README file for Public Update
MIDUS 2 Biomarker Project (P4) Data
April 2024

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

This document outlines a number of revisions, improvements, and updates that have been made to the MIDUS 2 Project 4 (M2P4) Biomarker data since the last version published in 2018.

Note: The revised data and documentation are intended to REPLACE all the files associated with previous releases of the M2P4 data and documentation.

1. What Data Files Are Available?

a. The MIDUS 2 Biomarker (P4) dataset:
M2_BIO_AGGREGATE_N1255_20240405.sav
b. 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_BIO_MEDICATION_STACKED_N7174_20240404.sav

2. Revisions in the Updated M2P4 Datasets

a. For assay data, soluble urokinase plasminogen activator receptor (suPAR) is added as an inflammatory biomarker. Three new urine assay measures—albumin, Albumin-Creatinine ratio (uACR), and Cystatin C—are added as indicators for kidney function.
b. For diet and nutrition in the medical history, a new composite index variable B4HMHEI (MIDUS Healthy Eating Index) is added.
c. For why a medication is being taken, an ICD-10 code is added to each medication, in addition to the ICD-9 code previously available.
d. Text responses to open-ended questions or 'other specify' questions in the medical history, bone questionnaire, physical exam, PSQ, and sleep diary are coded into categorical variables. Either new categorical variables are created or extant codes for a related variable are expanded. About 160 variables are added to the larger aggregated dataset. Detailed information can be found in the Documentation for Coded Text Responses.
e. The M2 high frequency (HF) heart rate variability in Psychophysiology Data used a 0.15-0.50 Hz band, while MR1 and M3 used a narrower band (0.15-0.40 Hz). The 0.15-0.40 Hz band comparable with MR1 and M3 data is added in this update. We named them HF (high freq HR variability) and LHF (natural log of HF-HRV) for each session period, and re-named the original HF and LHF variables HF5 and LHF5.
f. For lunar femur scan data, when data for both sides were available, we previously computed a set of combined values using the lowest score (either left or right). In this

update release, we included data for both femurs, and removed the computed one side data.

g. Variable labels and value labels of all variables have been reviewed and updated as needed, including correcting typographic errors and expanding text that had been previously abbreviated due to software limitations.

3. What is the Structure of the MIDUS 2 Biomarker Datasets?

The aggregated file is a SPSS dataset comprised of survey data (self-administered questionnaires, staff administered interviews), physical exam data, medication, physiological, and assay data. The file contains 3,516 variables for 1,255 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 Naming, Coding, and Formatting Conventions: is posted with the MIDUS 2 Survey (Project 1) data and describes conventions for naming and coding variables. It is included with the M2 Survey Project documentation in the MIDUS Portal or at ICPSR.

M2_P4_AGGREGATED_CODEBOOK: 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 (https://midus.colectica.org).

The *stacked* medication file is a SPSS 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:

M2_P4_MEDICATION_STACKED_CODEBOOK – 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

4. 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.

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.

General Documents:

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

***M2 P4 Biomarker 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 P4 Biomarker Project Data File Notes: Contains details about the data that users should be aware of prior to beginning analysis, including administrative variables, procedures for handling missing data and other issues that arose during data collection and cleaning.

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 Data 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 P4 Documentation for PsychoSocial Constructs and Composite Variables

- Coded Text Responses. Text responses to open-ended questions or requests to 'Please Specify' or 'Please Describe' are coded into numeric categories. Either new categorical variables are created or extant codes for a related variable are expanded. Details are documented in the following file:

M2 P4 Documentation for Coded Text Responses

- 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 P4 Blood-Urine-Saliva Data Documentation

- Bone Health*:* the protocol 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 – number 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 assessments can be found in:

M2 P4 Musculoskeletal Health 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 Data Documentation

- 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, and 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 P4 Physical Exam Data Documentation

- 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 P4 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 P4 Sleep Data Documentation

5. 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).

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Please report any errors or inconsistencies you find in the data or documentation to
midus_help@aging.wisc.edu

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