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Midlife in the United States (MIDUS 2): Biomarker Project, 2004-2009

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Readme First Memo

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README file for MIDUS 2 Biomarker Project (P4) Data
(Updated June 2018)

***** It is important to read through this document carefully *****
***** prior to using the data and documentation. *****

The purpose of this memo is to provide basic information about the MIDUS 2 Biomarker Project (P4) data and documentation that are publicly available via ICPSR. For details about the MIDUS samples see *Descriptions of MIDUS Samples* included with the MIDUS 2 Survey (2004-2006) documentation.

Data and documentation for other MIDUS longitudinal projects are available through:

1. The public archive at ICPSR (http://www.icpsr.umich.edu/icpsrweb/NACDA/studies/36532/version/2)
2. The MIDUS Colectica Portal (http://midus.colectica.org/) which houses interactive codebooks for all the publicly available MIDUS projects. The Portal also includes search and explore functions, links to documentation, and a custom download function.

Decoding Documentation File Names
The documentation files described below are available as PDF files through the Colectica Portal and at ICPSR. The Portal supports the naming system below, but unfortunately, the file management system in place at ICPSR renames the files into the following format:

Documentation.pdf (*shortfilename*)

The *shortfilename* is based on the file names of the documents we submit (see below), thus, the name of this readme file at ICPSR is something like "Documentation.pdf (readme)". To find documents of interest on the ICPSR site it is recommended that you review the following descriptions and then look for key words from these file names in the parenthetical *shortfilenames*. After downloading the files it may be helpful to rename them according to the conventions below for future reference.

A. What Data Files Are Available?

The MIDUS 2 Biomarker (P4) dataset:
M2_P4_AGGREGATED_UPDATED_PUBLIC_20180502.sav

An additional dataset accompanies this release. Please note this is a ***stacked*** file. That is, there is one row per medication reported, thus the 'N' indicates the total number of medications, not the number of cases:
M2_P4_MEDICATION_STACKED_UPDATED_PUBLIC_N=7174_20180425.sav

B. What is the Structure of the Biomarker (P4) Datasets?

The aggregated file is a SPSS (ver. 23) dataset comprised of survey data (self-administered questionnaires, staff administered interviews), physical exam data, medication, physiological and

assay data. The file contains 3,228 variables for 1255 cases from the MIDUS 2 MainRDD, Twin, and Milwaukee African American samples.

The data set has been initially cleaned, meaning that value ranges and skip patterns have been checked, and data entry errors corrected. Variables have been named according to the MIDUS 2 naming conventions. All variables include labels to aid interpretation. Value labels have been applied where appropriate and discrete missing values have been defined. The following documents provide additional information about the data:

> ***MIDUS II_Naming and Coding Conventions:*** is posted with the MIDUS 2 Survey (Project 1) data and describes conventions for naming and coding variables. (https://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/4652#)
>
> ***M2P4_DDI_CODEBOOK_20180606.pdf***: provides additional details about each variable (e.g. question text, notes, frequency distributions etc.). The codebook was created according to DDI (Data Documentation Initiative) standards for linking data and metadata. A PDF of the codebook is available at ICPSR. An interactive version is available through the Colectica Portal (see link above).

The *stacked* medication file is a SPSS (ver. 23) dataset comprised of data about medications taken by MIDUS 2 Biomarker cases. The file contains data about 7,174 medications. Details about the MIDUS 2 *stacked* medication data can be found here:

> ***MIDUS-MIDJA Biomarker Medication Documentation 6-17-16*** – provides details about details protocols for linking MIDUS and MIDJA medication data to the Lexicomp® Lexi-Data database that contains therapeutic and pharmacologic class codes. It also includes details about coding text data on reasons for taking medications as well construction of related administrative and other variables.
>
> ***M2_P4_MEDICATION_STACKED_DDI_CODEBOOK_20180425.pdf*** – provides additional details about each variable (e.g. question text, notes, frequency distributions, etc.). The codebook was created according to DDI (Data Documentation Initiative) standards for linking data and metadata

C. ID Systems

Respondent IDs. The same respondent identification system has been applied to all MIDUS 2 data. The variable is called M2ID. This system has been implemented to help maintain confidentiality of respondents. It is used in all of the MIDUS longitudinal data files (MIDUS 1, MIDUS 2 and MIDUS 3).

Family IDs. A family identification system has been applied to MIDUS 2 data. The variable is called M2FAMNUM. Every respondent has a family number. Related respondents (Main-Siblings or Twin-Twin) have the same family number. This system is used in all of the MIDUS longitudinal data files (MIDUS 1, MIDUS 2 and MIDUS 3).

D. Instruments, Protocols, and Documentation Files

This section provides an overview of the Documentation files and Instruments that are linked to the MIDUS 2 Biomarker data.

General Documents:

Biomarker Project Acknowledgement Text*:* Please include in all publications using data from the Biomarker project.

M2 Biomarker (P4) Project Summary*:* Project overview contains a description of the protocol and along with general information about the instruments and data collection protocols identified below.

M2 Biomarker (P4) Readme Data File Notes: contains information about administrative variables, procedures for handling missing data and other issues that arose during data collection and cleaning, including details about coding of text data.

Instruments:

The following are available as standalone files. Other instruments and data collection tools are included in the composite documentation files as indicated below.

Self-Administered Questionnaire: 25 page booklet containing psychosocial scales assessing:

- Mood (e.g. anger, anxiety, depression, positive affect).
- Stress.
- Relationships with others (e.g. support received and given, interdependence & independence, social obligation).
- Life experiences (e.g. childhood trauma, positive events).
- Sympathy, adjustment, self-control.
- Having a good life.

Medical History*:* 25 page booklet assessing medical history, health behaviors and significant life events since completing the MIDUS 2 Survey Project (P1):

- Symptoms and conditions.
- Major health events (e.g. broken bones, surgeries, injuries, etc.).
- Immune function (e.g. allergies and immunizations).
- Family medical history.
- Current health practices (e.g. diet, exercise, smoking, alcohol use, health care and screenings).
- Life events (e.g. change in marital status, deaths of family member or close friends, and, other events as reported by respondent).

Composite Documentation Files:

The following additional documents about biomarker protocols are also available. If reporting forms or other instruments were used in these assessments copies are included in the documents.

For example, a copy of the Physical Exam form is included in the Physical Exam documentation file below.

- Constructed scales. Scale scores have been created for the Pittsburgh Sleep Questionnaire (PSQ) and most of the psychosocial constructs assessed in the Self-Administered Questionnaire. In addition, other composite variables have been constructed (e.g. Waist/Hip Ratio, Body Mass Index (BMI), counts of conditions). These variables can be found at the end of the data for the instrument or protocol containing the variables used to create the scale score or composite. Details about creating these variables can be found in:

  M2 Documentation of Scales & Composite Variables

- Tissue Samples. Details about collection, processing, and assay of blood, urine, and saliva samples obtained during the clinic visit can be found in the following file:

  M2 Blood, Urine and Saliva Data

- Bone Health*:* the procotol includes DXA scans to assess bone density and body composition, blood assay measures of bone turnover, and self-report data including:
  - History of broken bones and falls for respondent and immediate family
  - Medical conditions that might impact bone health
  - Medication/Treatment history -. use of osteoporosis medications and other medications or treatments (e.g. chemotherapy) that could affect bone health
  - History of smoking, passive smoking, exercise
  - Women's health- # of past pregnancies, current menarchal status (e.g. pre or post-menopausal)
  - Metal in the body – presence of pins, rods, or other metal in body to facilitate interpretation of whole body scan data.

  Details about these assessment can be found in:

  M2 Bone Data Documentation

- Medications*:* Detailed information about prescription, over-the-counter, and alternative medications used by participants is obtained during the clinic visit. Details about the protocol, a copy of the Medication Chart, and available measures including therapeutic and pharmacologic classifications can be found in the following files:

  M2_P4_Medication Documentation

  MIDUS-MIDJA Biomarker Medication Documentation 9-29-17 (NEW)

- Physical Exam Protocol: a short physical exam is performed during the visit. It includes the following assessments of:
  - Vital signs.

- Morphometrics (weight, height, waist, hip measurements).
- Functioning (grip strength, visual acuity, peak flow, timed walk, chair stands).
- Integument (hair, skin).
- Hearing (tuning fork, bone conduction, pinnae, external canal, ear drum).
- Sinuses, Mouth, Neck.
- Cardiovascular function (auscultation, murmurs, pulses).
- Thorax and Lungs (inspection, auscultation).
- Musculoskeletal system (muscles, spine, joints, tender points, extremities).
- Neurological function (coordination, motor system, reflexes, sensation, autonomic).

Details about these protocols can be found in:

M2 Physical Exam Data

- Psychophysiology Protocol: the biomarker project includes an experimental psychophysiology protocol measuring heart rate variability, beat-to-beat blood pressure, and respiration along with saliva cortisol levels. Details about the protocol and available measures can be found in the following file:

M2 Psychophysiology Protocol Documentation

- Sleep Data: sleep is assessed via self-administered questionnaire and actigraphy (UW only). Details about these assessments and copies of the instruments can be found in the following file:

M2 Sleep Data Documentation

D. Data and Documentation Updates and Additions

Significant modifications have been made to the aggregated data file. In some instances resources became available to support additional processing of extant raw data after the initial MIDUS 2 data release in 2010. In other instances, the changes are made to optimize consistency in data availability and formatting between the MIDUS 2, MIDUS Refresher, and MIDJA Biomarker data. The most significant changes include the addition of new variables in several areas. These are highlighted below with additional details, unless otherwise noted, included in corresponding documentation files described above. Other changes include correcting typos in variable and value labels, as well as some formatting changes, most notably time variables, are also highlighted below. Unless otherwise noted, all of the new variables correspond to variables that are also included in the MIDUS Refresher data and/or MIDJA Biomarker data.

New Variables:

1. **Medication Data**. As noted above the medication data has been significantly enhanced via linkage to the Multum Lexicomp® Lexi-Data database. In addition the protocol for coding text data regarding reasons for taking medications has been significantly expanded to support coding all responses. Both of these changes in data processing allow for more comprehensive coding of therapeutic and pharmacologic class and reasons for taking medications than was possible under the earlier methodologies. ***Thus, the new data described below replaces the***

earlier data about medications and reasons for taking them.

a. **NEW** - The following new sets of variables have been added to the aggregated data file as a result of the Lexicomp linkage (see Documentation of MIDUS and MIDJA Medications for details):
    i. Drug IDs and Generic Names – where # indicates the Medication number (i.e. location in the list of medications of a given type).
        1. B4X_MID# - DrugID from the Lexi-Data database
        2. B4X_GN# - Generic Drug Name associated with the DrugID
    ii. Therapeutic Class Codes where # indicates the class code
        1. B4XTC# - Lexi-Data major therapeutic class codes
        2. B4X_TC#S# - Lexi-Data Sub-class codes for major therapeutic classes
        3. B4X_TC#S#_1 – Lexi-Data Sub-sub-class codes for major therapeutic classes
    iii. Pharmacologic Class Codes – where # indicates the class code
        1. B4XPC# - Lexi-Data pharmacologic class codes
    iv. Additional related dummy and count codes related to the Therapeutic and Pharmacologic class codes have also been created.
    v. Allergies – the following new variables are now available regarding Medication Allergies reported by participants (where # refers to the medication number) :
        1. B4XMMID# – DrugID from the Lexi-Data database
        2. B4MMGN# - Generic Drug Name associated with the DrugID
        3. B4XMMRC# - Codes representing the allergic reaction to the medication (see documentation for details about coding)
b. **NEW** - Protocols for coding reasons for taking medications were modified such that the reasons reported are assigned a code from one of two mutually exclusive coding systems (see Medication documentation for details).
    i. B4X_ICD9M# -- 3 digit numeric codes representing major categories in the International Classification of Diseases, 9th Revision.
    ii. B4X_MDC# – 5 character alphanumeric variables representing a set of codes used to categorize reasons for taking a medication that could not be classified into an ICD-9 category
c. **REPLACED** – variables having the following general formats were removed from the data set and replaced by the above more comprehensive variables.
    i. ***B4X(type)C#*** variables – these variables contain Medication Codes based on the American Hospital Formulary System (AHFS) Pharmacologic-Therapeutic classification system.
        1. Variables containing this information had the format where ‘type’ refers to the medication type (P=prescription, O=Over the Counter, A=Alternative) and ‘#’ refers to the medication number (i.e. prescription medication 1, 2, etc.)
    ii. ***B4X_D*** and ***B4X__C*** variables – these represent Yes/No and Count variables constructed to indicate whether the participant was taking medications of several types.
    iii. ***B4X(type)DC#*** variables – these variables contained diagnosis codes based on

a less rigorous protocol for coding text data about reasons for taking medications using the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM).

2. Psychophysiology Data – measures of beat to beat blood pressure and respiration obtained during the psychophysiology protocol have been processed thus measures of stress reactivity and recovery have been expanded to include indicators of Beat to Beat Blood Pressure, BP Variability (BPV), BaroReflex Sensitivity (BRS) and Respiration and related data quality filter variables.

3. Bone Data – the extant bone mineral density data was obtained via (Dual Energy X-ray Absorptiometry –DXA). Data obtained via DXA scan has been expanded to include the following:
    a. Body Composition – the DXA protocol was modified late in the MIDUS 2 data collection period to include whole body scans. That data has been added to the M2 data file to facilitate analysis that utilize corresponding data available for a subset of MIDUS Refresher Biomarker participants.
    b. Bone Strength Analysis – DXA data were re-analyzed and measured to generate this data. See the Bone documentation for details.

4. Actigraphy Data - raw activity data from the Actiwatch was re-analyzed to generate indices summarizing rest-activity patterns beyond extant sleep-wake statistics

5. Blood Assay Data: there are two updates to the extant assay data -
    a. CRP (C-Reactive Protein) – samples falling below the assay range were re-assayed using a new high-sensitivity assay kit. Thus, those values have been updated.
    b. Multi-cytokines: IL6, IL8, IL10, and TNFα assays were completed using stored MIDUS 2 samples after this set of assays was added to the MIDUS Refresher Biomarker protocol.
6. Text Coding – all of the paper and pencil instruments include places to record responses to open-ended questions (i.e. have you ever had surgery, do you engage in regular exercise) or requests to 'Please Specify' or 'Please Describe' when the respondent gives a response in the category "Other". This information was entered into the raw data files but the text responses are not included in the public data.
    a. Coding has now been completed for some text variables.
        i. Coding of medication data is described above
        ii. Additional details about coded text data can be found in the follow documents
            1. M2 Biomarker Readme DataFile notes
            2. M2 Physical Exam Data
            3. M2 Sleep Data Documentation
    b. The interactive DDI codebook (via the Portal) or the DDI Codebook.pdf (available at ICPSR) includes variable specific notes identify new code variables or variable forw which codes have been expanded as well as notes about coding that is in progress or pending.
7. M2 P4 Documentation of Scales and Composite Variables – this document has been updated to include details about the following new scales and composite variables:

a. CES-D – new subscales have been added
b. Friendship Support – This scale only has one item, thus the variable name was changed from B4QSGFA to the original variable name as it appears in the data [B4Q13H1].
c. Medication Use – includes updated text about medication summary variables related to changes described above
d. Age at Clinic Visit – a new age variable has been created
e. Metabolic Equivalent of Task (MET) – constructed variable indicating total number of MET minutes per week.

8. Variable label, formatting changes: the following changes were also made as appropriate
    a. Variable labels –
        i. Typographic errors were corrected
        ii. Text that had been previously abbreviated due to software limitations has been expanded
    b. Value labels –
        i. All value labels are now capitalized
        ii. Extra characters have been removed as appropriate
        iii. DON'T KNOW labels are now consistent

9. Time variables- MIDUS conventions for formatting time variables were modified at the Refresher, the MIDUS 2 time variables were updated to be consistent with the new format. See the M2 Biomarker (P4) Readme DataFile Notes for details.