

**MEPS HC-197C:
2017 Other Medical Expenses
May 2019**

NOTE: The MEPS instrument design changed beginning in Spring of 2018, affecting Panel 23 Round 1, Panel 22 Round 3, and Panel 21 Round 5. For the Full-Year 2017 PUFs, the Panel 22 Round 3 and Panel 21 Round 5 data were transformed to the degree possible to conform to the previous design. For the Full-Year 2018 PUFs, Panel 22 Rounds 1 and 2, collected under the old design, were transformed to the degree possible to conform to the new design. **Data users should be aware of possible impacts on the data and especially trend analysis for these data years due to the design transition.**

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Table of Contents

| | | |
|----|---|-----|
| A. | Data Use Agreement..... | A-1 |
| B. | Background..... | B-1 |
| | 1.0 Household Component..... | B-1 |
| | 2.0 Medical Provider Component..... | B-1 |
| | 3.0 Survey Management and Data Collection | B-2 |
| C. | Technical and Programming Information..... | C-1 |
| | 1.0 General Information..... | C-1 |
| | 2.0 Data File Information..... | C-2 |
| | 2.1 Codebook Structure | C-3 |
| | 2.2 Reserved Codes | C-4 |
| | 2.3 Codebook Format | C-4 |
| | 2.4 Variable Source and Naming Conventions | C-4 |
| | 2.4.1 Variable - Source Crosswalk..... | C-4 |
| | 2.4.2 Expenditure and Source of Payment Variables | C-5 |
| | 2.5 File Contents..... | C-6 |
| | 2.5.1 Survey Administration Variables..... | C-6 |
| | 2.5.1.1 Person Identifiers (DUID, PID, DUPERSID)..... | C-6 |
| | 2.5.1.2 Record Identifiers (EVENTIDX, FFEEIDX) | C-6 |
| | 2.5.1.3 Round Indicator (EVENTRN)..... | C-6 |
| | 2.5.1.4 Panel Indicator (PANEL) | C-6 |
| | 2.5.2 Other Medical Type Variable (OMTYPEX). | C-6 |
| | 2.5.3 Flat Fee Variables (FFEEIDX, FFOMTYPE, FFBEF17, FFTOT18) | C-7 |
| | 2.5.3.1 Definition of Flat Fee Payments | C-7 |
| | 2.5.3.2 Flat Fee Variable Descriptions | C-8 |
| | 2.5.3.2.1 Flat Fee ID (FFEEIDX) . | C-8 |
| | 2.5.3.2.2 Flat Fee Type (FFOMTYPE)..... | C-8 |

Table of Contents (continued)

| | | | |
|-------|-----------|--|------|
| | 2.5.3.2.3 | Counts of Flat Fee Events that Cross Years (FFBEF17, FFTOT18)... | C-8 |
| | 2.5.3.3 | Caveats of Flat Fee Groups..... | C-8 |
| 2.5.4 | | Condition Codes..... | C-9 |
| 2.5.5 | | Expenditure Data..... | C-9 |
| | 2.5.5.1 | Definition of Expenditures | C-9 |
| | 2.5.5.2 | Data Editing and Imputation Methodologies of Expenditure Variables | C-9 |
| | 2.5.5.2.1 | General Data Editing Methodology | C-10 |
| | 2.5.5.2.2 | Imputation Methodologies | C-10 |
| | 2.5.5.2.3 | Other Medical Expenses Data Editing and Imputation..... | C-10 |
| | 2.5.5.3 | Imputation Flag Variable (IMPFLAG)..... | C-12 |
| | 2.5.5.4 | Flat Fee Expenditures | C-12 |
| | 2.5.5.5 | Zero Expenditures..... | C-12 |
| | 2.5.5.6 | Sources of Payment | C-13 |
| | 2.5.5.7 | Other Medical Expenditure Variables (OMSF17X-OMTC17X)..... | C-14 |
| | 2.5.5.8 | Rounding..... | C-14 |
| 3.0 | | Sample Weight (PERWT17F) | C-14 |
| 3.1 | | Overview | C-14 |
| 3.2 | | Details on Person Weight Construction | C-14 |
| | 3.2.1 | MEPS Panel 21 Weight Development Process | C-15 |
| | 3.2.2 | MEPS Panel 22 Weight Development Process | C-15 |
| | 3.2.3 | The Final Weight for 2017..... | C-16 |
| | 3.2.4 | Coverage | C-16 |
| 3.3 | | Using MEPS Data for Trend Analysis | C-16 |

Table of Contents (continued)

| | | |
|-------|--|------|
| 4.0 | Strategies for Estimation..... | C-17 |
| 4.1 | Basic Estimates of Utilization, Expenditures, and Sources of Payment | C-17 |
| 4.1.1 | Type of Records on File (OMTYPEX)..... | C-17 |
| 4.2 | Variables with Missing Values..... | C-18 |
| 4.3 | Variance Estimation (VARPSU, VARSTR)..... | C-19 |
| 4.3.1 | Taylor-series Linearization Method..... | C-19 |
| 4.3.2 | Balanced Repeated Replication (BRR) Method | C-20 |
| 5.0 | Merging/Linking MEPS Data Files | C-21 |
| 5.1 | Linking to the Person-Level File..... | C-21 |
| 5.2 | Linking to the Prescribed Medicines File..... | C-22 |
| 5.3 | Linking to the Medical Conditions File..... | C-22 |
| | References..... | C-23 |
| D. | Variable-Source Crosswalk | D-1 |

A. Data Use Agreement

Individual identifiers have been removed from the micro-data contained in these files. Nevertheless, under Sections 308 (d) and 903 (c) of the Public Health Service Act (42 U.S.C. 242m and 42 U.S.C. 299 a-1), data collected by the Agency for Healthcare Research and Quality (AHRQ) and/or the National Center for Health Statistics (NCHS) may not be used for any purpose other than for the purpose for which they were supplied; any effort to determine the identity of any reported cases is prohibited by law.

Therefore in accordance with the above referenced Federal Statute, it is understood that:

1. No one is to use the data in this data set in any way except for statistical reporting and analysis; and
2. If the identity of any person or establishment should be discovered inadvertently, then (a) no use will be made of this knowledge, (b) the Director Office of Management AHRQ will be advised of this incident, (c) the information that would identify any individual or establishment will be safeguarded or destroyed, as requested by AHRQ, and (d) no one else will be informed of the discovered identity; and
3. No one will attempt to link this data set with individually identifiable records from any data sets other than the Medical Expenditure Panel Survey or the National Health Interview Survey. Furthermore, linkage of the Medical Expenditure Panel Survey and the National Health Interview Survey may not occur outside the AHRQ Data Center, NCHS Research Data Center (RDC) or the U.S. Census RDC network.

By using these data you signify your agreement to comply with the above stated statutorily based requirements with the knowledge that deliberately making a false statement in any matter within the jurisdiction of any department or agency of the Federal Government violates Title 18 part 1 Chapter 47 Section 1001 and is punishable by a fine of up to \$10,000 or up to 5 years in prison.

The Agency for Healthcare Research and Quality requests that users cite AHRQ and the Medical Expenditure Panel Survey as the data source in any publications or research based upon these data.

B. Background

1.0 Household Component

The Medical Expenditure Panel Survey (MEPS) provides nationally representative estimates of health care use, expenditures, sources of payment, and health insurance coverage for the U.S. civilian noninstitutionalized population. The MEPS Household Component (HC) also provides estimates of respondents' health status, demographic and socio-economic characteristics, employment, access to care, and satisfaction with health care. Estimates can be produced for individuals, families, and selected population subgroups. The panel design of the survey, which includes 5 Rounds of interviews covering 2 full calendar years, provides data for examining person-level changes in selected variables such as expenditures, health insurance coverage, and health status. Using computer assisted personal interviewing (CAPI) technology, information about each household member is collected, and the survey builds on this information from interview to interview. All data for a sampled household are reported by a single household respondent.

The MEPS-HC was initiated in 1996. Each year a new panel of sample households is selected. Because the data collected are comparable to those from earlier medical expenditure surveys conducted in 1977 and 1987, it is possible to analyze long-term trends. Each annual MEPS-HC sample size is about 15,000 households. Data can be analyzed at either the person or event level. Data must be weighted to produce national estimates.

The set of households selected for each panel of the MEPS HC is a subsample of households participating in the previous year's National Health Interview Survey (NHIS) conducted by the National Center for Health Statistics. The NHIS sampling frame provides a nationally representative sample of the U.S. civilian noninstitutionalized population and reflects an oversample of Blacks and Hispanics. In 2006, the NHIS implemented a new sample design, which included Asian persons in addition to households with Black and Hispanic persons in the oversampling of minority populations. NHIS introduced a new sample design in 2016 that discontinued oversampling of these minority groups. The linkage of the MEPS to the previous year's NHIS provides additional data for longitudinal analytic purposes.

2.0 Medical Provider Component

Upon completion of the household CAPI interview and obtaining permission from the household survey respondents, a sample of medical providers are contacted by telephone to obtain information that household respondents cannot accurately provide. This part of the MEPS is called the Medical Provider Component (MPC) and information is collected on dates of visits, diagnosis and procedure codes, charges and payments. The Pharmacy Component (PC), a subcomponent of the MPC, does not collect charges or diagnosis and procedure codes but does collect drug detail information, including National Drug Code (NDC) and medicine name, as well as date filled and sources and amounts of payment. The MPC is not designed to yield national estimates. It is primarily used as an imputation source to supplement/replace household reported expenditure information.

3.0 Survey Management and Data Collection

MEPS HC and MPC data are collected under the authority of the Public Health Service Act. Data are collected under contract with Westat, Inc. (MEPS HC) and Research Triangle Institute (MEPS MPC). Data sets and summary statistics are edited and published in accordance with the confidentiality provisions of the Public Health Service Act and the Privacy Act. The National Center for Health Statistics (NCHS) provides consultation and technical assistance.

As soon as data collection and editing are completed, the MEPS survey data are released to the public in staged releases of summary reports, micro data files, and tables via the [MEPS website](#). Selected data can be analyzed through MEPSnet, an on-line interactive tool designed to give data users the capability to statistically analyze MEPS data in a menu-driven environment.

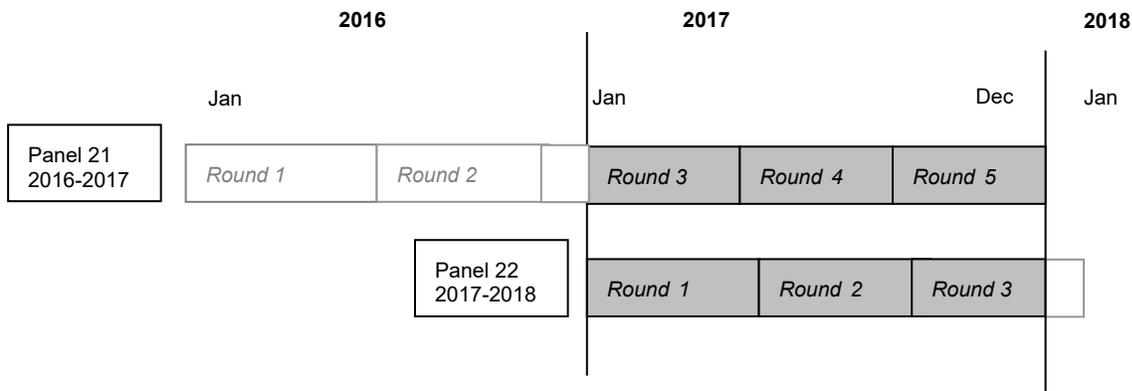
Additional information on MEPS is available from the MEPS project manager or the MEPS public use data manager at the Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality, 5600 Fishers Lane, Rockville, MD 20857 (301-427-1406).

C. Technical and Programming Information

1.0 General Information

This documentation describes one in a series of public use event files from the 2017 Medical Expenditure Panel Survey (MEPS) Household Component (HC). Released as an ASCII data file (with related SAS, SPSS, and Stata programming statements) and a SAS transport file, the 2017 Other Medical Expenses public use event file provides information on the purchases of and expenditures for visual aids, medical equipment, supplies, and other medical items for a nationally representative sample of the civilian noninstitutionalized population of the United States. Data from the Other Medical event file can be used to make estimates of the Other Medical event expenditures associated with medical items for calendar year 2017. The purchase of medical equipment, supplies, and other medical items is based entirely on household reports. They were not included in the Medical Provider Component (MPC); therefore, all expenditure and payment data on the Other Medical event file are reported by the household.

This file contains 28 variables and has a logical record length of 170 with an additional 2-byte carriage return/line feed at the end of each record. As illustrated below, this file consists of MEPS survey data obtained in the 2017 portion of Round 3, and Rounds 4 and 5 for Panel 21, as well as Rounds 1, 2, and the 2017 portion of Round 3 for Panel 22 (i.e., the rounds for the MEPS panels covering calendar year 2017).



The Other Medical event file contains one record for each type of medical item reported as being purchased or otherwise obtained by a household member during the specified reference period. It should be noted that prior to Panel 21 Round 5 and Panel 22 Round 3, questions regarding glasses/contact lenses were asked in every round, and questions regarding other medical types were asked only in Round 3 and Round 5 for events incurred for the whole year. Starting in Panel 21 Round 5 and Panel 22 Round 3, all OM type questions are asked in every round.

Other medical expense categories in 2017 differ from previous years. See section 2.5.2 for details. Other medical expense categories included in this file are:

- Glasses or contact lenses
- Ambulance services

- Disposable supplies
- Long-term medical equipment (such as mobility aids, hearing devices, equipment used at home and alterations/modifications, etc.)

Records for purchases of insulin and diabetic supplies in a round were included in the Other Medical Expenses event files for 1996-2004. Beginning with the 2005 file, it was decided to exclude these records from the Other Medical Expenses event file since the expenditures have always been included on the Prescribed Medicines file. The Prescribed Medicines file is a more appropriate source for estimates of both utilization and expenditures for insulin and diabetic supplies. As a consequence, there are no records on this file where the variable OMTYPEX = 2 or 3.

Data from this event file can be merged with other 2017 MEPS HC data files for the purpose of appending person-level data, such as demographic characteristics or health insurance coverage, to each other medical record.

This file can also be used to construct summary variables of expenditures, source of payment, and related aspects of the purchase of medical items. Aggregate annual person-level information on expenditures for other medical equipment is provided on the MEPS 2017 Full-Year Consolidated Data File where each record represents a MEPS sampled person. This aggregate information is provided for vision aids only and not for other types of other medical equipment.

The following documentation offers a brief overview of the types and levels of data provided, and the content and structure of the files and the codebook. It contains the following sections:

- Data File Information
- Sample Weight
- Strategies for Estimation
- Merging/Linking MEPS Data Files
- References
- Variable - Source Crosswalk

For more information on MEPS HC survey design, see T. Ezzati-Rice, et al. (1998-2007) and S. Cohen, 1996. A copy of the MEPS HC survey instrument used to collect the information on the other medical expenses file is available on the [MEPS website](#).

2.0 Data File Information

The 2017 Other Medical Expenses public use data set consists of one event-level data file. The file contains characteristics associated with the Other Medical event and imputed expenditure data.

The 2017 Other Medical Expenses public use data set contains 7,451 other medical (OM) expenditure records; of these records, 7,299 are associated with persons having a positive person-level weight (PERWT17F). This file includes records for all household members who resided in eligible responding households and were reported to have purchased or otherwise obtained at least one type of medical item such as medical equipment, glasses, hearing devices,

etc. during calendar year 2017. Some persons may have been reported to have obtained more than one type of medical item and, therefore, have several records on this file. On the other hand, persons who were not reported to have obtained a medical item in 2017 have no records on this file. These data were collected during the 2017 portion of Round 3, and Rounds 4 and 5 for Panel 21, as well as Rounds 1, 2, and the 2017 portion of Round 3 for Panel 22 of the MEPS HC. The persons represented on this file had to meet either (a) or (b) below:

- a) Be classified as a key in-scope person who responded for his or her entire period of 2017 eligibility (i.e., persons with a positive 2017 full-year person-level weight ($PERWT17F > 0$)), or
- b) Be an eligible member of a family all of whose key in-scope members have a positive person-level weight ($PERWT17F > 0$). (Such a family consists of all persons with the same value for $FAMIDYR$.) That is, the person must have a positive full-year family-level weight ($FAMWT17F > 0$). Note that $FAMIDYR$ and $FAMWT17F$ are variables on the 2017 Full Year Consolidated Data File.

Persons with no other medical events for 2017 are not included on this event-level OM file but are represented on the person-level 2017 Full-Year Population Characteristics file.

Each record includes the following: type of medical item obtained, flat fee information, imputed sources of payment, total payment and total charge for the medical item, and a full-year person-level weight.

To append person-level information such as demographic or health insurance coverage to each event record, data from this file can be merged with 2017 MEPS HC person-level data (e.g. Full-Year Consolidated or Full-Year Population Characteristics files) using the person identifier, $DUPERSID$. Please see Section 5.0 for details on how to merge MEPS data files.

2.1 Codebook Structure

For most variables on the Other Medical Expenses event file, both weighted and unweighted frequencies are provided in the accompanying codebook. The exceptions to this are weight variables and variance estimation variables. Only unweighted frequencies of these variables are included in the accompanying codebook file. See the Weights Variables list in section D, Variable-Source Crosswalk.

The codebook and data file sequence list variables in the following order:

- Unique person identifier
- Unique other medical expenses identifier
- Type of other medical expenses
- Imputed expenditure variables
- Weight and variance estimation variables

Note that the person identifier is unique within this data year.

2.2 Reserved Codes

The following reserved code values are used:

| Value | Definition |
|--------------------|--|
| -1 INAPPLICABLE | Question was not asked due to skip pattern |
| -7 REFUSED | Question was asked and respondent refused to answer question |
| -8 DK | Question was asked and respondent did not know answer |
| -9 NOT ASCERTAINED | Interviewer did not record the data |

Generally, values of -1, -7, -8, and -9 for non-expenditure variables have not been edited on this file. The values of -1 and -9 can be edited by the data users/analysts by following the skip patterns in the [HC survey questionnaire](#) located on the MEPS website.

2.3 Codebook Format

The codebook describes an ASCII data set (although the data are also being provided in a SAS transport file). The following codebook items are provided for each variable:

| Identifier | Description |
|-------------------|---|
| Name | Variable name (maximum of 8 characters) |
| Description | Variable descriptor (maximum of 40 characters) |
| Format | Number of bytes |
| Type | Type of data: numeric (indicated by NUM) or character (indicated by CHAR) |
| Start | Beginning column position of variable in record |
| End | Ending column position of variable in record |

2.4 Variable Source and Naming Conventions

In general, variable names reflect the content of the variable, with an eight-character limitation. All imputed/edited variables end with an "X".

2.4.1 Variable - Source Crosswalk

Variables were derived from the HC survey questionnaire or from the CAPI. The source of each variable is identified in Section D "Variable - Source Crosswalk" in one of four ways:

1. Variables derived from CAPI or assigned in sampling are so indicated as "CAPI derived" or "Assigned in sampling," respectively;
2. Variables which come from one or more specific questions have those questionnaire sections and question numbers indicated in the "Source" column; questionnaire sections are identified as:

EV – Event Roster section
FF – Flat Fee section
CP – Charge Payment section

3. Variables constructed from multiple questions using complex algorithms are labeled “Constructed” in the “Source” column; and
4. Variables that have been edited or imputed are so indicated.

2.4.2 Expenditure and Source of Payment Variables

The names of the expenditure and source of payment variables follow a standard convention, are seven characters in length, and end in an “X” indicating edited/imputed. Please note that imputed means that a series of logical edits, as well as an imputation process to account for missing data, have been performed on the variable.

The total sum of payments and 12 source of payment variables are named in the following way:

The first two characters indicate the type of event:

| | |
|------------------------------|--------------------------|
| IP - inpatient stay | OB - office-based visit |
| ER - emergency room visit | OP - outpatient visit |
| HH - home health visit | DV - dental visit |
| OM - other medical equipment | RX - prescribed medicine |

In the case of the source of payment variables, the third and fourth characters indicate:

| | |
|--------------------------------------|-------------------------------|
| SF - self or family | OF - other federal government |
| MR - Medicare | SL - state/local government |
| MD - Medicaid | WC - Workers’ Compensation |
| PV - private insurance | OT - other insurance |
| VA - Veterans Administration/CHAMPVA | OR - other private |
| TR - TRICARE | OU - other public |
| | XP - sum of payments |

In addition, the total charge variable is indicated by TC in the variable name.

The fifth and sixth characters indicate the year (17). The seventh character, “X”, indicates whether the variable is edited/imputed.

For example, OMSF17X is the edited/imputed amount paid by self or family for 2017 other medical equipment and expenditures.

2.5 File Contents

2.5.1 Survey Administration Variables

2.5.1.1 Person Identifiers (DUID, PID, DUPERSID)

The dwelling unit ID (DUID) is a five-digit random number assigned after the case was sampled for MEPS. The three-digit person number (PID) uniquely identifies each person within the dwelling unit. The eight-character variable DUPERSID uniquely identifies each person represented on the file and is the combination of the variables DUID and PID. For detailed information on dwelling units and families, please refer to the documentation for the 2017 Full-Year Population Characteristics File.

2.5.1.2 Record Identifiers (EVNTIDX, FFEEIDX)

EVNTIDX uniquely identifies each other medical expense event (i.e., each record on the OME file) and is the variable required to link other medical events to data files containing details on prescribed medicines (MEPS 2017 Prescribed Medicines File). For details on linking, see Section 5.0, or the MEPS 2017 Appendix File, HC-197I.

FFEEIDX is a constructed variable that uniquely identifies a flat fee group, that is, all events that were part of a flat fee payment. FFEEIDX identifies a flat fee payment that was identified using information from the Household Component.

2.5.1.3 Round Indicator (EVENTRN)

EVENTRN indicates the round in which the other medical event was reported. Each record represents a summary of expenditures for items purchased or otherwise obtained for 2017. Starting with Panel 22, the Round 3 questions relating to the number of times glasses or contact lenses were obtained in each year of a panel are eliminated due to design changes. Instead, if a person's reference period crosses between year one and year two of a panel, the question 'whether a particular OM type was purchased/used' for each of the four OM types (glasses/contacts, ambulance services, disposable supplies and long-term medical equipment) is asked separately for each of two years of a panel.

2.5.1.4 Panel Indicator (PANEL)

PANEL is a constructed variable used to specify the panel number for the person. PANEL will indicate either Panel 21 or Panel 22 for each person on the file. Panel 21 is the panel that started in 2016, and Panel 22 is the panel that started in 2017.

2.5.2 Other Medical Type Variable (OMTYPEX)

Other medical expenditures (OMTYPEX) include glasses or contact lenses, ambulance services, disposable supplies and long-term medical equipment. Prior to Panel 21 Round 5 and Panel 22 Round 3, questions regarding glasses/contact lenses were asked in every round, and questions regarding other medical types were asked only in Round 3 and Round 5 for events incurred in the whole year. Starting in Panel 21 Round 5 and Panel 22 Round 3, all OM type questions are

asked in every round, and the OMTYPE text string OMOTHOS is no longer collected. Therefore, recoding of OMOTHOS to OMTYPEX is applied for Panel 21 Round 3 only, and the variables OMTYPE and OMOTHOS are dropped from the file.

Records for purchases of insulin and diabetic supplies (OMTYPEX = 2 or 3) in a round were included in the Other Medical Expenses event files for 1996-2004. Beginning with the 2005 file, it was decided to exclude these records from the Other Medical Expenses event file since the expenditures have always been included on the Prescribed Medicines file.

In FY2017, OMTYPEX is collapsed from ten categories to four categories as follows:

| 2005-2016 Other Medical Events PUF (OMTYPEX) | 2017 Other Medical Events PUF (OMTYPEX) |
|--|---|
| 1 – Glasses or contact lenses | 1 – Glasses or contact lenses |
| 4 – Ambulance services | 4 – Ambulance services |
| 5 – Orthopedic items | 12 – Long-term medical equipment |
| 6 – Hearing devices | 12 – Long-term medical equipment |
| 7 – Prosthesis | 12 – Long-term medical equipment |
| 8 – Bathroom aids | 12 – Long-term medical equipment |
| 9 – Medical equipment | 12 – Long-term medical equipment |
| 10 – Disposable supplies | 10 – Disposable supplies |
| 11 – Alterations/modifications | 12 – Long-term medical equipment |
| Not used | 12 – Long-term medical equipment |
| 91 – Other | 91 – Other (Panel 21 Round 3 only) |

2.5.3 Flat Fee Variables (FFEEIDX, FFOMTYPE, FFBEF17, FFTOT18)

2.5.3.1 Definition of Flat Fee Payments

A flat fee is the fixed dollar amount a person is charged for a package of services provided during a defined period of time. A flat fee group is the set of medical services that are covered under the same flat fee payment. The flat fee groups represented on the Other Medical Expenses event file include flat fee groups where at least one of the other medical events, as reported by the HC respondent, occurred during 2017. By definition, a flat fee group can span multiple years. Furthermore, a single person can have multiple flat fee groups.

2.5.3.2 Flat Fee Variable Descriptions

2.5.3.2.1 Flat Fee ID (FFEEIDX)

As noted earlier in Section 2.5.1.2 “Record Identifiers,” the variable FFEEIDX uniquely identifies all events that are part of the same flat fee group for a person. On any 2017 MEPS event file, every event that is part of a specific flat fee group will have the same value for FFEEIDX. Note that prescribed medicine and home health events are never included in a flat fee group and none of the flat fee variables are on those event files.

2.5.3.2.2 Flat Fee Type (FFOMTYPE)

FFOMTYPE indicates whether the 2017 other medical expenditure is the “stem” or “leaf” of a flat fee group. A stem (records with FFOMTYPE = 1) is the initial other medical service event, which is followed by other medical expense events that are covered under the same flat fee payment. The leaves of the flat fee group (records with FFOMTYPE = 2) are those other medical events that are tied back to the initial event (the stem) in the flat fee group. These “leaf” records have their expenditure variables set to zero. For the other medical events that are not part of a flat fee payment, the FFOMTYPE is set to -1, “INAPPLICABLE”.

2.5.3.2.3 Counts of Flat Fee Events that Cross Years (FFBEF17, FFTOT18)

As described in Section 2.5.3.1, a flat fee payment covers multiple events and the multiple events could span multiple years. For situations where the medical item was obtained in 2017 as part of a group of events, and some of the events occurred before or after 2017, counts of the known events are provided on the other medical record.

Variables that indicate events occurring before or after 2017 are the following:

FFBEF17 – indicates total number of 2016 events in the same flat fee group as the medical item that was obtained in 2017. This count would not include the medical item obtained in 2017.

FFTOT18 – indicates the number of 2018 medical events, including the purchase of any additional medical items, expected to be in the same flat fee group as the medical item obtained in 2017.

2.5.3.3 Caveats of Flat Fee Groups

Data users/analysts should note that flat fee payments are not common on the Other Medical Expenses file. There are 3 records that are identified as being part of a flat fee payment group. In general, every flat fee group should have an initial visit (stem) and at least one subsequent visit (leaf). There are some situations where this is not true. For some of these flat fee groups, the initial visit reported occurred in 2017, but the remaining visits that were part of this flat fee group occurred in 2018. In this case, the 2017 flat fee group represented on this file would consist of one event (the stem). The 2018 “leaf events” that are part of this flat fee group are not represented on the file. Similarly, the household respondent may have reported a flat fee group where the initial visit began in 2016 but subsequent visits occurred during 2017. In this case, the

initial visit would not be represented on the file. This 2017 flat fee group would then only consist of one or more leaf records and no stem. Please note that the crosswalk in this document lists all possible flat fee variables.

2.5.4 Condition Codes

Conditions data are not collected for Other Medical events; therefore, this file cannot be linked to the Conditions File.

2.5.5 Expenditure Data

2.5.5.1 Definition of Expenditures

Expenditures on this file refer to what is paid for the medical item. More specifically, expenditures in MEPS are defined as the sum of payments for each medical item that was obtained, including out-of-pocket payments and payments made by private insurance, Medicaid, Medicare and other sources. The definition of expenditures used in MEPS differs slightly from its predecessors: the 1987 NMES and 1977 NMCES surveys where “charges” rather than sum of payments were used to measure expenditures. This change was adopted because charges became a less appropriate proxy for medical expenditures during the 1990s due to the increasingly common practice of discounting. Although measuring expenditures as the sum of payments incorporates discounts in the MEPS expenditure estimates, these estimates do not incorporate any payment not directly tied to specific medical care events, such as bonuses or retrospective payment adjustments paid by third party payers. Another general change from the two prior surveys is that charges associated with uncollected liability, bad debt, and charitable care (unless provided by a public clinic or hospital) are not counted as expenditures because there are no payments associated with those classifications. While charge data are provided on this file, data users/analysts should use caution when working with these data because a charge does not typically represent actual dollars exchanged for services or the resource costs of those services, nor are they directly comparable to the expenditures defined in the 1987 NMES. For details on expenditure definitions, please refer to the following, “Informing American Health Care Policy” (Monheit et al., 1999). AHRQ has developed factors to apply to the 1987 NMES expenditure data to facilitate longitudinal analysis. These factors can be accessed via the CFACT data center. For more information see the [Data Center section of the MEPS website](#). If examining trends in MEPS expenditures, please refer to Section C, sub-Section 3.3 for more information.

2.5.5.2 Data Editing and Imputation Methodologies of Expenditure Variables

The general methodology used for editing and imputing expenditure data is described below. The MPC did not include either the dental events or other medical expenditures (such as glasses, contact lenses, and hearing devices). Therefore, although the general procedures remain the same for dental and other medical expenditures, editing and imputation methodologies were applied only to household-reported data. Please see below for details on the differences between these editing/imputation methodologies. Separate imputations were performed for flat fee and simple events, as well.

2.5.5.2.1 General Data Editing Methodology

Logical edits were used to resolve internal inconsistencies and other problems in the HC survey-reported data. The edits were designed to preserve partial payment data from households and providers, and to identify actual and potential sources of payment for each household-reported event. In general, these edits accounted for outliers, copayments or charges reported as total payments, and reimbursed amounts that were reported as out-of-pocket payments. In addition, edits were implemented to correct for misclassifications between Medicare and Medicaid, and between Medicare HMOs and private HMOs as payment sources. These edits produced a complete vector of expenditures for some events, and provided the starting point for imputing missing expenditures in the remaining events.

2.5.5.2.2 Imputation Methodologies

The predictive mean matching imputation method was used to impute missing expenditures. This procedure uses regression models (based on events with completely reported expenditure data) to predict total expenses for each event. Then, for each event with missing payment information, a donor event with the closest predicted payment with the same pattern of expected payment sources as the event with the missing payment was used to impute the missing payment value. The imputations for the flat fee events were carried out separately from the simple events.

A weighted sequential hot-deck procedure was used to impute the missing total charges. This procedure uses survey data from respondents to replace missing data, while taking into account the persons' weighted distribution in the imputation process.

2.5.5.2.3 Other Medical Expenses Data Editing and Imputation

In Panel 21 Round 5 and Panel 22 Round 3, MEPS started using a new CAPI instrument to collect data. The new instrument collects round-specific OM use and expenditures for all OM types (glasses/contact lenses, ambulance, disposable supplies, and long-term equipment), while the old CAPI instrument collected round-specific use and expenditures for only one OM type (glasses/contact lenses). For the remaining three OM types (e.g., ambulance services, long-term equipment and disposable supplies), the old instrument collected annual use and expenditures only in the year-end round of each panel.

Due to the change in the CAPI instrument, expenditure data for ambulance services, long-term equipment, and disposable supplies were not explicitly collected for Panel 22 Rounds 1 and 2, and Panel 21 Rounds 3 and 4. Supplemental research indicated that persons reporting expenditures for disposable supplies or long-term medical equipment in part of the year were likely to have similar expenditures in the remaining portion of the year. Thus, expenditures for these two OM types were annualized. Specifically, for Panel 21 Round 5 and Panel 22 Round 3, expenditures were inflated by the number of days in the reference period (i.e., expenditures x 365/reference days in 2017).

An additional change is that the new CAPI instrument collects the total charge and out-of-pocket expenditures for disposable supplies (OMTYPEX=10) in a range format. In Panel 21 Round 5 and Panel 22 Round 3, the ranges were replaced with mean dollar amounts of respective

expenditures reported in each range in prior years. The mean dollar replacement amounts are shown in the tables below:

| Total Charge Range for OMTYPEX=10 | Mean Dollar Amounts |
|-----------------------------------|---------------------|
| \$0 | \$0 |
| \$1 - \$10 | \$8.10 |
| \$11 - \$30 | \$20.50 |
| \$31 - \$100 | \$57.80 |
| \$101 or more | \$1,571.70 |

| Out of Pocket Payment Range for OMTYPEX=10 | Mean Dollar Amount |
|--|--------------------|
| \$0 | \$0 |
| \$1 - \$10 | \$6.70 |
| \$11 - \$30 | \$20.40 |
| \$31 - \$100 | \$56.20 |
| \$101 or more | \$442.60 |
| -7, -8, -9 | -8 |

Expenditures on other medical equipment and services were developed in a sequence of logical edits and imputations. The household edits were used to correct obvious errors in the reporting of expenditures, and to identify actual and potential sources of payments. Some of the edits were global (i.e., applied to all events). Others were hierarchical and mutually exclusive. One of the more important edits separated flat fee events from simple events. This edit was necessary because groups of events covered by a flat fee (i.e., a flat fee bundle) were edited and imputed separately from individual events each covered by a single charge (i.e., simple events). Other medical services were imputed as flat fee events if the charges covered a package of health care services (e.g., optical), and all of the services were part of the same event type (i.e., a pure bundle). If a bundle contained any OM events with any other types of events, the services were treated as simple events in the imputations (See Section 2.5.3 for more detail on the definition and imputation of events in flat fee bundles.)

Logical edits were used to sort each event into a specific category for the imputations. Events with complete expenditures were flagged as potential donors for the predictive mean imputations, while events with missing expenditure data were assigned to various recipient categories. Each event with missing expenditure data was assigned to a recipient category based on the extent of its missing charge and expenditure data. For example, an event with a known total charge but no expenditure information was assigned to one category, while an event with a known total charge and partial expenditure information was assigned to a different category. Similarly, events without a known total charge and no or partial expenditure information were assigned to various recipient categories.

The logical edits produced nine recipient categories for events with missing data. Eight of the categories were for events with a common pattern of missing data and a primary payer other than Medicaid. Medicaid events were imputed separately because persons on Medicaid rarely know the provider's charge for services or the amount paid by the state Medicaid program. As a result, the total charge for Medicaid-covered services was imputed and discounted to reflect the amount that a state program might pay for the care.

Separate predictive mean imputations were used to impute missing data in each of the eight recipient categories. The donor pool included "free events" because in some instances, providers are not paid for their services. These events represent charity care, bad debt, provider failure to bill, and third party payer restrictions on reimbursement in certain circumstances. If free events were excluded from the donor pool, total expenditures would be over-counted because the distribution of free events among complete events (donors) is not represented among incomplete events (recipients).

2.5.5.3 Imputation Flag Variable (IMPFLAG)

IMPFLAG is a six-category variable that indicates if the event contains complete Household Component (HC) or Medical Provider Component (MPC) data, was fully or partially imputed, or was imputed in the capitated imputation process (for OP and MV events only). The following list identifies how the imputation flag is coded; the categories are mutually exclusive.

IMPFLAG = 0 not eligible for imputation (includes zeroed out and flat fee leaf events)

IMPFLAG = 1 complete HC data

IMPFLAG = 2 complete MPC data (not applicable to OM events)

IMPFLAG = 3 fully imputed

IMPFLAG = 4 partially imputed

IMPFLAG = 5 complete MPC data through capitation imputation (not applicable to OM events)

2.5.5.4 Flat Fee Expenditures

The approach used to count expenditures for flat fees was to place the expenditure on the first visit of the flat fee group. The remaining visits have zero payments. Thus, if the first visit in the flat fee group occurred prior to 2017, all of the events that occurred in 2017 will have zero payments. Conversely, if the first event in the flat fee group occurred at the end of 2017, the total expenditure for the entire flat fee group will be on that event, regardless of the number of events it covered after 2017. See Section 2.5.3 for details on the flat fee variables.

2.5.5.5 Zero Expenditures

Some respondents reported persons obtaining medical items where the payments were zero. This could occur for several reasons including (1) the item or service was free, (2) bad debt was

incurred, or (3) the item was covered under a flat fee arrangement beginning in an earlier year. If all of the medical events for a person fell into one of these categories, then the total annual expenditures for that person would be zero.

2.5.5.6 Sources of Payment

In addition to total expenditures, variables are provided which itemize expenditures according to major source of payment categories. These categories are:

1. Out-of-pocket by User (self) or Family,
2. Medicare,
3. Medicaid,
4. Private Insurance,
5. Veterans Administration/CHAMPVA, excluding TRICARE,
6. TRICARE,
7. Other Federal Sources - includes Indian Health Service, military treatment facilities, and other care by the federal government,
8. Other State and Local Source - includes community and neighborhood clinics, state and local health departments, and state programs other than Medicaid,
9. Workers' Compensation, and
10. Other Unclassified Sources - includes sources such as automobile, homeowner's, and liability insurances, and other miscellaneous or unknown sources.

Two additional source of payment variables were created to classify payments for events with apparent inconsistencies between insurance coverage and sources of payment based on data collected in the survey. These variables include:

11. Other Private - any type of private insurance payments reported for persons not reported to have any private health insurance coverage during the year as defined in MEPS, and
12. Other Public - Medicare/Medicaid payments reported for persons who were not reported to be enrolled in the Medicare/Medicaid program at any time during the year.

Though relatively small in magnitude, data users/analysts should exercise caution when interpreting the expenditures associated with these two additional sources of payment. While these payments stem from apparent inconsistent responses to health insurance and source of payment questions in the survey, some of these inconsistencies may have logical explanations. For example, private insurance coverage in MEPS is defined as having a major medical plan covering hospital and physician services. If a MEPS sampled person did not have such coverage but had a single service type insurance plan (e.g., dental insurance) that paid for a particular episode of care, those payments may be classified as "other private." Some of the "other public" payments may stem from confusion between Medicaid and other state and local programs or may be from persons who were not enrolled in Medicaid, but were presumed eligible by a provider who ultimately received payments from the public payer.

2.5.5.7 Other Medical Expenditure Variables (OMSF17X-OMTC17X)

Other medical expenditure data were obtained only through the Household Component Survey. For cases with missing expenditure data, other medical expenditures were imputed using the procedures described above.

OMSF17X – OMOT17X are the 12 sources of payment. OMTC17X is the total charge, and OMXP17X is the sum of the 12 sources of payment for the other medical expenditures. The 12 sources of payment are: self/family (OMSF17X), Medicare (OMMR17X), Medicaid (OMMD17X), private insurance (OMPV17X), Veterans Administration/CHAMPVA (OMVA17X), TRICARE (OMTR17X), other federal sources (OMOF17X), state and local (non-federal) government sources (OMSL17X), Workers' Compensation (OMWC17X), other private insurance (OMOR17X), other public insurance (OMOU17X), and other insurance (OMOT17X).

2.5.5.8 Rounding

Expenditure variables on the 2017 Other Medical event file have been rounded to the nearest penny. Person-level expenditure information released on the MEPS 2017 Full Year Consolidated File will be rounded to the nearest dollar. It should be noted that using the MEPS event files to create person-level totals will yield slightly different totals than those found on the consolidated file. These differences are due to rounding only. Moreover, in some instances, the number of persons having expenditures on the event files for a particular source of payment may differ from the number of persons with expenditures on the person-level expenditure file for that source of payment. This difference is also an artifact of rounding only.

3.0 Sample Weight (PERWT17F)

3.1 Overview

There is a single full-year person-level weight (PERWT17F) assigned to each record for each key, in-scope person who responded to MEPS for the full period of time that he or she was in-scope during 2017. A key person was either a member of a responding NHIS household at the time of interview or joined a family associated with such a household after being out-of-scope at the time of the NHIS (the latter circumstance includes newborns as well as those returning from military service, an institution, or residence in a foreign country). A person is in-scope whenever he or she is a member of the civilian noninstitutionalized portion of the U.S. population.

3.2 Details on Person Weight Construction

The person-level weight PERWT17F was developed in several stages. Person-level weights for Panel 21 and Panel 22 were created separately. The weighting process for each panel included an adjustment for nonresponse over time and calibration to independent population figures. The calibration was initially accomplished separately for each panel by raking the corresponding sample weights for those in-scope at the end of the calendar year to Current Population Survey (CPS) population estimates based on six variables. The six variables used in the establishment of the initial person-level control figures were: educational attainment of the reference person (no degree, high school/GED no college, some college, bachelor's degree or higher; census region

(Northeast, Midwest, South, West); MSA status (MSA, non-MSA); race/ethnicity (Hispanic; Black, non-Hispanic; Asian, non-Hispanic; and other); sex; and age. A 2017 composite weight was then formed by multiplying each weight from Panel 21 by the factor .500 and each weight from Panel 22 by the factor .500. The choice of factors reflected the relative sample sizes of the two panels, helping to limit the variance of estimates obtained from pooling the two samples. The composite weight was raked to the same set of CPS-based control totals. When the poverty status information derived from income variables became available, a final raking was undertaken on the previously established weight variable. Control totals were established using poverty status (five categories: below poverty, from 100 to 125 percent of poverty, from 125 to 200 percent of poverty, from 200 to 400 percent of poverty, at least 400 percent of poverty) as well as the other five variables previously used in the weight calibration.

3.2.1 MEPS Panel 21 Weight Development Process

The person-level weight for MEPS Panel 21 was developed using the 2016 full-year weight for an individual as a “base” weight for survey participants present in 2016. For key, in-scope members who joined an RU some time in 2017 after being out-of-scope in 2016, the initially assigned person-level weight was the corresponding 2016 family weight. The weighting process included an adjustment for person-level nonresponse over Rounds 4 and 5 as well as raking to population control totals for December 2017 for key, responding persons in-scope on December 31, 2017. These control figures were derived by scaling back the population distribution obtained from the March 2018 CPS to reflect the December 31, 2017 estimated population total (estimated based on Census projections for January 1, 2018). Variables used for person-level raking included: educational attainment of the reference person (no degree, high school/GED no college, some college, bachelor’s degree or higher); census region (Northeast, Midwest, South, West); MSA status (MSA, non-MSA); race/ethnicity (Hispanic, Black non-Hispanic, Asian non-Hispanic, and other); sex; and age. (Poverty status is not included in this version of the MEPS full year database because of the time required to process the income data collected and then assign persons to a poverty status category). The final weight for key, responding persons who were not in-scope on December 31, 2017 but were in-scope earlier in the year was the person weight after the nonresponse adjustment.

Note that the 2016 full-year weight that was used as the base weight for Panel 21 was derived as follows; adjustment of the MEPS Round 1 weight for nonresponse over the remaining data collection rounds in 2016; and raking the resulting nonresponse adjusted weight to December 2016 population control figures.

3.2.2 MEPS Panel 22 Weight Development Process

The person-level weight for MEPS Panel 22 was developed using the 2017 MEPS Round 1 person-level weight as a “base” weight. For key, in-scope members who joined an RU after Round 1, the Round 1 family weight served as a “base” weight. The weighting process included an adjustment for nonresponse over the remaining data collection rounds in 2017 as well as raking to the same population control figures for December 2017 used for the MEPS Panel 21 weights for key, responding persons in-scope on December 31, 2017. The same six variables employed for Panel 21 raking (educational attainment of the reference person, census region, MSA status, race/ethnicity, sex, and age) were used for Panel 22 raking. Again, the final weight

for key, responding persons who were not in-scope on December 31, 2017 but were in-scope earlier in the year was the person weight after the nonresponse adjustment.

Note that the MEPS Round 1 weights for Panel 22 incorporated the following components: the original household probability of selection for the NHIS; proportion of the NHIS sample reserved for MEPS; adjustment for NHIS nonresponse; the probability of selection of NHIS responding households for MEPS; an adjustment for nonresponse at the dwelling unit level for Round 1; and poststratification to U.S. civilian noninstitutionalized population estimates at the family and person level obtained from the corresponding March CPS data bases.

3.2.3 The Final Weight for 2017

The final raking of those in-scope at the end of the year has been described above. In addition, the composite weights of two groups of persons who were out-of-scope on December 31, 2017 were poststratified. Specifically, the weights of those who were in-scope some time during the year, out-of-scope on December 31, and entered a nursing home during the year were adjusted to compensate for expected undercoverage for this subpopulation. The weights of persons who died while in-scope during 2017 were poststratified to corresponding estimates derived using data obtained from the Medicare Current Beneficiary Survey (MCBS) and Vital Statistics information provided by the National Center for Health Statistics (NCHS). Separate decedent control totals were developed for the “65 and older” and “under 65” civilian noninstitutionalized populations.

Overall, the weighted population estimate for the civilian noninstitutionalized population for December 31, 2017 is 321,529,965 (PERWT17F>0 and INSC1231=1). The sum of person-level weights across all persons assigned a positive person-level weight is 324,779,909.

3.2.4 Coverage

The target population for MEPS in this file is the 2017 U.S. civilian noninstitutionalized population. However, the MEPS sampled households are a subsample of the NHIS households interviewed in 2015 (Panel 21) and 2016 (Panel 22). New households created after the NHIS interviews for the respective Panels and consisting exclusively of persons who entered the target population after 2015 (Panel 21) or after 2016 (Panel 22) are not covered by MEPS. Neither are previously out-of-scope persons who join an existing household but are unrelated to the current household residents. Persons not covered by a given MEPS panel thus include some members of the following groups: immigrants; persons leaving the military; U.S. citizens returning from residence in another country; and persons leaving institutions. The set of uncovered persons constitutes only a small segment of the MEPS target population.

3.3 Using MEPS Data for Trend Analysis

MEPS began in 1996, and the utility of the survey for analyzing health care trends expands with each additional year of data; however, there are a variety of methodological and statistical considerations when examining trends over time using MEPS. Tests of statistical significance should be conducted to assess the likelihood that observed trends may be attributable to sampling variation. The length of time being analyzed should also be considered. In particular, large shifts in survey estimates over short periods of time (e.g. from one year to the next) that are statistically

significant should be interpreted with caution unless they are attributable to known factors such as changes in public policy, economic conditions, or MEPS survey methodology.

With respect to methodological considerations, in 2013 MEPS introduced an effort to obtain more complete information about health care utilization from MEPS respondents with full implementation in 2014. This effort likely resulted in improved data quality and a reduction in underreporting starting in FY 2014 and could have some modest impact on analyses involving trends in utilization across years.

There are also statistical factors to consider in interpreting trend analyses. Looking at changes over longer periods of time can provide a more complete picture of underlying trends. Analysts may wish to consider using techniques to evaluate, smooth, or stabilize analyses of trends using MEPS data such as comparing pooled time periods (e.g. 1996-97 versus 2011-13), working with moving averages, or using modeling techniques with several consecutive years of MEPS data to test the fit of specified patterns over time. Finally, researchers should be aware of the impact of multiple comparisons on Type I error. Without making appropriate allowance for multiple comparisons, undertaking numerous statistical significance tests of trends increases the likelihood of concluding that a change has taken place when one has not.

4.0 Strategies for Estimation

This file is constructed for estimation of utilization, expenditures, and sources of payment for other medical expenditures and to allow for estimates for the number of persons who obtained medical items in 2017.

4.1 Basic Estimates of Utilization, Expenditures, and Sources of Payment

In contrast to the other types of event files, the unit and/or period of time covered are not consistent across all records within this file. More specifically, this file contains round-specific expenditure data on purchases of eyeglasses or contact lenses and annual data on certain other types of medical equipment, supplies, and services (see description below and OMTYPEX variable in codebook for more details). Data are not collected on the actual number of purchases of the items/services represented on this file, so it is not possible to estimate the average expenditure per unit of service.

4.1.1 Type of Records on File (OMTYPEX)

Records for purchases of insulin and diabetic supplies were included in the Other Medical Expenses event files for 1996-2004. Beginning with the 2005 file, these records were excluded from the Other Medical Expenses event file since the expenditures have always been included on the Prescribed Medicines file. The Prescribed Medicines file is a more appropriate source for estimates of both utilization and expenditures for insulin and diabetic supplies. As a consequence, there are no records on this file where the variable OMTYPEX = 2 or 3.

Eyeglasses and contact lenses: Each record on this file where OMTYPEX = 1 contains information on total expenditures during a specific round for eyeglasses and/or contact lenses (a maximum of 3 records for a sample person). Variables for annual expenditure data for

eyeglasses/contact lenses (obtained by cumulating across round specific data in this file) are included on the annual Full-Year Consolidated File.

Other medical equipment, supplies and services: Each of the records in this file where OMTYPEX does not equal 1 contains person-specific information on annual expenditures for a specific category of medical equipment and supplies asked about in the survey. Estimates of the total number of persons with expenditures for an item during the year are the sum of the weight variable (PERWT17F) across relevant records (e.g., for ambulance services, records where OMTYPEX = 4). Estimates of expenditure variables must be weighted by PERWT17F to be nationally representative. For example, the estimate for the total expenditures for ambulance services paid out of pocket is produced by summing the product of the variables PERWT17F and OMSF17X across all the events in the file where OMTYPEX = 4 as follows (the subscript ‘j’ identifies each event and represents a numbering of events from 1 through the total number of events in the file):

$\sum W_j X_j$, where

$W_j = \text{PERWT17F}_j$ (full-year weight for the person associated with event j), and
 $X_j = \text{OMSF17X}_j$ (amount paid by self/family for event j) where OMTYPEX = 4.

The estimate for the total annual expenditures for ambulance services paid out of pocket per person with that type of expense is produced as follows (the subscript ‘j’ identifies each event and represents a numbering of events from 1 through the total number of events in the file):

$(\sum W_j X_j)/(\sum W_j)$, where

$W_j = \text{PERWT17F}_j$ (full-year weight for the person associated with event j), and
 $X_j = \text{OMSF17X}_j$ (amount paid by self/family for event j) where OMTYPEX = 4.

This type of estimate and corresponding [standard error \(SE\)](#) can be derived using an appropriate computer software package for complex survey analysis such as SAS, Stata, SUDAAN or SPSS. Variables are contained on the full-year annual file for aggregate expenditures across all of these types of services/items (OMTYPEX = 4, 10, or 12), but it is necessary to use this file to produce an annual estimate for a specific category of service. Small sample sizes make it advisable to pool multiple years of MEPS data to produce statistically reliable estimates for some of the items.

4.2 Variables with Missing Values

It is essential that the analyst examine all variables for the presence of negative values used to represent missing values. For continuous or discrete variables, where means or totals may be taken, it may be necessary to set negative values to values appropriate to the analytic needs. That is, the analyst should either impute a value or set the value to one that will be interpreted as missing by the software package used. For categorical and dichotomous variables, the analyst

may want to consider whether to recode or impute a value for cases with negative values or whether to exclude or include such cases in the numerator and/or denominator when calculating proportions.

Methodologies used for the editing/imputation of expenditure variables (e.g., source of payment, flat fee, and zero expenditures) are described in Section 2.5.5.2.

4.3 Variance Estimation (VARPSU, VARSTR)

The MEPS has a complex sample design. To obtain estimates of variability (such as the standard error of sample estimates or corresponding confidence intervals) for MEPS estimates, analysts need to take into account the complex sample design of MEPS for both person-level and family-level analyses. Several methodologies have been developed for estimating standard errors for surveys with a complex sample design, including the Taylor-series linearization method, balanced repeated replication, and jackknife replication. Various software packages provide analysts with the capability of implementing these methodologies. MEPS analysts most commonly use the Taylor Series approach. However, the capability of employing the Balanced Repeated Replication (BRR) methodology is also provided if needed to develop variances for more complex estimators.

4.3.1 Taylor-series Linearization Method

The variables needed to calculate appropriate standard errors based on the Taylor-series linearization method are included on this file as well as all other MEPS public use files. Software packages that permit the use of the Taylor-series linearization method include SUDAAN, Stata, SAS (version 8.2 and higher), and SPSS (version 12.0 and higher). For complete information on the capabilities of each package, analysts should refer to the corresponding software user documentation.

Using the Taylor-series linearization method, variance estimation strata and the variance estimation PSUs within these strata must be specified. The variables VARSTR and VARPSU on this MEPS data file serve to identify the sampling strata and primary sampling units required by the variance estimation programs. Specifying a “with replacement” design in one of the previously mentioned computer software packages will provide estimated standard errors appropriate for assessing the variability of MEPS survey estimates. It should be noted that the number of degrees of freedom associated with estimates of variability indicated by such a package may not appropriately reflect the number available. For variables of interest distributed throughout the country (and thus the MEPS sample PSUs), one can generally expect to have at least 100 degrees of freedom associated with the estimated standard errors for national estimates based on this MEPS database.

Prior to 2002, MEPS variance strata and PSUs were developed independently from year to year, and the last two characters of the strata and PSU variable names denoted the year. However, beginning with the 2002 Point-in-Time PUF, the variance strata and PSUs were developed to be compatible with all future PUFs until the NHIS design changed. Thus, when pooling data across years 2002 through the Panel 11 component of the 2007 files, the variance strata and PSU variables provided can be used without modification for variance estimation purposes for

estimates covering multiple years of data. There were 203 variance estimation strata, each stratum with either two or three variance estimation PSUs.

From Panel 12 of the 2007 files, a new set of variance strata and PSUs were developed because of the introduction of a new NHIS design. There are 165 variance strata with either two or three variance estimation PSUs per stratum, starting from Panel 12. Therefore, there are a total of 368 (203+165) variance strata in the 2007 Full Year file as it consists of two panels that were selected under two independent NHIS sample designs. Since both MEPS panels in the Full Year files from 2008 through 2016 are based on the next NHIS design, there are only 165 variance strata. These variance strata (VARSTR values) have been numbered from 1001 to 1165 so that they can be readily distinguished from those developed under the former NHIS sample design in the event that data are pooled for several years.

As discussed, the most recent change in the NHIS sample design took place in 2016, effectively changing the MEPS design beginning with calendar year 2017, where Panel 22 is based on the new NHIS design while Panel 21 is based on the old one. There were 117 variance strata formed for Panel 22. With the 165 strata available from Panel 21, there are a total of 282 variance strata appearing on the 2017 Full Year PUF.

In order to make the pooling of data across multiple years of MEPS more straightforward, the numbering system for the variance strata has changed. Those strata associated with the new design have four digit values with a “2” as the first digit. Those associated with the previous design have “1” as the first of four digits.

If analyses call for pooling MEPS data across several years, in order to ensure that variance strata are identified appropriately for variance estimation purposes, one can proceed as follows:

1. When pooling any year from 2002 or later, one can use the variance strata numbering as is.
2. When pooling any year from 1996 to 2001 with any year from 2002 or later, use the H36 file.
3. A new H36 file was constructed to allow pooling of 2007 and later years with 1996 to 2006.

4.3.2 Balanced Repeated Replication (BRR) Method

BRR replicate weights are not provided on this MEPS PUF for the purposes of variance estimation. However, a file containing a BRR replication structure is made available so users can form replicate weights, if desired, from the final MEPS weight to compute variances of MEPS estimates using either BRR or Fay’s modified BRR (Fay 1989) methods. The replicate weights are useful to compute variances of complex non-linear estimators for which a Taylor linear form is not easy to derive and not available in commonly used software. For instance, it is not possible to calculate the variances of a median or the ratio of two medians using the Taylor linearization method. For these types of estimators, users may calculate a variance using BRR or Fay’s modified BRR methods. However, it should be noted that the replicate weights have been

derived from the final weight through a shortcut approach. Specifically, the replicate weights are not computed starting with the base weight and all adjustments made in different stages of weighting are not applied independently in each replicate. Thus, the variances computed using this one-step BRR do not capture the effects of all weighting adjustments that would be captured in a set of fully developed BRR replicate weights. The Taylor Series approach does not fully capture the effects of the different weighting adjustments either.

The dataset, HC-036BRR, contains the information necessary to construct the BRR replicates. It contains a set of 128 flags (BRR1—BRR128) in the form of half sample indicators, each of which is coded 0 or 1 to indicate whether the person should or should not be included in that particular replicate. These flags can be used in conjunction with the full-year weight to construct the BRR replicate weights. For analysis of MEPS data pooled across years, the BRR replicates can be formed in the same way using the HC-036 file. For more information about creating BRR replicates, users can refer to the documentation for the HC-036BRR pooled linkage file.

5.0 Merging/Linking MEPS Data Files

Data from this file can be used alone or in conjunction with other files for different analytic purposes. This section summarizes various scenarios for merging/linking MEPS event files. Each MEPS panel can also be linked back to the previous years' National Health Interview Survey public use data files. For information on obtaining MEPS/NHIS link files please see the [MEPS website](#).

5.1 Linking to the Person-Level File

Merging characteristics of interest from other MEPS files (e.g., 2017 Full-Year Consolidated File or 2017 Prescribed Medicines) expands the scope of potential estimates. For example, to estimate the expenditures for medical equipment, visual aids, etc. for persons with specific demographic characteristics (such as age, race, and sex), population characteristics from a person-level file need to be merged onto the Other Medical Expenses event file. This procedure is shown below. The MEPS 2017 Appendix File, HC-197I, provides additional details on how to merge other MEPS data files.

1. Create data set PERSX by sorting the 2017 Full-Year Consolidated File, by the person identifier, DUPERSID. Keep only variables to be merged onto the other medical events file and DUPERSID.
2. Create data set OMEXP by sorting the other medical event file by person identifier, DUPERSID.
3. Create final data set NEWOME by merging these two files by DUPERSID, keeping only records on the other medical event file.

The following is an example of SAS code that completes these steps:

```
PROC SORT DATA=HCXXX (KEEP=DUPERSID AGE31X AGE42X  
AGE53X SEX RACEV1X EDUCYR HIDEG) OUT=PERSX;  
BY DUPERSID;
```

```
RUN;  
  
PROC SORT DATA=OMEXP;  
BY DUPERSID;  
RUN;  
  
DATA NEWOME;  
MERGE OMEXP (IN=A) PERSX (IN=B);  
BY DUPERSID;  
IF A;  
RUN;
```

5.2 Linking to the Prescribed Medicines File

The RXLK file provides a link from the MEPS event files to the 2017 Prescribed Medicine Event File. When using RXLK, data users/analysts should keep in mind that one other medical record can link to more than one prescribed medicine record. Conversely, a prescribed medicine event may link to more than one other medical record. When this occurs, it is up to the data user/analyst to determine how the prescribed medicine expenditures should be allocated among those medical events. For detailed linking examples, including SAS code, data users/analysts should refer to the MEPS 2017 Appendix File, HC-197I.

5.3 Linking to the Medical Conditions File

Conditions data are not collected for Other Medical events; therefore, this file cannot be linked to the Conditions File.

References

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D. Variable-Source Crosswalk

VARIABLE-SOURCE CROSSWALK

FOR MEPS HC-197C: 2017 OTHER MEDICAL EXPENSES

Survey Administration Variables

| Variable | Description | Source |
|----------|------------------------|----------------------|
| DUID | Dwelling unit ID | Assigned in sampling |
| PID | Person number | Assigned in sampling |
| DUPERSID | Person ID (DUID + PID) | Assigned in sampling |
| EVNTIDX | Event ID | Assigned in Sampling |
| EVENTRN | Event round number | CAPI derived |
| FFEEIDX | Flat fee ID | CAPI derived |
| PANEL | Panel number | Constructed |

Other Medical Events Variables

| Variable | Description | Source |
|----------|-------------------------------------|---------------|
| OMTYPEX | Other medical expense type – edited | EV03 (edited) |

Flat Fee Variables

| Variable | Description | Source |
|----------|-------------------------------------|-------------|
| FFOMTYPE | Flat Fee Bundle | Constructed |
| FFBEF17 | Total # of visits in FF before 2017 | FF05 |
| FFTOT18 | Total # of visits in FF after 2017 | FF10 |

Imputed Expenditure Variables

| Variable | Description | Source |
|-----------------|---|---------------------|
| OMSF17X | Amount paid, family (Imputed) | CP Section (Edited) |
| OMMR17X | Amount paid, Medicare (Imputed) | CP Section (Edited) |
| OMMD17X | Amount paid, Medicaid (Imputed) | CP Section (Edited) |
| OMPV17X | Amount paid, private insurance (Imputed) | CP Section (Edited) |
| OMVA17X | Amount paid, Veterans/CHAMPVA (Imputed) | CP Section (Edited) |
| OMTR17X | Amount paid, TRICARE (Imputed) | CP Section (Edited) |
| OMOF17X | Amount paid, other federal (Imputed) | CP Section (Edited) |
| OMSL17X | Amount paid, state & local government (Imputed) | CP Section (Edited) |
| OMWC17X | Amount paid, workers' compensation (Imputed) | CP Section (Edited) |
| OMOR17X | Amount paid, other private insurance (Imputed) | Constructed |
| OMOU17X | Amount paid, other public insurance (Imputed) | Constructed |
| OMOT17X | Amount paid, other insurance (Imputed) | CP Section (Edited) |
| OMXP17X | Sum of OMSF17X–OMOT17X (Imputed) | Constructed |
| OMTC17X | Household reported total charge (Imputed) | CP Section (Edited) |
| IMPFLAG | Imputation status | Constructed |

Weights Variables

| Variable | Description | Source |
|-----------------|--------------------------------------|---------------|
| PERWT17F | Expenditure file person weight, 2017 | Constructed |
| VARSTR | Variance estimation stratum, 2017 | Constructed |
| VARPSU | Variance estimation PSU, 2017 | Constructed |