

# **Health and Retirement Study**

**2006 Biomarker Data  
Version 1.0, October 2007  
(Sensitive Health Data)**

**Data Description and Usage**



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## DATA DESCRIPTION AND USAGE

### 1. Introduction

The Biomarker Data (Early, Version 1.0) release consists of information derived from the Health and Retirement Study (HRS), a national longitudinal study of the economic, health, marital, family status, and public and private support systems of older Americans. The National Institute on Aging provided funding (NIH U01 AGO9740), with supplemental support from the Social Security Administration. The Institute for Social Research (ISR) Survey Research Center (SRC) at the University of Michigan conducted the survey. Specifically, these data were part of the physical measures and biomarkers portion of the 2006 Core data collection.

Under the terms specified in the *Sensitive Health Data Use Agreement*, the 2006 Biomarker data are intended for exclusive use by you. If there are any questions about its use, please contact the HRS Help Desk ([hrsquest@isr.umich.edu](mailto:hrsquest@isr.umich.edu)).

This document may be reproduced only with the written consent of the staff of the Health and Retirement Study, Institute for Social Research, University of Michigan.

### 2. Background

In 2006, HRS initiated what is referred to as an Enhanced Face-to-Face Interview. In addition to the core interview, the Enhanced Face-to-Face Interview includes a set of physical performance measures, collection of biomarkers, and a Leave-Behind Questionnaire on psychosocial topics. A random one-half of households were pre-selected for the enhanced face-to-face interview in 2006. In coupled households, both members of the couple were selected. Selected respondents who completed an in person self-interview (as opposed an interview done with a proxy), at least through Section I - the physical measures and biomarkers section, and who were non-institutionalized at the time of the interview were eligible for the physical measures and biomarkers components.

The specific measures included in the physical measures and biomarkers component are:

- Blood pressure
- Breathing test (peak flow)
- Grip strength
- Timed walk (8 ft.)
- Balance tests (semi-tandem, side-by-side, full tandem)
- Height
- Weight
- Waist circumference
- Saliva (for which DNA was extracted and stored)

Blood spots (analyzed to date for Hemoglobin A1c, total cholesterol and HDL cholesterol)

Results from the first eight items (blood pressure through waist circumference) were released with the 2006 Core data.

This file contains data pertaining to the administration and analysis of the blood spots. The test results available to date include Hemoglobin A1c, total cholesterol and HDL cholesterol. Analyses for C-reactive protein and cystatin C are forthcoming, and a new version of this file will be issued when those analyses have been completed.

Three separate consents were obtained to cover: 1) all of the physical measures, plus blood pressure; 2) saliva sample; and 3) dry blood spots. The physical measures booklet, which the interviewers used to administer the physical measures and biomarkers, is available on the HRS website: (<http://hrsonline.isr.umich.edu/meta/2006/core/qnaire/online/44hr06BioMarker.pdf>). The booklet contains the consent forms, as well as instructions and protocols for all of the measurements.

### **3. Protocol and Equipment Used for Blood Sample Collection**

The process of blood acquisition and determination was performed using instructions and kits from Biosafe Laboratories, Chicago, IL. Biosafe is a CLIA-certified laboratory, i.e., it has been certified to provide values of sufficient accuracy for clinical use. Blood was taken by pricking the participant's finger with a sterile lancet after cleansing the finger with an alcohol swab. Droplets of blood were expressed from the finger and directly placed on specially treated filter paper, within circles printed on the paper. There was an attempt to fill at least four circles, but this was not always successful. The blood spots on the filter paper were then placed in special foil envelopes with a dessicant packet and then within mailing containers, and shipped to Biosafe Labs. The process is constructed so that no special temperature control is needed to preserve the values of the specimens.

Below is a summary of the protocol and equipment that the interviewers used in the blood sample collection. Additional details can be found in the physical measures booklet at the link given above.

#### Protocol

- The interviewer placed all materials on a hard, clean, and dry surface.
- The respondent was instructed to rub their hands together or massage them to get the blood flowing to the finger tips.
- The barcode label was placed on the authorization form, the consent form, the lab authorization form and on both blood collection cards.
- The date and time of the blood collection was recorded on the lab authorization form, and in this booklet.

- The interviewer put on a pair of latex gloves and cleaned the respondent's finger with the alcohol prep pad. The respondent's finger was dry before proceeding.
- While holding the respondents hand firmly, the lancet was placed on the side of the pad of the respondent's middle or ring finger or the thumb.
- The lancet was pressed firmly to prick the finger. If necessary, the respondent was instructed to gently squeeze their finger from the base several times to form a large drop of blood.
- The first drop of blood was wiped away with the sterile gauze pad.
- The next large drop of blood was formed and allowed to drop onto the first circle on the blood spot card.
- Interviewers were instructed to start with the left-most circle and continue filling the spots left to right (fully filling one spot before moving on to the next). If a single drop of blood does not completely fill a circle, you may add additional drops beside the first until the circle is filled. The drops should not overlap.
- If the blood "pooled" on the surface of the card, the card was gently tapped to break the surface tension of the blood and allow it to flow through to the card below.
- Once the spots on the analysis card were filled the respondent was instructed to fill as many of the spots on the storage card as possible.
- The respondent was provided with a gauze pad and a bandage once the measure was complete.
- The blood spot samples were air dried for 10 to 15 minutes and then placed in their respective foil pouches.
- Both sealed foil return bags and the top portion of the lab authorization form were placed in a prepaid mailing envelope addressed to the laboratory.
- The sample was mailed to the laboratory when the interviewer left the respondent's home.

#### Special instructions

Interviewers were supplied with first aid instructions to use in case the respondent's finger continued bleeding. If the respondent preferred, they could prick their own finger. Only the study materials were used to conduct this measure. A second finger prick could be carried out if the first was not adequate.

#### Equipment

- Cholesterol and A1c Collection Kit
- Lab Authorization Form
- 2 Blood Collection Cards (one to be analyzed, one for storage)
- 2 Foil Blood Sample Return Bags with Desiccant;
- Lancets

- Alcohol Prep Pad
- Sterile Gauze Pad
- Adhesive Bandage
- Pre-addressed, Prepaid Mailing Envelope
- Latex Gloves

#### 4. Data File

The 2006 Biomarker (Early, Version 1.0) data are distributed in 1 data file at the respondent level. The file consists of 8,392 cases, 22 variables, and the primary identifiers (HHID, PN). The records in the data files are sorted in order by these primary identifiers. The following are the variables included in the 2006 Biomarker data set.

| Variable Name | Label                               |
|---------------|-------------------------------------|
| KCOL_MNTH     | HRS 2006 DATA COLLECTION MONTH      |
| KCOL_YEAR     | HRS 2006 DATA COLLECTION YEAR       |
| KREP_MNTH     | HRS 2006 BLOOD REPORT MONTH         |
| KREP_YEAR     | HRS 2006 BLOOD REPORT YEAR          |
| KDAYS         | NUM DAYS BTWN COLLECTION AND REPORT |
| KHDL          | RESPONDENT HDL READING              |
| KTOTCHOL      | TOTAL CHOLESTEROL                   |
| KA1C          | RESPONDENT A1C READING              |
| KI922         | BLOOD CONSENT                       |
| KI923         | BLOOD COMPLETE                      |
| KI924M1       | BLOOD WHY NOT COMPLETE              |
| KI924M2       | BLOOD WHY NOT COMPLETE              |
| KI924M3       | BLOOD WHY NOT COMPLETE              |
| KI924M4       | BLOOD WHY NOT COMPLETE              |
| KI924M5       | BLOOD WHY NOT COMPLETE              |
| KI943M1       | WHY NO CONSENT BLOOD                |
| KI943M2       | WHY NO CONSENT BLOOD                |
| KI943M3       | WHY NO CONSENT BLOOD                |
| KI943M4       | WHY NO CONSENT BLOOD                |
| KI943M5       | WHY NO CONSENT BLOOD                |
| KI943M6       | WHY NO CONSENT BLOOD                |
| KBLVERSION    | 2006 BLOOD DATA RELEASE VERSION     |

The data are provided in ASCII format, with fixed-length records. Use associated SAS, SPSS or STATA program statements to read the data into the analysis package of your choice.

#### 5. Obtaining the Data

##### 5a. How to Apply

1. Visit the [HRS User Registration/File Download Web site](#). If you do not already have a username and password, you must register in order to enter the site.

2. Identify the desired data set (Biomarker 2006, in this case) under the *Requesting HRS Special Access Files* heading.
3. Download and complete the *Data Use Agreement* in hardcopy format (See Appendix).
4. Send a signed copy of the agreement via surface mail to:

Health and Retirement Study  
DUA Review Committee  
426 Thompson Street, Room 3050 ISR  
Ann Arbor, Michigan 48104-2321

### **5b. Approval Process**

The Health and Retirement Study will review your request, and based on the information that you provided when you registered at the [HRS User Registration/File Download Web site](#), verify your identity and institutional affiliation. Once this authentication process has been completed to our satisfaction, we will authorize access to the 2006 Biomarker data. We will communicate with you at the email address that you provided when you registered at the download site.

### **5c. How to Download**

Once you receive your approval notification, login to the [HRS User Registration/File Download Web site](#). In the HRS Special Access Files box on the right hand side of the page you will now see links to the 2006 Biomarker data set. Click on the appropriate link and follow instructions to download the 2006 Biomarker files.

### **5d. Publications Based on Sensitive Health Data**

You must inform HRS of any papers, publications, or presentations based on this HRS sensitive health data set. Please send a copy of any such publications, with a bibliographical reference if appropriate, to this address:

Health and Retirement Study  
Attn: Papers and Publications  
The Institute for Social Research, Room 3050  
426 Thompson Street  
Ann Arbor, MI (USA) 48104

Papers and publications may also be submitted via electronic mail; send message and attachment(s) to [hrequest@isr.umich.edu](mailto:hrequest@isr.umich.edu). Please include "Attn: Papers and Publications" on the subject line.

The following citation should be included in any research reports, papers, or publications based on these data:

In text: "The HRS 2006 Biomarker data is sponsored by the National Institute on Aging (grant number NIA U01AG009740) and was conducted by the University of Michigan."  
In references: "Health and Retirement Study, 2006 Biomarker data. Produced and distributed by the University of Michigan with

funding from the National Institute on Aging (grant number NIA U01AG009740). Ann Arbor, MI, (2006)."

## **6. Distribution Set**

The HRS 2006 Biomarker data (V1.0) files are packaged for distribution in a .zip file, biomkr06.zip. In order to keep the contents secure, this file has been password-protected. For users working in a Microsoft Windows environment, a self-extracting .exe file is distributed. UNIX, Linux, and Macintosh users will receive a standard .zip file. Users who require special file formats should contact the HRS Help Desk ([hrequest@isr.umich.edu](mailto:hrequest@isr.umich.edu)). Extract the data file, the program statement file that matches your analysis environment, the data description (this file), and the codebook file.

### Windows Environment

Run the self-extracting archive file, biomkr06.exe, from the command line or from Windows Explorer. When you are prompted for the pass-phrase, respond with the character string that you received via e-mail. The output from the self-extracting process will be the files listed below. If you have problems, please contact the HRS Help Desk ([hrequest@isr.umich.edu](mailto:hrequest@isr.umich.edu)).

#### **6a. Distribution Files**

The following extensions are used for the six different types of distribution files:

- .da for data files,
- .sas for SAS program statements,
- .sps for SPSS program statements,
- .do for STATA do statements,
- .dct for STATA dictionary statements, and
- .txt for codebook files.

For example:

BIOMKR06.da contains ASCII data,  
BIOMKR06.sas contains corresponding SAS program statements,  
BIOMKR06.sps contains corresponding SPSS program statements,  
BIOMKR06.do contains corresponding STATA do statements,  
BIOMKR06.dct contains corresponding STATA dictionary statements, and  
BIOMKR06.txt contains the ASCII codebook.

The 2006 HRS biomarker data are provided in ASCII format, with fixed-length records. Use the associated SAS, SPSS, or STATA program statements to read the data into the analysis package of your choice. In addition, you will probably want to download the codebook file (BIOMKR06.txt) and the data description (this document).

## **7. Program Statements**

### ***7a. Using the Files with SAS***

To create a SAS system file for a particular dataset, two file types must be present for that dataset -- .sas program statement files and .da data files.

To create a SAS system file, load the \*.sas file into the SAS Program Editor.

If the \*.sas file is located in "c:\BIOMKR06\sas" and the data file is located in "c:\BIOMKR06\data", you can run the file as is. A SAS system file (\*.sas7bdat) will be saved to directory "c:\BIOMKR06\sas".

If the files are not located in the specified directories, you will need to edit the \*.sas file to reflect the proper path names prior to running the file.

### ***7b. Using the Files with SPSS***

To create an SPSS system file for a particular dataset, two file types must be present for that dataset -- .sps program statement files and .da data files.

To create an SPSS system file, open the \*.sps file in SPSS as an SPSS Syntax File.

If the \*.sps file is located in "c:\BIOMKR06\spss" and the data file is located in "c:\BIOMKR06\data", you can run the file as is. An SPSS system file (\*.sav) will be saved to directory "c:\BIOMKR06\spss".

If the files are not located in the specified directories, you will need to edit the \*.sps file to reflect the proper path names prior to running the file.

### ***7c. Using the Files with STATA***

To use STATA with a particular dataset, the following three file types must be present for that dataset -- .dct files, .do files, and .da data files.

Files with the suffix .da contain the raw data for STATA to read. Files with the suffix .dct are STATA dictionaries used by STATA to describe the data. Files with the suffix .do are short STATA programs ("do files") which you may use to read in the data. Load the .do file into STATA and then submit it.

If the \*.do and \*.dct files are located in "c:\BIOMKR06\stata" and the data file is located in "c:\BIOMKR06\data", you can run the .do file as is.

If the files are not located in these directories, you must edit the \*.do and \*.dct files to reflect the proper path names before you run the files.

Note that the variable names provided in the .dct files are uppercase. If you prefer lower case variable names, you may wish to convert the .dct files to lower case prior to use. You may do this by reading the .dct file into a text or word processing program and changing the case. For instance, in Microsoft Word, Edit, Select All, Format, Change Case, lowercase.

## **8. If You Need to Know More**

This document is intended to serve as a brief overview and to provide guidelines for using the HRS 2006 Biomarker data. If you have questions or concerns that are not adequately covered here or on our restricted data Web site, or if you have any comments, please contact us. We will do our best to provide answers.

### ***8a. HRS Internet Sites***

Health and Retirement Study public release data and additional information about the HRS are available on the Internet. To access the data and other relevant information, point your Web browser to the HRS Web site at <http://hrsonline.isr.umich.edu/>. Visit the HRS Restricted Data Web site at <http://hrsonline.isr.umich.edu> if you want to find out more about restricted data products.

### ***8b. Contact Information***

If you need to contact us, you may do so by one of the methods listed below.

Internet: Help Desk at our Web site  
(<http://hrsonline.isr.umich.edu/intro/hrsquest.php>)

E-mail: [hrsquest@isr.umich.edu](mailto:hrsquest@isr.umich.edu)

Postal service:  
Health and Retirement Study  
The Institute for Social Research, Room 3050  
The University of Michigan  
P.O. Box 1248  
Ann Arbor, MI 48106-1248  
FAX: (734) 647-1186

## APPENDIX

### 9. Examples for Merging 2006 Biomarker Data into the 2006 Core Data

#### 9a. SAS Example R to R Merge

2006 Biomarker to 2006 Core (for only those in the 2006 Biomarker data file)

```
/* create sas libraries; change paths to match local file locations*/
libname b06 "c:\biomkr06\sas" ;
libname c06 "c:\hrs2006\sas" ;
/*Primary identifiers for same wave, respondent merging are HHID and PN; Sort data by
these variables */
data biomkr;
set b06.biomkr06;
run;
proc sort; by hhid pn; run;
data h06i_r;
set c06.h06i_r;
run;
proc sort; by hhid pn; run;
/*perform the merge, creating the new data set called "iall" - "in" statement on data set
for which you want to keep all records*/
data iall;
merge biomkr (in=y) h06i_r;
by hhid pn;
if y=1;
run;
```

#### 9b. STATA Example R to R Merge

2006 Biomarker to 2006 Core (for only those in the 2006 Biomarker data file)

```
use HHID PN KI859 KI860 using h06i_r
sort HHID PN
save tmp1, replace
use HHID PN KHDL KTOTCHOL using BIOMKR06
sort HHID PN
merge HHID PN using tmp1
drop if _m==2
drop _m
sort HHID PN
save rdata, replace
```

**9c. SPSS Example R to R Merge**

2006 Biomarker to 2006 Core (for only those in the 2006 Biomarker data file)

```
GET FILE='C:\biomkr06\spss\biomkr06.sav'.
SORT CASES BY HHID (A) PN (A).
SAVE OUTFILE='C:\biomkr06\spss\bio.sav'.
GET FILE= 'c:\hrs2006\spss\H06I_R.SAV'.
SORT CASES BY HHID (A) PN (A).
SAVE OUTFILE='C:\hrs2006\spss\i_r.sav'.
MATCH FILES
/FILE='C:\hrs2006\spss\i_r.SAV'
/FILE='C:\biomkr06\spss\bio.sav'
/IN=source01
/BY hhid pn.
execute.
VARIABLE LABELS
source01 'Case source is C:\biomkr06\spss\bio.sav'.
SELECT IF( source01 = 1).
EXECUTE.
```

## 10. Appendix: Data Use Agreement

### Health and Retirement Study Sensitive Health Data Use Agreement

**Data Set Requested:** \_\_\_\_\_

By signing this form and obtaining the requested data set from HRS, the User agrees:

1. To use the data set solely for statistical reporting and analysis.
2. Not to share these data with, or provide copies of these data to, any other person or organization. Note: Each research assistant/associate, graduate student or undergraduate student, or other individual working on the research project must sign and submit his/her own form.
3. To return or destroy the data set, and any derivative data files, upon request from HRS.
4. To make no attempt to link this data set with individually identifiable records from any source, or in any other way attempt to identify the persons in this or other HRS data sets.
5. That if the identity of any person or establishment in this data set is inadvertently discovered, then (a) no use will be made of this knowledge, (b) the Director of HRS will be advised of this incident immediately, (c) the information that would identify any individual or establishment will be safeguarded or destroyed, as requested by HRS, and (d) no one else will be informed of the discovered identity.
6. To employ the following guidelines when producing tabulations for distribution:
  - Magnitude Data: Ensure that no cells/strata with  $n < 5$  are produced.
  - Frequency Data: Apply a marginal threshold of  $n \geq 5$  and cell threshold of  $n \geq 5$  to all tabulations.
  - Protecting against complementary disclosure: Additional cells may be suppressed, i.e., complementary disclosure, to make sure the primary suppressions cannot be derived by subtraction from published marginal totals.
7. Aggregate statistical summaries of the data and analyses (frequency tabulations, magnitude tabulations, means, variances, regression coefficients, and correlation coefficients): These are approved under this agreement and may be freely published by the User, subject to the provisions above.
8. To cite HRS as the data source in any publications or research based upon these data, and to provide a copy of any publications to the HRS. Please refer to the data description for the correct citation that should be included in any research reports, papers, or publications based on these data.
9. To maintain a secure computing environment for storage and use of this data set and any data sets derived from it.
10. To hold harmless and indemnify HRS and the University of Michigan, its agents and employees, for any claims of breaches of confidentiality arising out of his/her research, defined as failure to abide by any section of this agreement or any accidental or intentional violation of privacy of any contributor to any HRS data resource.

UserID (from HRS File Download site):

\_\_\_\_\_

Signature

\_\_\_\_\_

Name (printed or typed)

Title

\_\_\_\_\_

Employer/Institutional Affiliation

| For Office Use Only | Date | Initials |
|---------------------|------|----------|
| Received            |      |          |
| Verified            |      |          |
| Approved            |      |          |
| Access Granted      |      |          |