeric |  | 1998-1994  1999-2018 |
| sbp | Systolic blood pressure (mm Hg) | Numeric |  | 1998-1994  1999-2018 |
| meanbp | Mean blood pressure (mm Hg) | Numeric |  | 1998-1994  1999-2018 |
| pulse | Pulse | Numeric |  | 1998-1994  1999-2018 |
| ggt | Gamma glutamyl transferase (U/L) | Numeric |  | 1998-1994  2001-2018 |
| glucose\_fasting | Plasma fasting glucose (mg/dL) | Numeric |  | 1999-2016 |
| insulin | Insulin (uU/mL) | Numeric |  | 1998-1994  1999-2016 |
| phpfast | Number of hours since last ate or drank (hours) | Numeric |  | 1998-1994  1999-2018 |
| hba1c | Glycohemoglobin (%) | Numeric |  | 1998-1994  1999-2018 |
| hdl | HDL (mg/dL) | Numeric |  | 1998-1994  1999-2018 |
| ldl | LDL (mg/dL) | Numeric |  | 1998-1994  1999-2016 |
| trig | Triglyceride (mg/dL) | Numeric |  | 1998-1994  1999-2016 |
| totchol | Total cholesterol (mg/dL) | Numeric |  | 1998-1994  1999-2018 |
| vitaminA | Vitamin A (umol/L) | Numeric |  | 1998-1994  1999-2006 |
| vitaminE | Vitamin E (umol/L) | Numeric |  | 1998-1994  1999-2006 |
| vitaminB12 | Vitamin B12 (pmol/L) | Numeric |  | 1998-1994  1999-2014 |
| vitaminC | Vitamin C (umol/L) | Numeric |  | 1998-1994  2003-2006 |
| **Mortality** | | | | |
| eligstat | Eligibility status for mortality follow-up | Numeric | 1: eligible  2: under age 18  3: ineligible | 1998-1994  1999-2010 |
| status | Final mortatlity status | Numeric | 0: assumed alive  1: assumed deceased | 1998-1994  1999-2010 |
| ucod\_leading | Underlying leading cause of death | Numeric | 1: diseases of heart  2: malignant neoplasms  3: chronic lower respiratory diseases  4: accidents  5: cerebrovascular diseases  6: Alzheimer’s disease  7: diabetes mellitus  8: influenza and pneumonia  9: nephritis, nephrotic syndrome and nephrosis  10: all other causes | 1998-1994  1999-2010 |
| diabetes | Diabetes flag from multiple cause of death | Numeric | 0: no  1: yes | 1998-1994  1999-2010 |
| hyperten | Hypertension flag from multiple cause of death | Numeric | 0: no  1: yes | 1998-1994  1999-2010 |
| permth\_int | Number of person months of follow-up from NHANES interview date (months) | Numeric |  | 1998-1994  1999-2010 |
| time | Number of person months of follow-up from NHANES Mobile Examination Center date | Numeric |  | 1998-1994  1999-2010 |
| **The following variables are also included in the dataset from the bioage results:** | | | | |
| kdm0 | Original KDM biological age | Numeric |  | 1998-1994  2007-2010 |
| kdm\_advance0 | Original KDM biological age advancement | Numeric |  | 1998-1994  2007-2010 |
| phenoage0 | Original Levine’s phenotypic age | Numeric |  | 1998-1994  1999-2010  2015-2018 |
| phenoage\_advance0 | Original Levine’s phenotypic age advancement | Numeric |  | 1998-1994  1999-2010  2015-2018 |