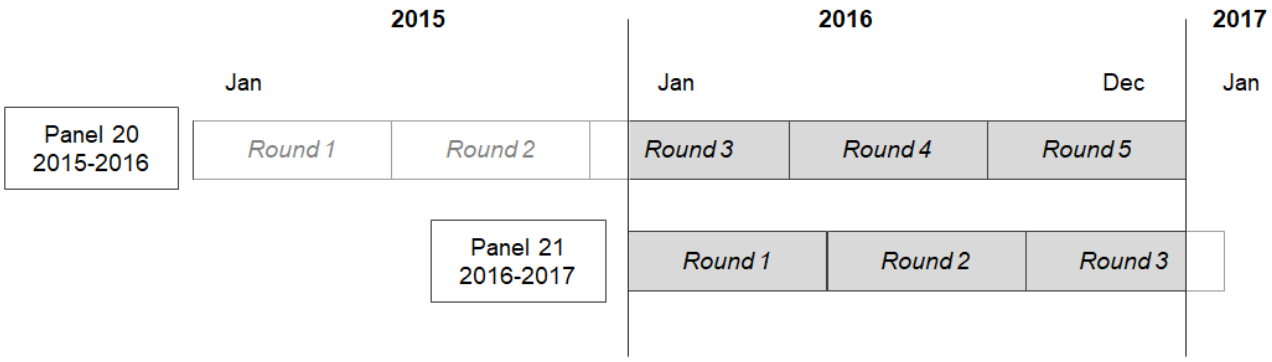
Linkage File for 2016 MEPS and 2014/2015 NHIS Public-use Files

1.0 Overview

The MEPS-HC survey uses the NHIS as its sampling frame. Each year a new MEPS-HC panel is established drawing from the previous year's NHIS sample. The MEPS-HC collects data through an overlapping panel design. In this design, two calendar years of information are collected from each household through in-person interviews, conducted over five rounds, with Round 3 spanning both calendar years.

For each panel, Rounds 1, 2, and part of Round 3 typically contain data from calendar year 1; the remaining part of Round 3, and Rounds 4 and 5 cover calendar year 2 for a panel. Therefore, MEPS full calendar year public-use data files contain data from the first year of a new panel combined with that of the second year of the previous panel. As illustrated below, for full calendar year 2016 estimates, Rounds 1, 2, and 3 of Panel 21 (which uses the 2015 NHIS as its sampling frame) are combined with Rounds 3, 4, and 5 of Panel 20 (which uses the 2014 NHIS as its sampling frame).



Public-use files containing NHIS data for a given calendar year are available from NCHS.

Users who need to augment the MEPS data with information from NHIS can do so with the linkage file described in the following sections.

2.0 Linkage File Description

The MEPS and NHIS linkage file, NHMEP16X.DAT, allows the data user to merge any of the person-level MEPS 2016 Full Year public use data files with the 2014 and 2015 NHIS person-level public-use data files (Person, Sample Adult, and Sample Child).

The NHIS person identifiers have been changed since 2004. Prior to 2004, one household equaled one "case" and unique person identifiers are Household Serial Number (HHX) and Person Number (PX). Since 2004, each family (FMX) is considered a separate case and unique person identifiers are Household Serial Number (HHX), Family Sequence Number (FMX), and Person Sequence Number (FPX).

The linkage file contains 34,655 person-level records and seven variables. In the linkage file, a record exists for each of the MEPS 2016 full-year persons. Each record contains the MEPS sample person ID (DUPERSID) and the corresponding NHIS sample person ID (HHX, FMX, and FPX). The linkage file can be linked to any of the person-level MEPS 2016 Full Year public use data files using the variable DUPERSID. The linkage file can be linked to the NHIS 2014 or 2015 person-level data files by HHX, FMX, FPX, and SRVY_YR.

When a MEPS sample person does not link to NHIS, HHX is set to 999999, FMX is set to 99, PX is set to 99, FPX is set to 99, SRVY_YR is set to 9999, and LINKFLAG is set to 0.

3.0 Linkage File Record Counts

15,766 of the 17,603 Panel 20 persons link to the 2014 NHIS data, while 15,638 of the 17,052 Panel 21 persons link to the 2015 NHIS data. A total of 3,251 persons in the two panels do not link to either 2014 or 2015 NHIS data. These unlinked cases include newborns, newly in-scope persons as well as a small number of cases where the NHIS identified a household as responding but when fielded in MEPS it was determined to actually be a non-responding household. The table below summarizes the linkages.

Table 1 - Linkage File Record Counts

Linked or not linked to NHIS	Linked to NHIS		Not Linked to NHIS	Total
	2014 NHIS PUF (n=112,053)	2015 NHIS PUF (n=103,789)		
MEPS FY 2016 Panel 20 persons	15,766	0	1,837	17,603

MEPS FY 2016 Panel 21 persons	0	15,638	1,414	17,052
Total	31,404		3,251	34,655

4.0 Linkage File Record Layout

Following is the record layout for the person-level MEPS/NHIS linkage file (NHMEP16X.DAT).

Variable	Column Position	Type	Label and value range
DUPERSID	1 - 8	Character	MEPS encrypted person ID (range=10001101-80570101)
HHX	9 - 14	Character	NHIS household serial number (range=000011 – 065122)
FMX	15 - 16	Character	NHIS family number (range=01-06)
FPX	17 - 18	Character	NHIS person number (range=01-12)
LINKFLAG	19 - 19	Numeric	Linkage status between MEPS and NHIS (1 or 0)
PANEL	20 - 21	Numeric	MEPS panel number (either 20 or 21)
SRVY_YR	22 - 25	Numeric	NHIS survey year (2014 or 2015)

Below is the input statement to convert the linkage file (NHMEP16X.DAT) to a SAS dataset.

```
DATA XX.NHMEP16X;
INFILE  “C:\TEMP\MEPS\NHMEP16X.DAT”;
INPUT  DUPERSID $1-8  HHX $9-14  FMX $15-16  FPX $17-18  LINKFLAG 19
PANEL 20-21  SRVY_YR 22-25;
RUN;
```

5.0 Linking Instructions for SAS Users

The following is one way of adding NHIS person-level variables to the MEPS person-level file. Input files are: MEPS HC-184 (2016 Full-year Population Characteristics), 2014 NHIS person-level data file, 2015 NHIS person-level data file, and the linkage file NHMEP16X.DAT.

1. Create four SAS datasets as follows:

    - Convert MEPS HC-184 (ASCII or SAS transport file) to a SAS dataset named FY2016 (n=34,655).

    - Convert the linkage file NHMEP16X.DAT to a SAS dataset named NHMEP16X (n=34,655).

    - Convert the 2015 NHIS Person file to a SAS dataset named NHIS2015 (n=103,789). Make sure the SAS dataset includes HHX, FMX, FPX, SRVY_YR, and other variables that are to be added to the MEPS full-year dataset.

    - Convert the 2014 NHIS Person file to a SAS dataset named NHIS2014 (n=112,053). Make sure the SAS dataset includes HHX, FMX, FPX, SRVY_YR, and other variables that are to be added to the MEPS full-year dataset.

2. Sort FY2016 by DUPERSID. Concatenate NHIS2014 and NHIS2015 into one dataset named NHISALL (n=215,842). Sort NHISALL by HHX, FMX, FPX, and SRVY_YR.

3. Merge FY2016 (n=34,655) with NHMEP16X (n=34,655) by DUPERSID. Name the output dataset MEPS (n=34,655). Then sort MEPS by HHX, FMX, FPX, and SRVY_YR.

4. Merge MEPS (n=34,655) with NHISALL (n=215,842) by HHX, FMX, FPX, and SRVY_YR. Keep records only in MEPS (n=34,655). Name the output dataset MEPS16NH (n=34,655).

Below is a sample SAS program for adding NHIS variables to the MEPS dataset.

```
LIBNAME MEPS "C:\TEMP\MEPS"; /*MEPS 2016 Full-Year PUF*/
LIBNAME NHIS "C:\TEMP\NHIS"; /*NHIS 2014 and 2015 Person Files*/

PROC FORMAT;
VALUE AGE
.='.'
0-HIGH='>=0';
RUN;
```

```
DATA NHISALL;
SET NHIS.NHIS2015 (KEEP=HHX FMX FPX SRVY_YR AGE_P /*other NHIS variables*/)
NHIS.NHIS2014 (KEEP=HHX FMX FPX SRVY_YR AGE_P /*other NHIS variables*/);
RUN;

PROC SORT DATA=NHISALL;
BY HHX FMX FPX SRVY_YR;
RUN;

DATA MEPS;
MERGE MEPS.FY2016 MEPS.NHMEP16X (KEEP=DUPERSID HHX FMX FPX
SRVY_YR LINKFLAG);
BY DUPERSID;
RUN;

PROC SORT DATA=MEPS;
BY HHX FMX FPX SRVY_YR;
RUN;

DATA MEPS.MEPS16NH;
MERGE MEPS (IN=A) NHISALL;
BY HHX FMX FPX SRVY_YR;
IF A;
RUN;

TITLE1 "MEPS 2016 FY data with NHIS variables";
PROC FREQ DATA=MEPS.MEPS16NH;
TABLES LINKFLAG*SRVY_YR*AGE_P/LIST MISSING;
FORMAT AGE_P AGE.;
RUN;
```

6.0 Sample Stata Code for Adding NHIS Variables to the MEPS Dataset

```
clear

log using stata16.log, replace

use c:\temp\meps\fy2016
sort dupersid
save fy2016, replace



use c:\temp\nhis\nhis2014
```

```
append using c:\temp\nhis\nhis2015
save nhisall, replace

use nhisall
sort hhx fmx fpx srvy_yr
save nhisall, replace

use c:\temp\meps\nhmep16x
sort dupersid
save link, replace

use fy2016
merge dupersid using link
drop _merge
save meps, replace

use meps
sort hhx fmx fpx srvy_yr
save meps, replace

use meps
merge hhx fmx fpx srvy_yr using nhisall
keep if _merge==3 | _merge==1
keep dupersid hhx fmx fpx srvy_yr linkflag /*plus nhis variables wanted to
add*/ save c:\temp\meps\meps16nh, replace

describe
tab1  linkflag srvy_yr
```

7.0 Further Information

For any questions regarding the linkage file, please contact May Chu at 301-427-1653 or by email at May.Chu@ahrq.hhs.gov. MEPS public use data files can be downloaded free of charge from the MEPS website at https://www.meps.ahrq.gov. NHIS public use data files can be obtained by contacting NCHS by telephone (301-458-4636) or through their website, https://www.cdc.gov/nchs.