# MEPS HC-229E:
# 2021 Emergency Room Visits

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**Agency for Healthcare Research and Quality**
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# 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 includes five rounds of interviews covering two full calendar years. Additional rounds were added in 2020 and 2021, covering a third and fourth year respectively, to compensate for the smaller number of completed interviews in later panels. These extra rounds provide 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 (NCHS). The NHIS sampling frame provides a nationally representative sample of the U.S. civilian noninstitutionalized population. 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.

## 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 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 micro data files and tables via the MEPS website and datatools.ahrq.gov.

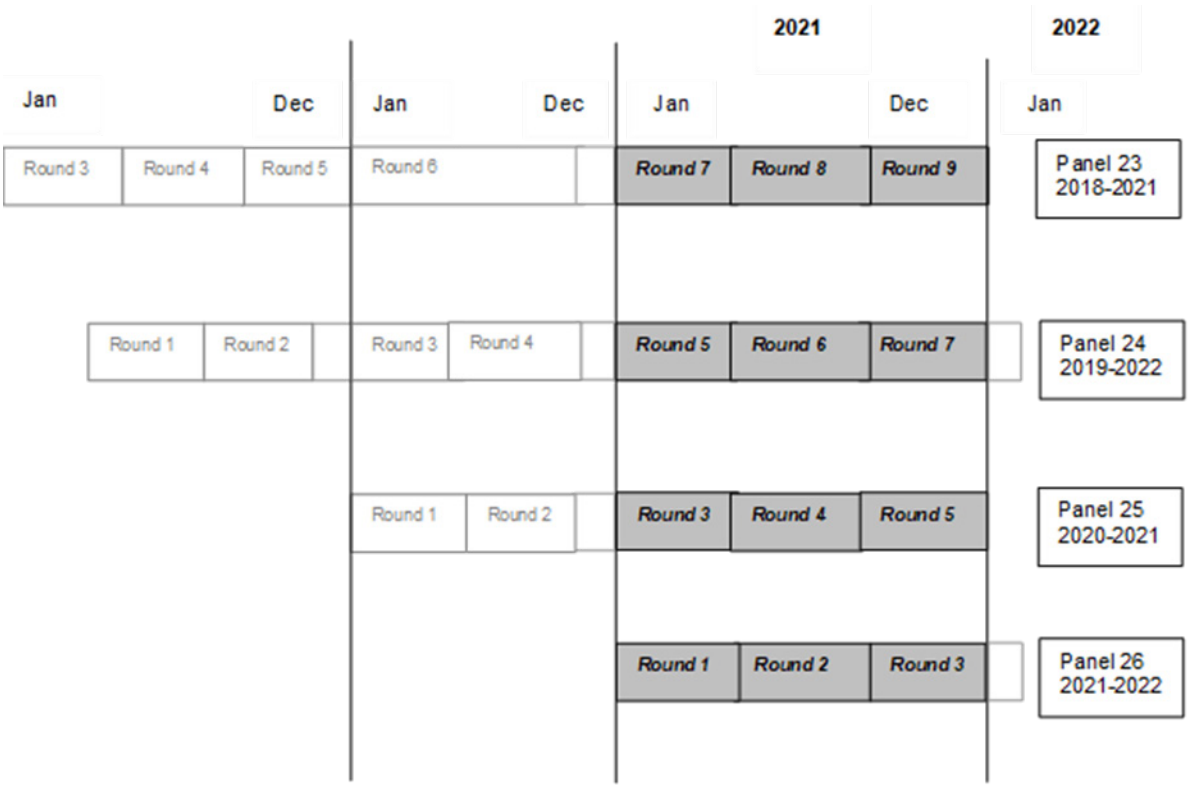
Additional information on MEPS is available from the MEPS project manager or the MEPS public use data manager at the Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality, 5600 Fishers Lane, Rockville, MD 20857 (301-427-1406).

# C. Technical and Programming Information

## 1.0 General Information

This documentation describes one in a series of public use event files from the 2021 Medical Expenditure Panel Survey (MEPS) Household Component (HC) and Medical Provider Component (MPC). Released as an ASCII data file (with related SAS, Stata, R, and SPSS programming statements and data user information) and a SAS data set, SAS transport file, Stata data set, and Excel file, the 2021 Emergency Room Visits (EROM) public use event file provides detailed information on emergency room visits for a nationally representative sample of the civilian noninstitutionalized population of the United States. Data from the EROM event file can be used to make estimates of emergency room utilization and expenditures for calendar year 2021. The file contains 53 variables and has a logical record length of 310 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 in the 2021 portion of Round 7, and all of Rounds 8 and 9 for Panel 23; the 2021 portions of Rounds 5 and 7, and all of Round 6 for Panel 24; the 2021 portion of Round 3, and all of Rounds 4 and 5 for Panel 25; and Rounds 1, 2 and the 2021 portion of Round 3 for Panel 26 (i.e., the rounds for the MEPS panels covering calendar year 2021).

Full year (FY) 2021 is the first data year to include four panels of data; Panel 23 was extended to include Rounds 7, 8, and 9 and Panel 24 was extended to include Rounds 6 and 7.




Emergency room events reported in Panel 23 Round 9, Panel 24 Round 7, Panel 25 Round 5, and Panel 26 Round 3 and known to have occurred after December 31, 2021 are not included on this file.

Annual counts of emergency room visits are based entirely on household reports. Information from the MEPS MPC is used to supplement expenditure and payment data reported by the household and does not affect use estimates.

Data from the Emergency Room event file can be merged with other 2021 MEPS HC data files for purposes of appending person-level data such as demographic characteristics or health insurance coverage to each emergency room record.

This file can also be used to construct summary variables of expenditures, sources of payment, and related aspects of emergency room visits. Aggregate annual person-level information on the use of emergency rooms and other health services is provided on the MEPS 2021 Full Year Consolidated Data file, where each record represents a MEPS sampled person.

This documentation offers an overview of the types and levels of data provided, and the content and structure of the file and the codebook. It contains the following sections:

- Data File Information
- Survey Sample Information
- Strategies for Estimation

- Merging/Linking MEPS Data Files
- References
- Variable - Source Crosswalk

Any variables not found on this file but released on previous years' files may have been excluded because they contained only missing data.

For more information on the MEPS HC sample design, see Chowdhury et al (2019). For information on the MEPS MPC design, see RTI (2019). Copies of the HC and the MPC survey instruments used to collect the information on the EROM file are available in the *Survey Questionnaires* section of the MEPS website.

## 2.0 Data File Information

The 2021 Emergency Room Visits public use data set consists of one event-level data file. The file contains characteristics associated with the EROM event and imputed expenditure data.

The 2021 EROM public use data set contains variables and frequency distributions for 5,444 emergency room visits reported during the 2021 portion of Round 7, and all of Rounds 8 and 9 for Panel 23; the 2021 portions of Rounds 5 and 7 and all of Round 6 for Panel 24; the 2021 portion of Round 3, and all of Rounds 4 and 5 for Panel 25; and Rounds 1, 2, and the 2021 portion of Round 3 of Panel 26 of the MEPS Household Component. This file includes emergency room visit records for all household survey members who resided in eligible responding households and reported at least one emergency room visit. Records where the emergency room visit was known to have occurred after December 31, 2021 are not included on this file. Of these 5,444 records, 5,342 were associated with persons having positive person-level weights (PERWT21F). The persons represented on this file had to meet either a) or b):

a) Be classified as a key in-scope person who responded for his or her entire period of 2021 eligibility (i.e., persons with a positive 2021 full-year person-level weight (PERWT21F > 0)), or

b) Be an eligible member of a family all of whose key in-scope members have a positive person-level weight (PERWT21F > 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 (FAMWT21F>0). Note that FAMIDYR and FAMWT21F are variables on the 2021 Full Year Consolidated Data File.

Persons with no emergency room visit events for 2021 are not included on this event-level ER file but are represented on the person-level 2021 Full Year Population Characteristics file.

Each emergency room visit record includes the following: date of the visit; whether or not person saw doctor; type of care received; type of services (i.e., lab test, sonogram or ultrasound, x-rays, etc.) received; medicines prescribed during the visit; flat fee information; imputed sources of

payment; total payment and total charge; a full-year person-level weight; variance strata; and variance PSU.

To append person-level information such as demographic or health insurance coverage to each event record, data from this file can be merged with 2021 MEPS HC person-level data (e.g. Full Year Consolidated or Full Year Population Characteristics file) using the person identifier, DUPERSID. Emergency room visit events can also be linked to the MEPS 2021 Medical Conditions File. Please see Section 5.0 and the 2021 Appendix File, HC-229I for details on how to merge MEPS data files.

## 2.1 Codebook Structure

For most variables on the Emergency Room Visits 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 identifiers
- Unique emergency room event identifiers
- Emergency room characteristic variables
- 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 or the information could not be ascertained |
| -15 CANNOT BE COMPUTED | Value cannot be derived from data |

The value -15 (CANNOT BE COMPUTED) is assigned to MEPS constructed variables in cases where there is not enough information from the MEPS instrument to calculate the constructed

variables. “Not enough information” is often the result of skip patterns in the data or from missing information resulting from MEPS responses of -7 (REFUSED) or -8 (DK). Note that reserved code -8 includes cases where the information from the question was “not ascertained” or where the respondent chose “don’t know”.

Generally, values of -1, -7, -8, and -15 for non-expenditure variables have not been edited on this file. The values of -1 and -15 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 EROM codebook describes an ASCII data set (although the data are also being provided in a SAS data set, SAS transport file, Stata data set, and Excel file). The following codebook items are provided for each variable:

| Identifier | Description |
|---|---|
| Name | Variable name |
| Description | Variable descriptor |
| 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. All imputed/edited variables end with an “X”.

As variable collection, universe, or categories are altered, the variable name will be appended with “_Myy” to indicate in which year the alterations took place. Details about these alterations can be found throughout this document.

### 2.4.1 General

Variables on this file were derived from the HC questionnaire itself, derived from the MPC data collection instrument, derived from CAPI, or assigned in sampling. 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 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:

    - ER - Emergency Room 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 which 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 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 the 10 source of payment variables are named in the following way:

The first two characters indicate the type of event:

IP - inpatient stay

ER - emergency room visit

HH - home health visit

OM - other medical equipment

OB - office-based visit

OP - outpatient visit

DV - dental visit

RX - prescribed medicine

For expenditure variables on the ER file, the third character indicates whether the expenditure is associated with the facility (F) or the physician (D).

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

SF - self or family

MR - Medicare

MD - Medicaid

PV - private insurance

VA - Veterans Administration/CHAMPVA

TR - TRICARE

OF - other federal government

SL - state/local government

WC - Workers' Compensation

OT - other insurance

XP - sum of payments

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

The sixth and seventh characters indicate the year (21). The eighth character, being "X", indicates whether the variable is edited/imputed.

For example, ERFSF21X is the edited/imputed amount paid by self or family for the facility portion of the expenditure associated with an emergency room visit.

## 2.5 File Contents

### 2.5.1 Survey Administration Variables

#### *Person Identifiers (DUID, PID, DUPERSID)*

The definitions of Dwelling Units (DUs) in the MEPS Household Survey are generally consistent with the definitions employed for the National Health Interview Survey (NHIS). The dwelling unit ID (DUID) is a seven-digit ID number consisting of a 2-digit panel number followed by a five-digit random number assigned after the case was sampled for MEPS. A three-digit person number (PID) uniquely identifies each person within the DU. The ten-character variable DUPERSID uniquely identifies each person represented on the file and is the combination of the variables DUID and PID. IDs begin with the 2-digit panel number.

For detailed information on dwelling units and families, please refer to the documentation for the 2021 Full Year Population Characteristics file.

#### *Record Identifiers (EVNTIDX, ERHEVIDX, FFEEIDX)*

EVNTIDX uniquely identifies each emergency room visit/event (i.e., each record on the Emergency Room Visits file) and is the variable required to link emergency room events to the data file containing details on conditions (MEPS 2021 Medical Conditions File). EVNTIDX begins with a 2-digit panel number and ends with a 2-digit event type number. For details on linking, see Section 5.0 or the MEPS 2021 Appendix File, HC-229I.

ERHEVIDX is a constructed variable identifying an EROM record that has its facility expenditures represented on an associated hospital inpatient stay record. For events where the provider-reported data are not available, this variable is derived from the final link between a hospital inpatient stay and an emergency room visit reported by the household (see "Emergency Room/Hospital Inpatient Stay Expenditures" in Section 2.5.6). For events where the provider-reported data are available, this variable is derived from provider-reported information on linked

emergency room and inpatient stay events that matched to corresponding events reported by the household. The variable ERHEVIDX contains the EVNTIDX of the linked event. On the 2021 EROM file, there are 1,145 emergency room events linked to subsequent hospital stays. Please note that where the emergency room visit is associated with a hospital stay (and its expenditures and charges are included with the hospital stay), the physician expenditures associated with the emergency room visit remain on the Emergency Room Visits file.

FFEEIDX is a constructed variable that uniquely identifies a flat fee group, that is, all events that were a part of a flat fee payment.

#### *Round Indicator (EVENTRN)*

EVENTRN indicates the round in which the emergency room visit was reported. Please note: Rounds 7 (partial), 8, and 9 are associated with MEPS survey data collected from Panel 23. Likewise, Rounds 5 (partial), 6 and 7 (partial) are associated with MEPS survey data collected from Panel 24. Rounds 3 (partial), 4, and 5 are associated with data collected from Panel 25; and Rounds 1, 2, and 3 (partial) are associated with data collected from Panel 26.

#### *Panel Indicator (PANEL)*

PANEL is a constructed variable used to specify the panel number for the person. PANEL will indicate either Panel 23, Panel 24, Panel 25, or Panel 26 for each person on the file. Panel 23 is the panel that started in 2018, Panel 24 is the panel that started in 2019, Panel 25 is the panel that started in 2020, and Panel 26 is the panel that started in 2021.

### 2.5.2 MPC Data Indicator (MPCDATA)

MPCDATA is a constructed variable which indicates whether or not MPC data were collected for the emergency room visit. While all emergency room events are sampled into the Medical Provider Component, not all emergency room event records have MPC data associated with them. This is dependent upon the cooperation of the household respondent to provide permission forms to contact the emergency room facility as well as the cooperation of the emergency room facility to participate in the survey.

### 2.5.3 Emergency Room Visit Event Variables

This file contains variables describing emergency room visits/events reported by household respondents in the Emergency Room section of the MEPS HC questionnaire. The questionnaire contains specific probes for determining details about the emergency room event. These variables have not been edited.

#### *Visit Details (ERDATEYR-VSTRELCN)*

When a person reported having had a visit to the emergency room, the year and month of the emergency room visit was recorded (ERDATEYR and ERDATEMM respectively). The type of care the person received (VSTCTGRY) and whether or not the visit was related to a specific condition (VSTRELCN) were also determined.

#### *Services, Procedures, and Prescription Medicines (LABTEST_M18-MEDPRESC)*

Services received during the visit included whether or not the person received lab tests (LABTEST_M18), a sonogram or ultrasound (SONOGRAM_M18), x-rays (XRAYS_M18), a mammogram (MAMMOG_M18), an MRI or CAT scan (MRI_M18), an electrocardiogram / an electroencephalogram (EKG_M18), or a vaccination (RCVVAC_M18). Due to design changes, beginning in 2017, EEG was combined with EKG; ANESTH (This visit did p receive anesthesia) and THRTSWAB (This visit did p have a throat swab) were removed. Beginning in 2018, OTHSVCE is removed. Whether or not a surgical procedure was performed during the visit was asked (SURGPROC). The questionnaire determined if a medicine was prescribed for the person during the emergency room visit (MEDPRESC).

### 2.5.4 Clinical Classification Software Refined

Information on household-reported medical conditions (ICD-10-CM condition codes) and aggregated clinically meaningful categories generated using Clinical Classification Software Refined (CCSR) for each emergency room visit are not provided on this file. For information on ICD-10-CM condition codes and associated CCSR codes, see the MEPS 2021 Medical Conditions file.

### 2.5.5 Flat Fee Variables (FFEEIDX, FFERTYPE, FFBEF21, FFTOT22)

#### *Definition of Flat Fee Payments*

A flat fee is the fixed dollar amount a person is charged for a package of health care services provided during a defined period of time. Examples would be: obstetrician's fee covering a normal delivery, as well as pre- and post-natal care; or a surgeon's fee covering a surgical procedure and post-surgical care. A flat fee group is the set of medical services (i.e., events) that are covered under the same flat fee payment. The flat fee groups represented on this file include flat fee groups where at least one of the health care events, as reported by the HC respondent, occurred during 2021. By definition, a flat fee group can span multiple years. Furthermore, a single person can have multiple flat fee groups.

It is important to note that certain flat fee bundle types reported by healthcare providers (HC) were identified as having a high likelihood of being simple events misidentified as bundle events. To address this, starting in 2021, HC-reported flat fee bundles were considered as flat

fees if the bundle consisted only of dental events, or the bundle started in the previous year and also had events in 2021.

Other HC-reported bundles were not allowed as flat fee bundles, and events in these bundles were treated as simple events. HC-reported bundles that included a mix of emergency room and hospitalization events were treated as linked events. All emergency room expenditures were combined with hospital inpatient expenditures. However, provider-reported flat fees were processed in a similar way to prior years.

### *Flat Fee Variable Descriptions*

#### Flat Fee ID (FFEEIDX)

As noted in "Record Identifiers," the variable FFEEIDX uniquely identifies all events that are part of the same flat fee group for a person. On any 2021 MEPS event file, every event that was a 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 FFEEIDX is not a variable on those event files.

#### Flat Fee Type (FFERTYPE)

FFERTYPE indicates whether the 2021 emergency room visit is the "stem" or "leaf" of a flat fee group. A stem (records with FFERTYPE = 1) is the initial medical service (event) which is followed by other medical events that are covered under the same flat fee payment. The leaves of the flat fee group (records with FFERTYPE = 2) are those medical events that are tied back to the initial medical event (the stem) in the flat fee group. These "leaf" records have their expenditure variables set to zero. For the emergency room visits that are not part of a flat fee payment, the FFERTYPE is set to -1, "INAPPLICABLE."

#### Counts of Flat Fee Events that Cross Years (FFBEF21, FFTOT22)

As described in "Definition of Flat Fee Payments," a flat fee payment may cover multiple events, and the multiple events could span multiple years. For situations where the emergency room event occurred in 2021 as part of a group of events, and some events occurred before or after 2021, counts of the known events are provided on the emergency room event record. Variables indicating events that occurred before or after 2021 are as follows:

> FFBEF21 - total number of pre-2021 events in the same flat fee group as the 2021 emergency room visit(s). This count would not include the 2021 emergency room visit(s).
>
> FFTOT22 - the number of 2022 emergency room visits, expected to be in the same flat fee group as the emergency room event that occurred in 2021.

If there are no 2021 events on the file, FFBEF21 will be omitted. Likewise, if there are no 2022 events on the file, FFTOT22 will be omitted. If there are no flat fee data related to the records in this file, FFEEIDX and FFERTYPE will be omitted as well. Please note that the crosswalk in this document lists all possible flat fee variables.

### *Caveats of Flat Fee Groups*

There are 7 emergency room visits 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 flat fee groups, the initial visit reported occurred in 2021, but the remaining visits that were part of this flat fee group occurred in 2022. In this case, the 2021 flat fee group represented on this file would consist of one event, the stem. The 2022 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 2020 but subsequent visits occurred during 2021. In this case, the initial visit would not be represented on the file. This 2021 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.

## 2.5.6 Expenditure Data

### *Definition of Expenditures*

Expenditures on this file refer to what is paid for health care services. More specifically, expenditures in MEPS are defined as the sum of payments for care received for each emergency room visit, 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, the estimates do not incorporate any payment not directly tied to specific medical care visits, such as bonuses or retrospective payment adjustments by third party payers. Currently, 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 reference "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, and also are available in Zuvekas and Cohen, 2002. For more information, see the Data Center section of the MEPS website.

Expenditure data related to emergency room visits are broken out by facility and separately billing doctor expenditures. When a facility bills directly for the services provided by physicians and other providers, in MEPS, the facility charge and payments in such cases include the physician and other providers' charge and payments. This file contains six categories of expenditure variables per visit: basic hospital emergency room facility expenses; expenses for

doctors who billed separately from the hospital for any emergency room services provided during the emergency room visit; total expenses, which is the sum of the facility and physician expenses; facility charge; physician charge; and total charges, which is the sum of the facility and physician charges. If examining trends in MEPS expenditures, please refer to Section 3.5 for more information.

### *Data Editing and Imputation Methodologies of Expenditure Variables*

The expenditure data included on this file were derived from both the MEPS Household (HC) and Medical Provider Components (MPC). The MPC contacted medical providers identified by household respondents. The charge and payment data from medical providers were used in the expenditure imputation process to supplement missing household data. For all emergency room visits, MPC data were used if available; otherwise, HC data were used. Missing data for emergency room visits, where HC data were not complete and MPC data were not collected, or MPC data were not complete, were imputed through the imputation process.

#### General Data Editing Methodology

Logical edits were used to resolve internal inconsistencies and other problems in the HC and MPC 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.

#### 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 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.

The 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.

#### Emergency Room Visit Data Editing and Imputation

Facility expenditures for emergency room services were developed in a sequence of logical edits and imputations. "Household" edits were applied to sources and amounts of payment for all events reported by HC respondents. "MPC" edits were applied to provider-reported sources and amounts of payment for records matched to household-reported events. Both sets of edits were used to correct obvious errors in the reporting of expenditures. After the data from each source were edited, a decision was made as to whether household- or MPC-reported information would

be used in the final editing and predictive mean matching imputations for missing expenditures. The general rule was that MPC data would be used where a household-reported event corresponded to an MPC-reported event (i.e., a matched event), since providers usually have more complete and accurate data on sources and amounts of payment than households.

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 covered by a single charge (i.e., simple events). Most emergency room events were imputed as simple events because hospital facility charges are rarely bundled with other events. (See Section 2.5.5 for more details on flat fee groups). However, some emergency room visits were treated as free events because the person was admitted to a hospital through its emergency room. In these cases, emergency room charges are included in the charge for an inpatient hospital stay.

Logical edits also 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 matching 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 eight recipient categories in which all events had a common extent of missing data. However, for predictive mean matching imputations, the recipients were grouped into four categories based on the known status of total charge and the sources of payment: 1. Known charge but unknown payment status of at least one potential paying source; 2. Unknown charge and unknown payment status of at least one potential paying source; 3. Known charge and known status of all payment sources; and 4. Unknown charge and known status of all payment sources. Separate predictive mean matching imputations were performed on events in each recipient group. For emergency room events, the donor pool was restricted to events with complete expenditures from the MPC. To improve the reliability of imputation, current year donors and inflation-adjusted prior year donors are used for the predictive mean matching imputations.

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) would not be represented among incomplete events (recipients).

Expenditures for some emergency room visits are not shown because the person was admitted to the hospital through the emergency room. These emergency room events are not free, but the expenditures are included in the inpatient stay expenditures. The variable ERHEVIDX can be

used to differentiate between free emergency room care and situations where the emergency room charges have been included in the inpatient hospital charges.

Expenditures for services provided by separately billing doctors in hospital settings were also edited and imputed. These expenditures are shown separately from hospital facility charges for hospital inpatient, outpatient, and emergency room care.

### *Imputation Flag (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 OB 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

IMPFLAG = 3 fully imputed

IMPFLAG = 4 partially imputed

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

### *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 facility payments, while physician's expenditures may still be present. Thus, if the first visit in the flat fee group occurred prior to 2021, all of the events that occurred in 2021 will have zero payments. Conversely, if the first event in the flat fee group occurred at the end of 2021, the total expenditure for the entire flat fee group will be on that event, regardless of the number of events it covered after 2021. See Section 2.5.5 for details on the flat fee variables.

### *Zero Expenditures*

There are some medical events reported by respondents where the payments were zero. Zero payment events can occur in MEPS for the following reasons: (1) the visit was covered under a flat fee arrangement (flat fee payments are included only on the first event covered by the arrangement), (2) there was no charge for a follow-up visit, (3) the provider was never paid by an individual, insurance plan, or other source for services provided, (4) charges were included in the bill for a subsequent hospital admission (emergency room events only), or (5) the event was paid for through government or privately-funded research or clinical trials.

### *Discount Adjustment Factor*

An adjustment was also applied to some HC-reported expenditure data because an evaluation of matched HC/MPC data showed that respondents who reported that charges and payments were equal were often unaware that insurance payments for the care had been based on a discounted charge. To compensate for this systematic reporting error, a weighted sequential hot-deck imputation procedure was implemented to determine an adjustment factor for HC-reported insurance payments when charges and payments were reported to be equal. As for the other imputations, selected predictor variables were used to form groups of donor and recipient events for the imputation process.

### *Emergency Room/Hospital Inpatient Stay Expenditures*

Records in the MEPS 2021 data files include the HC survey data collected using the new CAPI instrument. For persons reporting an emergency room visit that preceded a hospital stay, the instrument creates links between the two events.

For events where the provider-reported data are not available, a final link between a hospital inpatient stay and an emergency room visit of a person is created using the household-reported information in addition to the CAPI generated links. For a given person and facility provider pair, if the emergency room visit occurred anytime within two days before and one day after the hospital inpatient event, then the two events are linked. The facility expenditures, if any, reported for the emergency room visit are rolled onto the facility expenditures of the inpatient event linked to the emergency room visit.

For events where the provider-reported data are available, the provider-reported information is used. That is, such a relationship could be identified (using the MPC start and end dates of the events as well as other information from the provider) where the facility expenditures associated with the preceding emergency room visit were included in the hospital facility expenditures.

The record of a linked preceding emergency visit on the MEPS 2021 Emergency Room Visits file will have its facility expenditure information zeroed out to avoid double-counting. The variable ERHEVIDX identifies those hospital stays whose expenditures include the facility expenditures for the preceding emergency room visit (see ERHEVIDX in “Record Identifiers”). It should also be noted that for these cases, there is only one hospital stay associated with the emergency room stay.

### *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) - includes any deductible, coinsurance, and copayment amounts not covered by other sources, as well as payments for services and providers not covered by the person’s insurance or other sources,

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 insurance, and other miscellaneous or unknown sources.

Prior to 2019, for cases where reported insurance coverage and sources of payment are inconsistent, the positive amount from a source inconsistent with reported insurance coverage was moved to one or both of the source categories Other Private and Other Public. Beginning in 2019, this step is removed and the inconsistency between the payment sources and insurance coverage is allowed to remain - the amounts are not moved to Other Private and Other Public categories any more. The two source of payment categories, Other Private and Other Public, are no longer available.

### *Imputed Emergency Room Expenditure Variables*

This file contains two sets of imputed expenditure variables: facility expenditures and physician expenditures.

#### Emergency Room Facility Expenditures (ERFSF21X-ERFOT21X, ERFXP21X, ERFTC21X)

Emergency room expenses include all expenses for treatment, services, tests, diagnostic and laboratory work, x-rays, and similar charges, as well as any physician services included in the emergency room charge.

ERFSF21X - ERFOT21X are the 10 sources of payment. The 10 sources of payment are: self/family (ERFSF21X), Medicare (ERFMR21X), Medicaid (ERFMD21X), private insurance (ERFPV21X), Veterans Administration/CHAMPVA (ERFVA21X), TRICARE (ERFTR21X), other federal sources (ERFOF21X), state and local (non-federal) government sources (ERFSL21X), Worker's Compensation (ERFWC21X), and other insurance (ERFOT21X). ERFXP21X is the sum of the 10 sources of payment for the emergency room expenditures, and ERFTC21X is the total charge. Please note that where an emergency room visit record is linked

to a hospital inpatient stay record, all facility sources of payment variables, as well as ERFTC21X, have been zeroed out.

#### Emergency Room Physician Expenditures (ERDSF21X - ERDOT21X, ERDXP21X, ERDTC21X)

Charges for services provided in a hospital setting by physicians and other providers are sometimes billed directly by the hospital. In such cases, these charges are included in the hospital-facility charge and payments. When the charges are not billed directly by the hospital, physicians and other providers bill charges for the provided services directly to the third-party and the patient. In such cases, these providers are called separately billing doctors (SBD). SBD expenses typically cover services provided to patients in hospital settings by providers like anesthesiologists, radiologists, and pathologists, whose charges are often not included in emergency room visit bills.

For physicians who bill separately (i.e., outside the emergency room visit bill), a separate data collection effort within the Medical Provider Component was performed to obtain this same set of expenditure information from each separately billing doctor. It should be noted that there could be several separately billing doctors associated with a medical event. For example, an emergency room visit could have a radiologist and an internist associated with it. If their services are not included in the emergency room visit bill then this is one medical event with two separately billing doctors. The imputed expenditure information associated with the separately billing doctors was summed to the event level and is provided on the file. ERDSF21X - ERDOT21X are the 10 sources of payment, ERDXP21X is the sum of the 10 sources of payments, and ERDTC21X is the physician's total charge.

Data users/analysts need to take into consideration whether to analyze facility and SBD expenditures separately, combine them within service categories, or collapse them across service categories (e.g., combine SBD expenditures with expenditures for physician visits to offices and/or outpatient departments).

#### Total Expenditures and Charges for Emergency Room Visits (ERXP21X, ERTC21X)

Data users/analysts interested in total expenditure should use the variable ERXP21X, which includes both the facility and physician amounts. Those interested in total charges should use the variable ERTC21X, which includes both facility and physician charges (see Section 2.5.6 for an explanation of the "charge" concept). However, please note that where the emergency room visit is linked to a hospital inpatient stay record, ERFTC21X has been zeroed out. Thus, ERTC21X may be equal to "0" or the doctor total charge (ERDTC21X).

### 2.5.7 Rounding

The expenditure variables have been rounded to the nearest penny. Person-level expenditure information released on the MEPS 2021 Person-Level Use and Expenditure File were rounded to the nearest dollar. It should be noted that using the MEPS 2021 event files to create person-level totals will yield slightly different totals than those found on the full year 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 expenditures file for that source of payment. This difference is also an artifact of rounding only.

# 3.0 Survey Sample Information

## 3.1 Discussion of Pandemic Effects on Quality of 2021 MEPS Data

### 3.1.1 Summary

The challenges associated with MEPS data collection in 2020 after the onset of the COVID-19 pandemic continued into 2021. The major modifications to the standard MEPS study design remained in effect, permitting data to be collected safely but with accompanying concerns related to the quality of the data obtained. These data quality issues are discussed below. The suggestion made in the documentation for the FY 2020 MEPS Consolidated PUF data (as well as for most federal major in-person surveys conducted in 2021 and 2020) still holds. Researchers are counseled to take care in the interpretation of estimates based on data collected from these two calendar years. This includes the comparison of such estimates to those of other years and corresponding trend analyses.

### 3.1.2 Overview

Section 3.1 of the documentation for the 2020 Full Year Consolidated Data File provides a general discussion of the impact of the COVID-19 pandemic on several other major in-person federal surveys as well as on MEPS. In addition, it offers a detailed look at how MEPS was modified to permit safe data collection and the development of useful estimates at a time when the way the U.S. health care system functioned underwent many transformations in order to meet population needs.

In this corresponding 2021 document, focus is placed mostly on MEPS data quality in 2021. However, it also includes how data quality issues related to the two federal surveys most closely connected to it, the National Health Interview Survey (NHIS) carried out by the National Center for Health Statistics (NCHS) and the Current Population Survey (CPS) carried out by the Census Bureau, have an impact on the data quality issues of MEPS.

Specifically, the following discussion describes: 1) data quality issues experienced by the NHIS and CPS that affect MEPS; 2) modifications to the MEPS sample design in 2021 due to the continuing pandemic; and 3) potential data quality issues in the FY 2021 MEPS data related to the COVID-19 pandemic.

### 3.1.3 Data Quality Issues for MEPS in 2021 Directly Associated with Data Quality Concerns for the NHIS and CPS

Households fielded for Round 1 of MEPS in each year have been selected as a subsample from among the NHIS responding households from the prior year. The MEPS first year panel in 2021 was Panel 26. The households fielded for MEPS in Round 1 of Panel 26 were thus selected from NHIS responding households in 2020. It is important to note here that the NHIS households eligible for use in MEPS are restricted to the first three quarters of the NHIS as the fourth quarter households cannot be made available in time for MEPS data collection early in the next calendar year.

The onset of the pandemic in 2020 at a national level took place in mid-March of that year, when the NHIS data collection for the first quarter of 2020 was virtually completed and that of the second quarter was about to begin. The NHIS had to make a rapid transition from in-person to telephone interviewing in order to attempt to gather NHIS data for the second quarter of 2020. While NCHS was able to make the transition, assessments made by NCHS at the time indicated a much lower response rate than is typically experienced during Quarter 2 and the quality of Quarter 2 data was of particular concern. NCHS thus modified the 2020 NHIS sample design for Quarters 3 and 4. A randomly selected subsample of the sampled housing units originally selected for fielding in Quarters 3 and 4 of 2020 was removed from the sample to be fielded. This reduced sample for Quarters 3 and 4 was then enhanced by randomly selecting responding households from the 2019 NHIS for interviewing in 2020 as well. In consideration of the data quality issues and sample design modifications associated with the 2020 NHIS, the MEPS sample design for FY 2021 was modified, as will be discussed shortly.

With respect to the CPS, the quality of CPS data is always of particular importance to MEPS as March CPS-ASEC estimates serve as the basis of control totals for the raking component of the MEPS weighting process. These control totals incorporate the following demographic variables: age, sex, race/ethnicity, region, MSA status, educational attainment, and poverty status. The CPS estimates of educational attainment and poverty status used in the development of the FY 2021 MEPS PUFs were of particular concern. Evaluations of these estimates undertaken by the Census Bureau have shown that they suffered from bias due to survey nonresponse with CPS income estimates being on the high side and the estimate of those under poverty being on the low side. The impact of these CPS estimates on the quality of MEPS estimates has been carefully considered. The approach used for the MEPS Full Year 2021 Consolidated PUF sample weights is discussed in Section 3.3.

A set of references (Bramlett et al., 2021; Dahlhamer et al., 2021; Lau et al, 2021; Rothbaum & Bee, 2021, 2022; Zuvekas & Kashihara, 2021) discussing the fielding of these surveys during the pandemic and possible bias concerns, can be found in the References section of this document.

### 3.1.4 Modifications to the MEPS HC 2021 Sample Design

Two key factors were thus expected to raise issues with MEPS plans for fielding a 2021 sample. First, 2020 NHIS data quality and sample size issues were of particular concern for Quarter 2 of that year. Second, roughly half of the NHIS sampled households for Quarter 3 would also have

been respondents in the 2019 NHIS so that many of the Quarter 3 NHIS respondents were expected to have already been sampled and fielded for Panel 25 of MEPS. It thus became clear that it would be prudent to modify the 2021 MEPS sample design for MEPS Panel 26. Action had to be taken immediately because the MEPS sample selection from NHIS responding households begins in the late summer/early fall of each year.

AHRQ contacted NCHS, reviewing the various issues and asking if it would be possible that responding households in NHIS Panels 2 and 4 from Quarter 1 of 2020 be made available for MEPS sample selection. Virtually all of these households were interviewed in-person prior to the major onset of the pandemic, so the Quarter 1 response rates for all four NHIS panels were consistent with prior years and the data quality issues associated with the pandemic could be avoided. NCHS was fully supportive of this approach and made NHIS Panels 2 and 4 for Quarter 1 available for use by MEPS. Thus, for MEPS Panel 26, the NHIS responding households subsampled from MEPS were selected from among all NHIS responding households in Quarter 1 as well as those responding in Quarter 3 that were not originally sampled for the 2019 NHIS.

As an adjunct to this modification, it was decided to take advantage of the additional PSUs (sampled localities) available from NHIS Panels 2 and 4 and appearing in the MEPS sample for the first time. State level estimation is of interest to MEPS, and the added PSUs would serve to increase the precision for state level estimates. State estimates that would be expected to benefit the most from these added PSUs were the "middle-sized" states. The largest states already had large sample sizes while precision for the smallest states would remain low. As a result, the MEPS sample focused on oversampling the "middle-sized" states rather than Hispanics, Blacks, and Asians, as has usually been the practice.

Finally, it was decided to collect data for Panels 23 and 24 for nine rounds, so that these two panels will ultimately contribute to MEPS estimates for four calendar years. In so doing, the number of respondents to MEPS will be kept at a relatively high level despite the decline in response rates due to the pandemic. The MEPS FY 2021 PUF records thus consist of data obtained from the following MEPS Panels and corresponding rounds: Panel 23, Rounds 7-9; Panel 24, Rounds 5-7; Panel 25, Rounds 3-5; and Panel 26, Rounds 1-3.

### 3.1.5 Data Quality Issues for MEPS for FY 2021

Three sources of potential bias were identified for MEPS for FY 2020: long recall period for Round 6 of Panel 23; switching from in-person to telephone interviewing which likely had a larger impact on Panel 25; and the impact of CPS bias on the MEPS weights. A number of statistically significant differences were found between panels for FY 2020. Those findings are discussed in the documentation for the Full Year 2020 Consolidated PUF.

With this in mind, there were a number of uncertainties for FY 2021 warranting examination. Would Panel 23 data quality increase substantially once the issue of an extensive recall period was eliminated? Would event reporting continue to be generally higher in Panel 25 compared to other panels? Since Panel 26 was the first year MEPS panel in 2021, would Panel 26 estimates tend to be different than those of the other three panels?

Preliminary analyses undertaken to examine the quality of MEPS FY 2021 data appearing on the Full Year 2021 Consolidated PUF have been focused on the comparison of health insurance status distribution (some private insurance, some public insurance, no health insurance) for the MEPS target population between the panels fielded. These comparisons were undertaken for the full sample and the three age groups of 0-17, 18-64, and 65+.

The analyses undertaken thus far suggest no major differences between the four panels for the distribution of health insurance status. Even though slight differences were observed with Panel 25 (e.g., the distribution associated with the age range 18-64 showed a higher percentage of all public insurance compared to the other three panels while those at least 65 years of age showed a lower percentage of some private insurance compared to the other three panels), no statistically significant differences were detected.

Further analyses of MEPS estimates will be conducted as part of the production of the FY 2021 Consolidated PUF to be released later in 2023.

## 3.2 Sample Weight (PERWT21F)

There is a single full-year person-level weight (PERWT21F) assigned to each record for each key, in-scope person who responded to MEPS for the full period of time that they were in-scope during 2021. A key person was either a member of a responding NHIS household at the time of the 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 they are a member of the civilian noninstitutionalized portion of the U.S. population.

## 3.3 Details on Person Weight Construction

The person-level weight PERWT21F was developed in several stages. Person-level weights for Panel 23, Panel 24, Panel 25, and Panel 26 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 2021 composite weight was then formed by multiplying each weight from Panel 23 by the factor .22, each weight from Panel 24 by the factor .22, each weight from Panel 25 by the factor .25, and each weight from Panel 26 by the factor .31. The choice of factors reflected the relative effective sample sizes of the four panels, helping to limit the variance of estimates obtained from pooling the four samples. The composite weight was raked to the same set of CPS-based control totals.

The standard approach for MEPS weighting is as follows. When the poverty status information derived from income variables becomes available, a final raking is undertaken. The full sample weight appearing on the Population Characteristics PUF for a given year is re-raked, establishing control figures reflecting poverty status rather than educational attainment. Thus, control totals are 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.

### 3.3.1 MEPS Panel 23 Weight Development Process

The person-level weight for MEPS Panel 23 was developed using the 2020 full-year weight for an individual as a "base"weight for 2020 survey participants present in 2021. For key, in-scope members who joined an RU some time in 2021 after being out-of-scope in 2020, the initially assigned person-level weight was the corresponding 2020 family weight. The weighting process included an adjustment for person-level nonresponse over Rounds 8 and 9 as well as raking to population control figures for December 2021 for key, responding persons in-scope on December 31, 2021. These control totals were derived by scaling back the population distribution obtained from the March 2022 CPS to reflect the December 31, 2021 estimated population total (estimated based on Census projections for January 1, 2022). Variables used for person-level raking included: education of the reference person (three categories: no degree; high school/GED only or some college; Bachelor's or higher degree); 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. (It may be noted that for confidentiality reasons, the MSA status variables are no longer released for public use.) The final weight for key, responding persons who were not in-scope on December 31, 2021 but were in-scope earlier in the year was the nonresponse-adjusted person weight without raking.

The 2020 full-year weight used as the base weight for Panel 23 was derived from the 2018 MEPS Round 1 weight and reflected adjustment for nonresponse over the remaining data collection rounds in 2018, 2019, and 2020 as well as raking to the December 2018, December 2019, and December 2020 population control figures.

### 3.3.2 MEPS Panel 24 Weight Development Process

The person-level weight for MEPS Panel 24 was developed using the 2020 full-year weight for an individual as a "base" weight for survey participants present in 2021. For key, in-scope members who joined an RU some time in 2021 after being out-of-scope in 2020, the initially assigned person-level weight was the corresponding 2020 family weight. The weighting process included an adjustment for person-level nonresponse over Rounds 6 and 7 as well as raking to the same population control totals for December 2021 used for the MEPS Panel 23 weights for key, responding persons in-scope on December 31, 2021. The same six variables employed for Panel 23 raking (education level, census region, MSA status, race/ethnicity, sex, and age) were also used for Panel 24 raking. Similar to Panel 23, the Panel 24 final weight for key, responding persons not in-scope on December 31, 2021 but in-scope earlier in the year was the nonresponse-adjusted person weight without raking.

Note that the 2020 full-year weight that was used as the base weight for Panel 24 was derived using the 2019 MEPS Round 1 weight and reflected adjustment for nonresponse over the remaining data collection rounds in 2019 and 2020 as well as raking to the December 2019 and December 2020 population control figures.

### 3.3.3 MEPS Panel 25 Weight Development Process

The person-level weight for MEPS Panel 25 was developed using the 2020 full year weight for an individual as a "base" weight for survey participants present in 2021.

For key, in-scope members who joined an RU sometime in 2021 after being out-of-scope in 2020, the initially assigned person-level weight was the corresponding 2020 family weight. The weighting process also included an adjustment for person-level nonresponse over Rounds 4 and 5 as well as raking to the same population control figures for December 2021 used for the MEPS Panels 23 and 24 weights for key, responding persons in-scope on December 31, 2021. The same six variables employed for Panels 23 and 24 raking (education level, census region, MSA status, race/ethnicity, sex, and age) were also used for Panel 25 raking. Similar to Panels 23 and 24, the Panel 25 final weight for key, responding persons not in-scope on December 31, 2021 but in-scope earlier in the year was the nonresponse-adjusted person weight without raking.

Note that the 2020 full-year weight that was used as the base weight for Panel 25 was derived using the 2020 MEPS Round 1 weight and reflected adjustment for nonresponse over the remaining data collection rounds in 2020 as well as raking to the December 2020 population control figures.

### 3.3.4 MEPS Panel 26 Weight Development Process

The person-level weight for MEPS Panel 26 was developed using the 2021 MEPS Round 1 person-level weight as a "base" weight. The MEPS Round 1 weights incorporated the following components: the original household probability of selection for the NHIS and for the NHIS subsample reserved for MEPS and an adjustment for NHIS nonresponse, the probability of selection for MEPS from NHIS, an adjustment for nonresponse at the dwelling unit level for Round 1, and poststratification to control figures at the person level obtained from the March CPS of the corresponding year. For key, in-scope members who joined an RU after Round 1, the Round 1 DU weight served as a "base" weight.

The weighting process also included an adjustment for nonresponse over the remaining data collection rounds in 2021 as well as raking to the same population control figures for December 2021 used for the MEPS Panel 23, Panel 24, and Panel 25 weights for key, responding persons in-scope on December 31, 2021. The same six variables employed for Panel 23, Panel 24, and Panel 25 raking (education level of the reference person, census region, MSA status, race/ethnicity, sex, and age) were also used for Panel 26 raking. Similar to Panel 23, Panel 24, and Panel 25, the Panel 26 final weight for key, responding persons who were not in-scope on December 31, 2021 but were in-scope earlier in the year was the nonresponse-adjusted person weight without raking.

### 3.3.5 The Final Weight for 2021

The final raking of those in-scope at the end of the year has been described above. In addition, the composite weights of three groups of persons who were out-of-scope on December 31, 2021 were adjusted for expected undercoverage. 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 and still residing in a nursing home at the end of the year were poststratified to an estimate of the number of persons who were residents of Medicare- and Medicaid-certified nursing homes for part of the year (approximately 3-9 months) during 2014. This estimate was developed from data on the Minimum Data Set (MDS) of the Center for Medicare and Medicaid Services (CMS). The weights of persons who died while in-scope were poststratified to corresponding estimates derived using data obtained from the Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Underlying Cause of Death, 2018-2021 on CDC WONDER Online Database, released in 2023, the latest available data at the time. 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, 2021 is 327,209,772 (PERWT21F >0 and INSC1231=1). The sum of person-level weights across all persons assigned a positive person-level weight is 331,249,393.

## 3.4 Coverage

The target population for MEPS in this file is the 2021 U.S. civilian noninstitutionalized population. However, the MEPS sampled households are a subsample of the NHIS households interviewed in 2017 (Panel 23), 2018 (Panel 24), 2019 (Panel 25), and 2020 (Panel 26). New households created after the NHIS interviews for the respective panels and consisting exclusively of persons who entered the target population after 2017 (Panel 23), after 2018 (Panel 24), after 2019 (Panel 25), or after 2020 (Panel 26) 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 a relatively small segment of the MEPS target population. Those not covered represent a small proportion of the MEPS target population.

## 3.5 Using MEPS Data for Trend Analysis

First, of course, we note that there are uncertainties associated with 2020 and 2021 data quality as discussed earlier in the data quality section (Section 3.1). Preliminary evaluations of a set of MEPS estimates of particular importance suggest that they are of reasonable quality. Nevertheless, analysts are advised to exercise caution in interpreting these estimates, particularly in terms of trend analyses since access to health care was substantially affected by the COVID-19 pandemic as were related factors such as health insurance and employment status for many people.

MEPS began in 1996, and the utility of the survey for analyzing health care trends expands with each additional year of data; however, when examining trends over time using MEPS, the length of time being analyzed should 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 focused on field procedure changes such as interviewer training 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 the second half of 2013 and throughout 2014 full year files and have had some impact on analyses involving trends in utilization across years. The changes in the NHIS sample design in 2016 and 2018 could also potentially affect trend analyses. The new NHIS sample design is based on more up-to-date information related to the distribution of housing units across the U.S. As a result, it can be expected to better cover the full U.S. civilian, noninstitutionalized population, the target population for MEPS, as well as many of its subpopulations. Better coverage of the target population helps to reduce the potential for bias in both NHIS and MEPS estimates.

Another change with the potential to affect trend analyses involved major modifications to the MEPS instrument design and data collection process, particularly in the events sections of the instrument. These were introduced in the Spring of 2018 and thus affected data beginning with Round 1 of Panel 23, Round 3 of Panel 22, and Round 5 of Panel 21. Since the Full Year 2017 PUFs were established from data collected in Rounds 1-3 of Panel 22 and Rounds 3-5 of Panel 21, they reflected two different instrument designs. In order to mitigate the effect of such differences within the same full year file, the Panel 22 Round 3 data and the Panel 21 Round 5 data were transformed to make them as consistent as possible with data collected under the previous design. The changes in the instrument were designed to make the data collection effort more efficient and easy to administer. In addition, expectations were that data on some items, such as those related to health care events, would be more complete with the potential of identifying more events. Increases in service use reported since the implementation of these changes are consistent with these expectations. ***Data users should be aware of possible impacts on the data and especially trend analyses for these data years due to the design transition.***

Process changes, such as data editing and imputation, may also affect trend analyses. For example, users should refer to Section 2.5.11 in the 2021 Consolidated file (HC-233) and, for more detail, the documentation for the prescription drug file (HC-229A) when analyzing prescription drug spending over time.

As always, it is recommended that data users review relevant sections of the documentation for descriptions of these types of changes that might affect the interpretation of changes over time before undertaking trend analyses.

Analysts may also wish to consider using statistical techniques to smooth or stabilize analyses of trends using MEPS data such as comparing pooled time periods (e.g. 1996-1997 versus 2011-2012), 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, statistical significance tests should be conducted to assess the likelihood that observed trends are not attributable to sampling variation. In addition, 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

## 4.1 Developing Event-Level Estimates

The data in this file can be used to develop national 2021 event-level estimates for the U.S. civilian noninstitutionalized population on emergency room visits as well as expenditures, and sources of payment for these visits. Estimates of total visits are the sum of the weight variable (PERWT21F) across relevant event records while estimates of other variables must be weighted by PERWT21F to be nationally representative. The tables below contain event-level estimates for selected variables.

### Selected Event-Level Estimates

#### Emergency Room Visits

| Estimate of Interest | Variable Name | Estimate (SE) | Estimate Excluding Zero Payment Events (SE)* |
|---|---|---|---|
| Total number of emergency room visits (in millions) | PERWT21F | 55.7 (2.40) | 51.8 (2.26) |
| Proportion of emergency room visits with expenditures > 0* | ERXP21X | 0.931 (0.0042) | ---------- |

#### Emergency Room Expenditures

| Estimate of Interest | Variable Name | Estimate (SE) | Estimate Excluding Zero Payment Events (SE)* |
|---|---|---|---|
| Mean total payments per visit | ERXP21X | $1,164 ($47.5) | $1,251 (51.0) |
| Mean out-of-pocket payment per visit | ERDSF21X +ERFSF21X | $109 ($7.4) | $117 ($7.9) |
| Mean proportion of total expenditures paid by private insurance per visit | (ERDPV21X +ERFPV21X) /ERXP21X | ---------- | 0.310 (0.0115) |

* Zero payment events can occur in MEPS for the following reasons: (1) the stay was covered under a flat fee arrangement (flat fee payments are included only on the first event covered by the arrangement), (2) there was no charge for a follow-up stay, (3) the provider was never paid by an individual, insurance plan, or other source for services provided, (4) charges were included in the bill for a subsequent hospital admission (emergency room events only), or (5) the event was paid for through government or privately-funded research or clinical trials.

## 4.2 Person-Based Estimates for Emergency Room Visits

To enhance analyses of emergency room visits, analysts may link information about emergency room visits by sample persons in this file to the annual full year consolidated file (which has data for all MEPS sample persons), or conversely, link person-level information from the full year consolidated file to this event-level file (see Section 5 below for more details). Both this file and the full year consolidated file may be used to derive estimates for persons with emergency room care and annual estimates of total expenditures. However, for estimates that pertain to those who did not have emergency room care as well as those who did (for example, the percentage of adults with at least one emergency room event during the past year or the mean number of emergency room events in the past year among those 65 or older), this file cannot be used. Only those persons with at least one emergency room event are represented on this data file. The full year consolidated file must be used for person-level analyses that include both persons with and without emergency room care.

## 4.3 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., sources of payment, flat fee, and zero expenditures) are described in Section 2.5.6.

## 4.4 Variance Estimation (VARPSU, VARSTR)

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. Although this data file does not contain replicate weights, the capability of employing replicate weights constructed using the Balanced Repeated Replication (BRR) methodology is also provided if needed to develop variances for more complex estimators (see Section 4.4.2).

### 4.4.1 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, R, Stata, SAS (version 8.2 and higher), and SPSS (version 12.0 and higher). For complete information on the capabilities of a 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. Beginning with the 2002 Point-in-Time PUF, the approach changed with the intention that variance strata and PSUs would be 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 if data are pooled for several years.

The NHIS sample design was changed again in 2016, effectively changing the MEPS design beginning with calendar year 2017. From Panel 22 of the 2017 files, a new set of variance strata and PSUs were developed. There are 117 variance strata with either two or three variance estimation PSUs per stratum. Therefore, there are a total of 282 (165+117) variance strata in the 2017 Full Year file as it consists of two panels that were selected under two independent NHIS sample designs. 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 were numbered from 2001 to 2117.

However, the NHIS sample design was further modified in 2018. With the modification in the 2018 NHIS sample design, the MEPS variance structure for the 2019 Full Year file was also modified, reducing the number of variance strata to 105. Consistency was maintained with the prior structure in that the 2019 Full Year file variance strata were also numbered within the range of values from 2001-2117, although there are now gaps in the values assigned within this range. Due to the modification, each stratum could contain up to five variance estimation PSUs.

For Panel 26 in the 2021 Full Year file, additional NHIS sample was used for MEPS to account for increasing nonresponse during the pandemic (as discussed in Section 3.1.4). The additional sample was assigned to the existing variance strata, so the 2021 Full Year file continues to have 105 variance strata, numbered 2001-2117, with a few gaps in the values in that range. In many cases, the additional sample was assigned to new variance estimation PSUs, so in the 2021 Full Year file, each stratum could contain up to eight variance estimation PSUs.

Some analysts may be interested in pooling data across multiple years of MEPS data. If pooling across years is to be undertaken, it should be noted that, to obtain appropriate standard errors when doing so, it is necessary to specify a common variance structure. Prior to 2002, each annual MEPS public use file was released with a variance structure unique to the particular MEPS sample in that year. Starting in 2002, the annual MEPS public use files were released with a common variance structure that allowed users to pool data from 2002 through 2018. However, with the need to modify the variance structure beginning with 2019, this can no longer be routinely done.

To ensure that variance strata are identified appropriately for variance estimation purposes when pooling MEPS data across several years, one can proceed as follows

1. When pooling any year between 2002 through 2018 use the variance strata numbering as is.

2. When pooling (a) any year from 1996 to 2001 with any year from 2002 or later, or (b) the year 2019 and beyond with any earlier year, use the pooled linkage public use file HC-036 that contains the proper variance structure. The HC-036 file is updated every year so that appropriate variance structures are available with pooled data. Further details on the HC-036 file can be found in the public use documentation of the HC-036 file.

### 4.4.2 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 that the 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 data set, HC-036BRR, MEPS 1996-2021 Replicates for Variance Estimation File, 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, MEPS 1996-2021 Pooled Linkage Variance Estimation File. For more information about creating BRR replicates, users can refer to the documentation for the HC-036BRR pooled linkage file on the AHRQ website.

## 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. Merging characteristics of interest from other MEPS files expands the scope of potential estimates. For example, the medical event files can be merged with the person-level Full Year Consolidated File to calculate event-level estimates for persons with specific characteristics (e.g., age, race, sex, and education).

Most of the event files can also be linked to the Medical Conditions file by using the condition-event link (CLNK) file. When using the CLNK, data users should keep in mind that (1) conditions are household reported, (2) there may be multiple conditions associated with a medical event, (3) one condition may link to more than one event and (4) not all medical events link to the medical conditions file.

In addition to linking to other MEPS files, each MEPS panel can also be linked back to the previous year's National Health Interview Survey (NHIS) public use data files. This is because the set of households selected for MEPS is a subsample of those participating in the NHIS. For information on obtaining MEPS/NHIS link files please see the MEPS website.

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# D. Variable-Source Crosswalk

## FOR MEPS HC-229E: 2021 EMERGENCY ROOM VISITS

### Survey Administration Variables

| Variable | Description | Source |
|---|---|---|
| DUID | Panel # + encrypted DU identifier | 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 |
| ERHEVIDX | Event ID for corresponding hospital stay | Constructed |
| FFEEIDX | Flat fee ID | CAPI derived |
| PANEL | Panel Number | Constructed |
| MPCDATA | MPC data flag | Constructed |

### Emergency Room Visit Event Variables

| Variable | Description | Source |
|---|---|---|
| ERDATEYR | Event date - year | CAPI derived |
| ERDATEMM | Event date - month | CAPI derived |
| VSTCTGRY | Best category for care p recv on visit dt | ER10 |
| VSTRELCN | This visit related to spec condition | ER20 |
| LABTEST_M18 | This visit did p have lab tests | ER50 |
| SONOGRAM_M18 | This visit did p have sonogram or ultrsd | ER50 |
| XRAYS_M18 | This visit did p have x-rays | ER50 |
| MAMMOG_M18 | This visit did p have a mammogram | ER50 |
| MRI_M18 | This visit did p have an MRI/Catscan | E505 |
| EKG_M18 | This visit did p have an EKG, EEG or ECG | ER50 |
| RCVVAC_M18 | This visit did p receive a vaccination | E505 |
| SURGPROC | Was surg proc performed on p this visit | ER40 |
| MEDPRESC | Any medicine prescribed for p this visit | ER60 |

## Flat Fee Variables

| Variable | Description | Source |
|---|---|---|
| FFERTYPE | Flat fee bundle | Constructed |
| FFBEF21 | Total # of visits in FF before 2021 | FF50 |
| FFTOT22 | Total # of visits in FF after 2021 | FF60 |

## Imputed Total Expenditure Variables

| Variable | Description | Source |
|---|---|---|
| ERXP21X | Total exp for event (ERFXP21X + ERDXP21X) | Constructed |
| ERTC21X | Total chg for event (ERFTC21X + ERDTC21X) | Constructed |

## Imputed Facility Expenditure Variables

| Variable | Description | Source |
|---|---|---|
| ERFSF21X | Facility amount paid, family (Imputed) | CP Section (Edited) |
| ERFMR21X | Facility amount paid, Medicare (Imputed) | CP Section (Edited) |
| ERFMD21X | Facility amount paid, Medicaid (Imputed) | CP Section (Edited) |
| ERFPV21X | Facility amount paid, private insurance (Imputed) | CP Section (Edited) |
| ERFVA21X | Facility amount paid, Veterans/CHAMPVA (Imputed) | CP Section (Edited) |
| ERFTR21X | Facility amount paid, TRICARE (Imputed) | CP Section (Edited) |
| ERFOF21X | Facility amount paid, other federal (Imputed) | CP Section (Edited) |
| ERFSL21X | Facility amount paid, state/local government (Imputed) | CP Section (Edited) |
| ERFWC21X | Facility amount paid, Workers Comp (Imputed) | CP Section (Edited) |
| ERFOT21X | Facility amount paid, other insurance (Imputed) | CP Section (Edited) |
| ERFXP21X | Facility sum payments ERFSF21X - ERFOT21X | Constructed |
| ERFTC21X | Total facility charge (Imputed) | CP Section (Edited) |

## Imputed Physician Expenditure Variables

| Variable | Description | Source |
|---|---|---|
| ERDSF21X | Doctor amount paid, family (Imputed) | Constructed |
| ERDMR21X | Doctor amount paid, Medicare (Imputed) | Constructed |

| Variable | Description | Source |
|---|---|---|
| ERDMD21X | Doctor amount paid, Medicaid (Imputed) | Constructed |
| ERDPV21X | Doctor amount paid, private insurance (Imputed) | Constructed |
| ERDVA21X | Doctor amount paid, Veterans/CHAMPVA (Imputed) | Constructed |
| ERDTR21X | Doctor amount paid, TRICARE (Imputed) | Constructed |
| ERDOF21X | Doctor amount paid, other federal (Imputed) | Constructed |
| ERDSL21X | Doctor amount paid, state/local government (Imputed) | Constructed |
| ERDWC21X | Doctor amount paid, Workers Comp (Imputed) | Constructed |
| ERDOT21X | Doctor amount paid, other insurance (Imputed) | Constructed |
| ERDXP21X | Doctor sum payments ERDSF21X - ERDOT21X | Constructed |
| ERDTC21X | Total doctor charge (Imputed) | Constructed |
| IMPFLAG | Imputation status | Constructed |

## Weights Variables

| Variable | Description | Source |
|---|---|---|
| PERWT21F | Expenditure file person weight, 2021 | Constructed |
| VARSTR | Variance estimation stratum, 2021 | Constructed |
| VARPSU | Variance estimation PSU, 2021 | Constructed |