README file for MIDUS Refresher Biomarker Project (P4)
July 2019

The purpose of this memo is to provide basic information about the MIDUS Refresher Biomarker Project (P4) data and documentation that are publicly available via ICPSR. For details about the MIDUS Refresher samples see the *Field Report* included with the MIDUS Refresher Survey (2011-2014) documentation. Data and documentation for other MIDUS Refresher 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.

Note, data users notified MIDUS of the following issues. Additional notes about these appear below as indicated:

- April 2019 - Body Impedance Spectroscopy labeling error, see p. 4 Musculoskeletal Health
- July 2019 – Catecholamine (Norepinephrine, Epinephrine, Dopamine) decimal placement error, see p. 5 Tissue Samples.

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 Refresher (SPSS) dataset is called:

MR_P4_AGGREGATE_N863_20171011.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:

MR_BIO_MEDICATION_STACKED_N=5118_20180320.sav

B. What is the structure of the MIDUS Refresher Biomarker Dataset?

The file is a SPSS (ver. 23) dataset comprised of survey data (self-administered questionnaires, staff administered interviews), as well as physical exam, medication, functional, physiological and assay data. The file contains 3,187 variables for 863 cases from the MIDUS Refresher MainRDD 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 Refresher 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:

MR_M3_Naming and Coding Conventions: is posted with the MIDUS Refresher Survey (Project 1) data and describes conventions for naming and coding variables. It is included with the MR Project 1 documentation in the Portal or at ICPSR: (http://www.icpsr.umich.edu/icpsrweb/ICPSR/series/203/studies/36532?archive=ICPSR&sortBy=7

MR_P4 DDI CODEBOOK_20171011.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 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.

MR_BIO_MEDICATION_STACKED_DDI_CODEBOOK_20180412.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. Documentation files and Instruments

This section provides an overview of the Documentation files and Instruments that are linked to

the Refresher Biomarker data.

General Documents:

MIDUS_Citation Acknowledgement_20170330: specifies funding acknowledgement text for all the MIDUS projects that should be included in all publications.

MR_P4_Biomarker Project Summary 9-29-17: Overview of the Biomarker project including descriptions of the sample, recruitment process and the clinic visit. General descriptions of the psychosocial and biomarker assessments (physiological measures, tissue samples, experimental procedures etc.) comprising the protocol are also provided along with references to documents containing more detailed information as appropriate.

MR_P4_Biomarker Project Readme DataFile Notes 9-29-17: Contains details about the data that users should be aware of prior to beginning analysis, including particulars of variable names (i.e. designated 4th character) specifying data type.

Survey Instruments. The Biomarker project includes a Medical History Interview and a Self-Administered Questionnaire. Copies of these instruments with variable names included are available as standalone files.

MR_P4_Biomarker SAQ V2

MR_Biomarker Medical History Interview

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 and Composite variables. A variety of psycho-social scales and constructed variables are included in the dataset. These variables are comparable to MIDUS 2 constructed scales and composites. Details about their construction and background are documented in the following file:

  MR_P4_Biomarker Psychosocial Constructs and Composite Variables 9-27-17

- Gait. An assessment of gait was added to the biomarker protocol for the Refresher. This assessment is only completed at UW. Details about the protocol and available measures can be found in the following file:

  MR_P4_Gait Documentation 9-28-17

- Medication. 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:

MR_P4_Medication Documentation 9-29-17

MIDUS-MIDJA Biomarker Medication Documentation 9-29-17

- Musculoskeletal Health. The protocol includes multiple assessments of bone health (DXA scans, blood assay, self-report), body composition (muscle, fat) measured via DXA and body impedance, and muscle function (jump, balance). These assessment are described in:

  MR_P4 Musculoskeletal Health and Function Data Documentation 3-23-18

  Note – a new citation was added in March 2018.

  Correction (April 2019): In response to a question from a data user we identified an incorrect variable label. The data file will be updated in a future public release, but for now users of the BIS (BioImpedance Spectroscopy) data should be aware that the reference to 'Fat Free', in the variable label for RA4IMFFMP is incorrect. This variable is a measure of FAT Mass percentage thus the correct label is.

  - *BIS: Mean whole body percent fat mass(FM/total body mass*

  Users should change this label in the data file to avoid future misinterpretations of their findings.

- Physical Exam. A short physical exam is performed during the clinic visit. Details about the protocol and available measures can be found in the following file along with a copy of the physical exam form:

  MR_P4_Physical Exam Data 9-27-17

- Ankle Brachial Index (ABI). An assessment of Ankle Brachial Index was added to the Biomarker protocol for the Refresher. This assessment was completed only at UCLA. Details about the protocol and available measures can be found in the following file:

  MR_P4 Ankle Brachial Index (ABI) Documentation 9-28-17

- Psychophysiology. 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:

  MR_P4_Psychophysiology Protocol Documentation 9-27-17

- Sleep. 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:

MR_P4_Sleep Data Documentation 9-27-17

- 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:

  MR_P4_Blood Urine Saliva Data Documentation 3-21-18

  Note:
  - March 2018 - details about new multi-cytokine assays added to the assay sensitivity table.
  - July 2019 – details about the catecholamine data in the assay sensitivity table are not affected by the decimal error described below.

Correction (July 2019) Catecholamine Data: In response to a question from a data user MIDUS identified an error in some of the MIDUS Refresher (MR) catecholamine (Norepinephrine, Epinephrine, Dopamine) data. The error was introduced in the initial data processing steps as we prepared the raw assay values for public release. When processing data for release we try to maintain consistent units wherever possible. For the catecholamines this means that we adjust the original units for Norepineprhine, Epinephrine, and Dopamine from ng/mL to ug/dL. Unfortunately the MR variable label indicates that the adjustment was made but it was not. As a result, the values in the data are inflated by a factor of 10 compared to the corresponding MIDUS 2 (M2) variables. The following SPSS syntax can be used to adjust the values for RA4BNOREP, RA4BEPIN and RA4BDOPA from ng/mL to ug/dL:

```
COMPUTE RA4BNOREP=RA4BNOREP/10.
COMPUTE RA4BEPIN=RA4BEPIN/10.
COMPUTE RA4BDOPA=RA4BDOPA/10.
EXECUTE.
```

Note, the missing value code for Epinephrine also needs to be adjusted as follows:

```
RECODE RA4BEPIN (99.8=998).
EXECUTE.
```

The values for the above variables are used to compute the corresponding creatinine-adjusted values in the following variables (RA4BNOCRE, RA4BEPCRE, RA4BDOCRE), so the error carried through to these as well. After applying the above correction,users can re-calculate the creatinine-adjusted variables using the following SPSS syntax:

```
COMPUTE RA4BNOCRE=RA4BNOREP/(RA4BUCREA * .001).
COMPUTE RA4BEPCRE=RA4BEPIN /(RA4BUCREA * .001).
COMPUTE RA4BDOCRE=RA4BDOPA /(RA4BUCREA * .001).
EXECUTE.
```

```
COMPUTE RA4BNOCRE = RND(RA4BNOCRE*1000)/1000.
COMPUTE RA4BEPCRE = RND(RA4BEPCRE*1000)/1000.
COMPUTE RA4BDOCRE = RND(RA4BDOCRE*1000)/1000.
EXECUTE.
```

Users should also note that at M2 the catecholamine assays were performed at the Mayo Laboratories, while the MR assays have been done at the UW Institute for Clinical and Translation Research (ICTR) Lab. When that change occurred the BioCore developed algorithms to adjust for the change in labs (and thus values) between M2 and MR for the Norepinephrine and Dopamine, but NOT Epinephrine, variables. Because the MR Epinephrine data are not adjusted for this change, these values will be higher than those in the M2 Epinephrine data.

Note, the BioCore tracks these types of changes in subsequent waves of data collection and develops algorithms to adjust assay data values back to the original M2 biomarker values. Details about these adjustments and the reasons for them are included in the Assay documentation released with each wave of data.

D. Other important information.

ID system. We have developed a separate 5-digit respondent identification variable for MIDUS Refresher cases called MRID. This ID system is implemented to help maintain confidentiality of respondents and will be used throughout the publicly available MIDUS Refresher datasets. It can be used to link the Project 4 Biomarker dataset to the other Refresher datasets.

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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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