

**MEPS HC-059E:  
2001 Emergency Room Visits**

**January 2004**

**Agency for Healthcare Research and Quality  
Center for Financing, Access and Cost Trends  
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## **A. Data Use Agreement**

Individual identifiers have been removed from the microdata contained in the files in this release. 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.
- 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.
- 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.

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**

The Medical Expenditure Panel Survey (MEPS) provides nationally representative estimates of health care use, expenditures, sources of payment, and insurance coverage for the U.S. civilian noninstitutionalized population. MEPS is cosponsored by the Agency for Healthcare Research and Quality (AHRQ) and the National Center for Health Statistics (NCHS).

MEPS is a family of three surveys. The Household Component (HC) is the core survey and forms the basis for the Medical Provider Component (MPC) and part of the Insurance Component (IC). Together these surveys yield comprehensive data that provide national estimates of the level and distribution of health care use and expenditures, support health services research, and can be used to assess health care policy implications.

MEPS is the third in a series of national probability surveys conducted by AHRQ on the financing and use of medical care in the United States. The National Medical Care Expenditure Survey (NMCES) was conducted in 1977, and the National Medical Expenditure Survey (NMES) was conducted in 1987. Since 1996, MEPS has continued this series with design enhancements and efficiencies that provide a more current data resource to capture the changing dynamics of the health care delivery and insurance systems.

The design efficiencies incorporated into MEPS are in accordance with the Department of Health and Human Services (DHHS) Survey Integration Plan of June 1995, which focused on consolidating DHHS surveys, achieving cost efficiencies, reducing respondent burden, and enhancing analytical capacities. To advance these goals, MEPS includes linkage with the National Health Interview Survey (NHIS) — a survey conducted by NCHS from which the sample for the MEPS HC is drawn — and enhanced longitudinal data collection for core survey components. The MEPS HC augments NHIS by selecting a sample of NHIS respondents, collecting additional data on their health care expenditures, and linking these data with additional information collected from the respondents' medical providers, employers, and insurance providers.

### **1.0 Household Component**

The MEPS HC, a nationally representative survey of the U.S. civilian noninstitutionalized population, collects medical expenditure data at both the person and household levels. The HC collects detailed data on demographic characteristics, health conditions, health status, use of medical care services, charges and payments, access to care, satisfaction with care, health insurance coverage, income, and employment.

The HC uses an overlapping panel design in which data are collected through a preliminary contact followed by a series of five rounds of interviews over a 2 ½ -year

period. Using computer-assisted personal interviewing (CAPI) technology, data on medical expenditures and use for 2 calendar years are collected from each household. This series of data collection rounds is launched each subsequent year on a new sample of households to provide overlapping panels of survey data and, when combined with other ongoing panels, will provide continuous and current estimates of health care expenditures.

The sampling frame for the MEPS HC is drawn from respondents to NHIS. NHIS provides a nationally representative sample of the U.S. civilian noninstitutionalized population, with oversampling of Hispanics and blacks.

## **2.0 Medical Provider Component**

The MEPS MPC supplements and/or replaces information on medical care events reported in the MEPS HC by contacting medical providers and pharmacies identified by household respondents. The MPC sample includes all home health agencies and pharmacies reported by HC respondents. Office-based physicians, hospitals, and hospital physicians are also included in the MPC but may be subsampled at various rates, depending on burden and resources, in certain years.

Data are collected on medical and financial characteristics of medical and pharmacy events reported by HC respondents. The MPC is conducted through telephone interviews and record abstraction.

## **3.0 Insurance Component**

The MEPS IC collects data on health insurance plans obtained through private and public-sector employers. Data obtained in the IC include the number and types of private insurance plans offered, benefits associated with these plans, premiums, contributions by employers and employees, and employer characteristics.

Establishments participating in the MEPS IC are selected through three sampling frames:

- A list of employers or other insurance providers identified by MEPS HC respondents who report having private health insurance at the Round 1 interview.
- A Bureau of the Census list frame of private-sector business establishments.
- The Census of Governments from the Bureau of the Census.

To provide an integrated picture of health insurance, data collected from the first sampling frame (employers and other insurance providers identified by MEPS HC respondents) are linked back to data provided by those respondents. Data collected from

the two Census Bureau sampling frames are used to produce annual national and State estimates of the supply and cost of private health insurance available to American workers and to evaluate policy issues pertaining to health insurance. National estimates of employer contributions to group health insurance from the MEPS IC are used in the computation of Gross Domestic Product (GDP) by the Bureau of Economic Analysis.

The MEPS IC is an annual survey. Data are collected from the selected organizations through a prescreening telephone interview, a mailed questionnaire, and a telephone follow-up for nonrespondents.

#### **4.0 Survey Management**

MEPS data are collected under the authority of the Public Health Service Act. They are edited and published in accordance with the confidentiality provisions of this act and the Privacy Act. NCHS provides consultation and technical assistance.

As soon as data collection and editing are completed, the MEPS survey data are released to the public in staged releases of summary reports, microdata files, and compendiums of tables. Data are also released through MEPSnet, an online interactive tool developed to give users the ability to statistically analyze MEPS data in real time. Summary reports and compendiums of tables are released as printed documents and electronic files. Microdata files are released on CD-ROM and/or as electronic files.

Selected printed documents are available through the AHRQ Publications Clearinghouse. Write or call:

AHRQ Publications Clearinghouse  
Attn: (publication number)  
P.O. Box 8547  
Silver Spring, MD 20907  
800-358-9295  
410-381-3150 (callers outside the United States only)  
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Be sure to specify the AHRQ number of the document you are requesting.

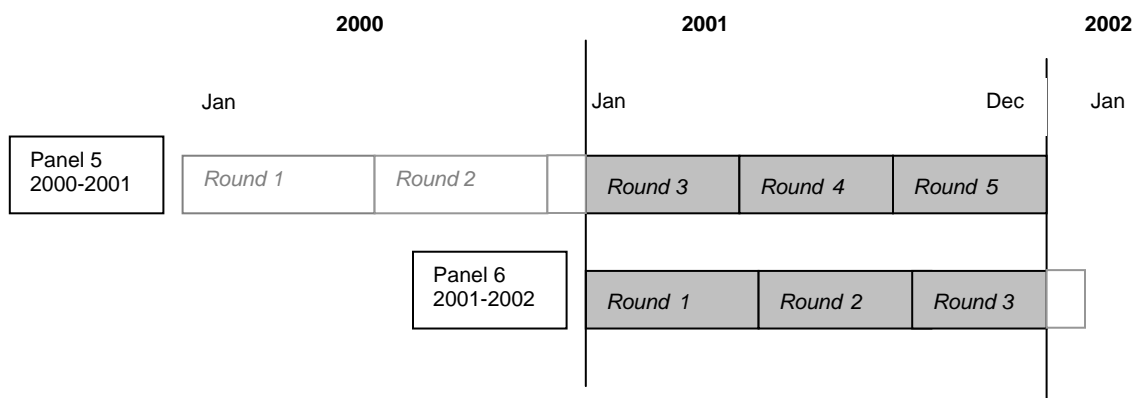
Additional information on MEPS is available from the MEPS project manager or the MEPS public use data manager at the Center for Financing, Access and Cost Trends, Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, Md 20850 (301-427-1406).



## C. Technical And Programming Information

### 1.0 General Information

This documentation describes one in a series of public use event files from the 2001 Medical Expenditure Panel Survey (MEPS) Household Component (HC) and Medical Provider Component (MPC). Released as an ASCII data file and a SAS transport file, the 2001 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 2001. As illustrated below, this file consists of MEPS survey data from the 2001 portion of Round 3, and Rounds 4 and 5 for Panel 5, as well as Rounds 1, 2, and the 2001 portion of Round 3 for Panel 6 (i.e., the rounds for the MEPS panels covering calendar year 2001).



Emergency room events reported in Panel 6 Round 3 and known to have occurred after December 31, 2001 are not included on this file. In addition to expenditures, each record contains household reported medical conditions and procedures associated with the emergency room visit.

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 2001 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 use is provided on

the MEPS 2001 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
- Sample Weights
- 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 were excluded because they contained only missing data.

For more information on MEPS HC survey design see S. Cohen, 1997; J. Cohen, 1997; and S. Cohen, 1996. For information on the MEPS MPC design, see S. Cohen, 1998. Copies of the HC and the MPC survey instruments used to collect the information on the EROM file are available in the *Survey Instrument* section of the MEPS web site at the following address: <<http://www.meps.ahrq.gov>>.

## **2.0 Data File Information**

The 2001 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. For users wanting to impute expenditures, pre-imputed data are available through the Center for Financing, Access and Cost Trends (CFACT) data center. Please visit the CFACT data center web site for details: <<http://www.meps.ahrq.gov>>. The data user/analyst is forewarned that the imputation of expenditures will necessitate a sizable commitment of resources: financial, staff, and time.

The 2001 EROM public use data set contains variables and frequency distributions for 6,444 emergency room visits reported during the 2001 portion of Round 3 and Rounds 4 and 5 for Panel 5, as well as Rounds 1, 2, and the 2001 portion of Round 3 for Panel 6 of the MEPS Household Component. The file includes emergency room visit records for all household survey respondents 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, 2001 are not included on this file. Of these

6,444 records, 6,237 were associated with persons having positive person-level weights (PERWT01F). 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 2001 eligibility (i.e., persons with a positive 2001 full-year person-level weight (PERWT01F > 0)), or
- b) Be an eligible member of a family all of whose key in-scope members have a positive person-level weight (PERWT01F > 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 (FAMWT01F > 0). Note that FAMIDYR and FAMWT01F are variables on the 2001 Population Characteristics file.

Persons with no emergency room visits for 2001 are not included on this file but are represented on the 2001 MEPS person-level file. A codebook for the data file is provided in files H55CB.PDF and H55CB.ASP.

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; and a full-year person-level weight.

Data from this file can be merged with the MEPS 2001 Full Year Population Characteristics File using the unique person identifier, DUPERSID, to append person-level information, such as demographic or health insurance characteristics, to each record. Emergency room visit events can also be linked to the MEPS 2001 Medical Conditions File and the MEPS 2001 Prescribed Medicines File. Please see Section 5.2 and the 2001 Appendix File, HC-059I for details on how to merge MEPS data files.

## **2.1 Using MEPS Data for Trend and Longitudinal Analysis**

MEPS began in 1996 and several annual data files have been released. As more years of data are produced, MEPS will become increasingly valuable for examining health care trends. However, it is important to consider a variety of factors when examining trends over time using MEPS. Statistical significance tests should be conducted to assess the likelihood that observed trends are attributable to sampling variation. MEPS expenditures estimates are especially sensitive to sampling variation due to the underlying skewed distribution of expenditures. For example, 1 percent of the population accounts for about one-quarter of all expenditures. The extent to which observations with extremely high expenditures are captured in the MEPS sample varies from year to year (especially for smaller population subgroups), which can produce substantial shifts in estimates of means or totals that are simply an artifact of the sample(s). The length of time being

analyzed should also be considered. In particular, large shifts in survey estimates over short periods of time (e.g. from one year to the next) that are statistically significant should be interpreted with caution, unless they are attributable to known factors such as changes in public policy or MEPS survey methodology. Looking at changes over longer periods of time can provide a more complete picture of underlying trends. Analysts may wish to consider using techniques to smooth or stabilize trends analyses of MEPS data such as pooling time periods for comparison (e.g. 1996-97 versus 1998-99), working with moving averages, or using modeling techniques with several consecutive years of MEPS data to test the fit of specified patterns over time. Finally, researchers should be aware of the impact of multiple comparisons on Type I error because performing numerous statistical significance tests of trends increases the likelihood of inappropriately concluding a change is statistically significant.

## 2.2 Codebook Structure

For each variable on the Emergency Room Events event file, both weighted and unweighted frequencies are provided in the codebook (H59ECB.PDF and H59ECB.ASP). The codebook and data file sequence list variables in the following order:

- Unique person identifiers
- Unique emergency room event identifiers
- Emergency room characteristic variables
- ICD-9-CM condition and procedure codes
- Clinical Classification Software (CCS) codes
- Imputed expenditure variables
- Weight and variance estimation variables

## 2.3 Reserved Codes

The following reserved code values are used:

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

Generally, values of -1, -7, -8, and -9 for non-expenditure variables have not been edited on this file. The values of -1 and -9 can be edited by the data users/analysts by following the skip patterns in the HC survey questionnaire (located on the MEPS web site: <<http://www.meps.ahrq.gov/>>).

## 2.4 Codebook Format

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

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

## 2.5 Variable Source and Naming Conventions

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

### 2.5.1 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.

### **2.5.2 Expenditure and Source of Payment Variables**

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

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

The first two characters indicate the type of event:

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

For expenditure variables on these files, 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	OF - other Federal Government
MR - Medicare	SL - State/local government
MD - Medicaid	WC - Workers’ Compensation
PV - private insurance	OT - other insurance
VA - Veterans	OR - other private
TR - TRICARE	OU - other public
	XP - sum of payments

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

The sixth and seventh characters indicate the year (01). The eighth character, “X”, indicates whether the variable is edited/imputed.

For example, ERFSS01X is the edited/imputed amount paid by self or family for the facility portion of the expenditure associated with an emergency room visit.

## **2.6 File Contents**

### **2.6.1 Survey Administration Variables**

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

The dwelling unit ID (DUID) is a five-digit random number assigned after the case was sampled for MEPS. The three-digit person number (PID) uniquely identifies each person within the dwelling unit. The eight-character variable DUPERSID uniquely identifies each person represented on the file and is the combination of the variables DUID and PID. For detailed information on dwelling units and families, please refer to the documentation for the 2001 Full Year Population Characteristics File.

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

EVNTIDX uniquely identifies each emergency room visit/event (i.e., each record on the Emergency Room visit file) and is the variable required to link emergency room events to data files containing details on conditions and/or prescribed medicines (MEPS 2001 Medical Conditions File and the MEPS 2001 Prescribed Medicines File, respectively). For details on linking, see Section 5.2 or the MEPS 2001 Appendix File, HC-059I.

ERHEVIDX is a constructed variable identifying an EROM record that has its facility expenditures represented on an associated hospital inpatient stay record. This variable was constructed by comparing date information for the reported hospital stay and all emergency room visits for the same person. On the 2001 EROM file, there are 522 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 file.

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

#### **2.6.1.3 Round Indicator (EVENTRN)**

EVENTRN indicates the round in which the emergency room visit was reported. Please note: Rounds 3, 4, and 5 are associated with MEPS survey data collected from Panel 5. Likewise, Round 1, 2, and 3 are associated with data collected from Panel 6.

### **2.6.2 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.

### **2.6.3 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.

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

When a person reported having had a visit to the emergency room, the date of the emergency room visit was recorded (ERDATEYR, ERDATEMM, ERDATEDD). Also reported is whether or not the person saw a medical doctor (SEEDOC). The type of care the person received (VSTCTGRY) and whether or not the visit was related to a specific condition (VSTRELCN) were also determined.

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

Services received during the visit included whether or not the person received lab tests (LABTEST), a sonogram or ultrasound (SONOGRAM), x-rays (XRAYS), a mammogram (MAMMOG), an MRI or CAT scan (MRI), an electrocardiogram (EKG), an electroencephalogram (EEG), a vaccination (RCVVAC), anesthesia (ANESTH), or other diagnostic tests or exams (OTHSVCE). 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). See Section 5.2 for information on linking to the prescription medicine events file.

#### **2.6.4 VA Facility (VAPLACE)**

VAPLACE is a constructed variable that indicates whether the service was provided at a VA facility. This variable only has valid data for providers that were sampled into the Medical Provider Component. All other providers are classified as “No”.

#### **2.6.5 Condition and Procedure Codes (ERICD1X-ERICD3X, ERPRO1X), and Clinical Classification Codes (ERCCC1X-ERCCC3X)**

Information on household reported medical conditions and procedures associated with each emergency room visit are provided on this file. There are up to three condition and CCS codes (ERICD1X-ERICD3X, ERCCC1X-ERCCC3X) and one procedure code (ERPRO1X) listed for each emergency room visit. In order to obtain complete condition



information associated with an event, the data user/analyst must link to the MEPS 2001 Medical Conditions File. Details on how to link the 2001 EROM event file to the MEPS 2001 Medical Conditions File are provided in Section 5.2. and the MEPS 2001 Appendix File, HC-059I. The data user/analyst should note that because of confidentiality restrictions, provider-reported condition information is not publicly available.

The medical conditions and procedures reported by the Household Component respondent were recorded by the interviewer as verbatim text, which were then coded to fully-specified 2001 ICD-9-CM codes, including medical conditions and V codes (Health Care Financing Administration, 1980) by professional coders. Although codes were verified and error rates did not exceed 2.5 percent for any coder, data users/analysts should not presume this level of precision in the data; the ability of household respondents to report condition data that can be coded accurately should not be assumed (Cox and Cohen, 1985; Cox and Iachan, 1987; Edwards, et al, 1994; and Johnson and Sanchez, 1993). For detailed information on how conditions and procedures were coded, please refer to the documentation on the MEPS 2001 Medical Conditions File. For frequencies of conditions by event type, please see the MEPS 2001 Appendix File, HC-059I.

The ICD-9-CM condition codes were aggregated into clinically meaningful categories. These categories, included on the file as ERCCC1X-ERCCC3X, were generated using Clinical Classification Software [formerly known as Clinical Classifications for Health Care Policy Research (CCHPR)], (Elixhauser, et al., 1998), which aggregates conditions and V-codes into 260 mutually exclusive categories, most of which are clinically homogeneous.

In order to preserve respondent confidentiality, nearly all of the condition codes provided on this file have been collapsed from fully-specified codes to three-digit code categories. The reported ICD-9-CM code values were mapped to the appropriate clinical classification category prior to being collapsed to the three-digit categories. Details on this procedure are outlined in the 2001 Medical Conditions File.

The condition codes (and clinical classification codes) and procedure codes linked to each emergency room visit are sequenced in the order in which the conditions were reported by the household respondent, which was in order of input into the database and not in order of importance or severity. Data users/analysts who use the MEPS 2001 Medical Conditions File in conjunction with this emergency room visits file should note that the order of conditions on this file is not identical to that on the Medical Conditions file.

## **2.6.6 Flat Fee Variables (FFEEIDX, FFERTYPE, FFBEF01, FFTOT02)**

### **2.6.6.1 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 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 2001. By definition, a flat fee group can span multiple years. Furthermore, a single person can have multiple flat fee groups.

### **2.6.6.2 Flat Fee Variable Descriptions**

#### **2.6.6.2.1 Flat Fee ID (FFEEIDX)**

As noted earlier in Section 2.5.1.2 "Record Identifiers," the variable FFEEIDX uniquely identifies all events that are part of the same flat fee group for a person. On any 2001 MEPS event file, every event that is part of a specific flat fee group will have the same value for FFEEIDX. Note that prescribed medicine and home health events are never included in a flat fee group and FFEEIDX is not a variable on those event files.

#### **2.6.6.2.2 Flat Fee Type (FFERTYPE)**

FFERTYPE indicates whether the 2001 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."

#### **2.6.6.2.3 Counts of Flat Fee Events that Cross Years (FFBEF01, FFTOT02)**

As described in Section 2.6.6.1, 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 2001 as part of a group of events, and some event occurred before or

after 2001, counts of the known events are provided on the emergency room record. Variables indicating events that occurred before or after 2001 are as follows:

FFBEF01 – total number of pre-2001 events in the same flat fee group as the 2001 emergency room visit(s). This count would not include the 2001 emergency room visit(s). Because there were no 2000 events expected for any flat fee group, this variable was omitted from the 2001 ER file.

FFTOT02 – indicates the number of 2002 emergency room visits, expected to be in the same flat fee group as the emergency room event that occurred in 2001. Because there were no 2002 events expected for any flat fee group, this variable was omitted from the 2001 ER file.

### **2.6.6.3 Caveats of Flat Fee Groups**

There are 61 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 2001, but the remaining visits that were part of this flat fee group occurred in 2002. In this case, the 2001 flat fee group represented on this file would consist of one event, the stem. The 2002 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 2000 but subsequent visits occurred during 2001. In this case, the initial visit would not be represented on the file. This 2001 flat fee group would then only consist of one or more leaf records and no stem.

## **2.6.7 Expenditure Data**

### **2.6.7.1 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 1990's 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. Another general change from the two prior surveys is that charges associated with uncollected liability, bad debt, and charitable care (unless provided by a public clinic or hospital) are not counted as expenditures because there are no payments

associated with those classifications. While charge data are provided on this file, data users/analysts should use caution when working with this 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 assessed via the CFACT data center. For more information, see the data center section of the MEPS web site <<http://www.meps.ahrq.gov>>.

Expenditure data related to emergency room visits are broken out by facility and separately billing doctor expenditures. 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, total charges, which is the sum of the facility and physician charges. If examining trends in MEPS expenditures or performing longitudinal analysis on MEPS expenditures, please refer to section C, sub-section 2.1 for more information.

#### **2.6.7.2 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 Component (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 complete; otherwise, HC data were used if complete. Missing data for emergency room visits, where HC data were not complete and MPC data were not collected or complete, were imputed through the imputation process.

##### **2.6.7.2.1 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 mis-classifications between Medicare and Medicaid and between Medicare HMOs and private HMOs as payment sources. These edits produced a complete vector of expenditures for some events, and provided the starting point for imputing missing expenditures in the remaining events.

### **2.6.7.2.2 General Hot-Deck Imputation**

A weighted sequential hot-deck procedure was used to impute missing expenditures as well as total charge. This procedure uses survey data from respondents to replace missing data while taking into account the respondents' weighted distribution in the imputation process. Classification variables vary by event type in the hot-deck imputations, but total charge and insurance coverage are key variables in all of the imputations. Separate imputations were performed for nine categories of medical provider care: inpatient hospital stays, outpatient hospital department visits, emergency room visits, visits to physicians, visits to non-physician providers, dental services, home health care by certified providers, home health care by paid independents, and other medical expenses. Within each event type file, separate imputations were performed for flat fee and simple events. After the imputations were finished, visits to physician and non-physician providers were combined into a single medical provider file. The two categories of home care also were combined into a single home health file.

### **2.6.7.2.3 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 hot-deck 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 2.6.6 for more details on flat fee groups). However, some emergency room visits were treated as free events because the respondent 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 hot-deck 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. Separate hot-deck imputations were performed on events in each recipient category, and the donor pool was restricted to events with complete expenditures from the MPC. The donor pool restriction was used even though some unmatched events had complete household-reported expenditures. These events were not allowed to donate information to other events because the MPC data were considered to be more reliable.

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 event among complete events (donors) is not 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.

### **2.6.7.3 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 MV events only). The following list identifies how the imputation flag is coded; the categories are mutually exclusive.

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

IMPFLAG=1 complete HC data

IMPFLAG=2 complete MPC data

IMPFLAG=3 fully imputed

IMPFLAG=4 partially imputed

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

#### **2.6.7.4 Flat Fee Expenditures**

The approach used to count expenditures for flat fees was to place the expenditure on the first visit of the flat fee group. The remaining visits have zero facility payments, while physician's expenditures may be still present. Thus, if the first visit in the flat fee group occurred prior to 2001, all of the events that occurred in 2001 will have zero payments. Conversely, if the first event in the flat fee group occurred at the end of 2001, the total expenditure for the entire flat fee group will be on that event, regardless of the number of events it covered after 2001. See Section 2.5.3 for details on the flat fee variables.

#### **2.6.7.5 Zero Expenditures**

There are some medical events reported by respondents where the payments were zero. This could occur for several reasons including (1) free care was provided, (2) bad debt was incurred, (3) care was covered under a flat fee arrangement beginning in an earlier year, (4) follow-up visits were provided without a separate charge (e.g., after a surgical procedure), or (5) emergency room visit expenditures were included on the linked hospital record. If all of the medical events for a person fell into one of these categories, then the total annual expenditures for that person would be zero.

#### **2.6.7.6 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.

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

It is common for an emergency room visit to result in a hospital stay. However, while it is true that all of the event files can be linked by DUPERSID, there is no unique record link between hospital inpatient stays and emergency room visits. However, wherever this relationship could be identified (using MPC start and end dates of the events as well as other information from the provider), the facility expenditure associated with the emergency room visit is included in the hospital facility expenditure. Hence, the expenditures (and charges) for some emergency room visits are included in the resulting hospitalization. In these situations, the emergency room record on this file will have its expenditure (and charge) information zeroed out to avoid double-counting while its corresponding hospital inpatient stay record on the MEPS 2001 Hospital Inpatient Stays File will have the combined expenditures. Please note that any physician expenditures associated with emergency room events remain on the Emergency Room event file. The variable ERHEVIDX identifies the emergency room visits whose expenditures are included in the expenditures for the following hospital inpatient stay. It should also be noted that for these cases there is only one emergency room stay associated with the hospital room stay.

### **2.6.7.8 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 or family,
2. Medicare,
3. Medicaid,
4. Private Insurance,
5. Veterans Administration, 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.



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

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

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

#### **2.6.7.9 Imputed Emergency Room Expenditure Variables**

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

##### **2.6.7.9.1 Emergency Room Facility Expenditures (ERFSF01X-ERFOT01X, ERFXP01X, ERFTC01X)**

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.

ERFSF01X - ERFOT01X are the 12 sources of payment. ERFTC01X is the total charge, and ERFXP01X is the sum of the 12 sources of payment for the Emergency Room expenditures. The 12 sources of payment are: self/family (ERFSF01X), Medicare (ERFMR01X), Medicaid (ERFMD01X), private insurance (ERFPV01X), Veterans Administration (ERFVA01X), TRICARE (ERFTR01X), other Federal sources (ERFOF01X), State and Local (non-federal) government sources (ERFSL01X), Worker’s Compensation (ERFWC01X), other private insurance (ERFOR01X), other public insurance (ERFOU01X), and other insurance (ERFOT01X). Please note that where an

emergency room visit record is linked to a hospital inpatient stay record, ERFTC01X has been zeroed out.

#### **2.6.7.9.2 Emergency Room Physician Expenditures (ERDSF01X - ERDOT01X, ERDXP01X, ERDTC01X)**

Separately billing doctor (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 2 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. ERDSF01X - ERDOT01X are the 12 sources of payment, ERDXP01X is the sum of the 12 sources of payments, and ERDTC01X is the 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).

#### **2.6.7.9.3 Total Expenditures and Charges for Emergency Room Visits (ERXP01X, ERTC01X)**

Data users/analysts interested in total expenditure should use the variable ERXP01X, which includes both the facility and physician amounts. Those interested in total charges should use the variable ERTC01X (see section 2.5.7.1 for an explanation of the “charge” concept). However, please note that where the emergency room visit is linked to a hospital inpatient stay record, ERFTC01X has been zeroed out. Thus, ERTC01X may be equal to “0” or the doctor total charge (ERDTC01X).

### **2.6.8 Rounding**

The expenditure variables have been rounded to the nearest penny. Person-level expenditure information released on the MEPS 2001 Person Level Use and Expenditure File were rounded to the nearest dollar. It should be noted that using the MEPS 2001 event files to create person-level totals will yield slightly different totals than those found on the person-level expenditure 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. Please see the MEPS 2001 Appendix File, HC-059I, for details on such rounding differences.

### **3.0 Sample Weight (PERWT01F)**

#### **3.1 Overview**

There is a single full year person-level weight (PERWT01F) assigned to each record for each key, in-scope person who responded to MEPS for the full period of time that he or she was in-scope during 2001. A key person either was a member of an NHIS household at the time of the NHIS interview, or became a member of a family associated with such a household after being out-of-scope at the time of the NHIS (examples of the latter situation include newborns and persons returning from military service, an institution, or living outside the United States). A person is in-scope whenever he or she is a member of the civilian noninstitutionalized portion of the U.S. population.

#### **3.2 Details on Person Weight Construction**

The person-level weight PERWT01F was developed in several stages. Person-level weights for Panels 5 and 6 were created separately. The weighting process for each panel included an adjustment for nonresponse over time and poststratification. Poststratification was achieved initially by controlling to Current Population Survey (CPS) population estimates based on five variables. The five variables used in the establishment of the initial person-level poststratification control figures were: census region (Northeast, Midwest, South, West); MSA status (MSA, non-MSA); race/ethnicity (Hispanic, black but non-Hispanic, and other); sex; and age. A 2001 composite weight was then formed by multiplying each weight from Panel 5 by the factor (1/3) and each weight from Panel 6 by the factor (2/3). The choice of factors reflected the relative sample sizes of the two panels, helping to limit the variance of estimates obtained from pooling the two samples. The composite weight was then poststratified to the same set of CPS-based control totals. When poverty status information derived from income variables became available, a final poststratification was done on the previously established weight variable. Control totals were established based on poverty status (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 original five poststratification variables.

### **3.2.1 MEPS Panel 5 Weight**

The person-level weight for MEPS Panel 5 was developed using the 2000 full year weight for an individual as a “base” weight for survey participants present in 2000. For key, in-scope respondents who joined an RU some time in 2001 after being out-of-scope in 2000, the 2000 family weight associated with the family the person joined served as a “base” weight. The weighting process included an adjustment for nonresponse over Rounds 4 and 5 as well as poststratification to population control figures for December 2001. These control figures were derived by scaling back the population totals obtained from the March 2001 CPS to reflect the December 2001 CPS estimated population distribution across age and sex categories as of December 2001. Variables used in the establishment of person-level poststratification control figures included: census region (Northeast, Midwest, South, West); MSA status (MSA, non-MSA); race/ethnicity (Hispanic, black but non-Hispanic, and other); sex; and age. Overall, the weighted population estimate for the civilian noninstitutionalized population on December 31, 2001 is 280,791,812. Key, responding persons not in-scope on December 31, 2001 but in-scope earlier in the year retained, as their final Panel 5 weight, the weight after the nonresponse adjustment.

### **3.2.2 MEPS Panel 6 Weight**

The person-level weight for MEPS Panel 6 was developed using the MEPS Round 1 person-level weight as a “base” weight. For key, in-scope respondents who joined an RU after Round 1, the Round 1 family weight served as a “base” weight. The weighting process included an adjustment for nonresponse over Round 2 and the 2001 portion of Round 3 as well as poststratification to the same population control figures for December 2001 used for the MEPS Panel 5 weights. The same five variables employed for Panel 5 poststratification (census region, MSA status, race/ethnicity, sex, and age) were used for Panel 6 poststratification. Similarly, for Panel 6, key, responding persons not in-scope on December 31, 2001 but in-scope earlier in the year retained, as their final Panel 6 weight, the weight after the nonresponse adjustment.

Note that the MEPS Round 1 weights (for both panels with one exception as noted below) incorporated the following components: the original household probability of selection for the NHIS; ratio-adjustment to NHIS-based national population estimates at the household (occupied dwelling unit) level; adjustment for nonresponse at the dwelling unit level for Round 1; and poststratification to figures at the family and person level obtained from the March 2001 CPS data base.

### **3.2.3 The Final Weight for 2001**

Variables used in the establishment of person-level poststratification control figures included: poverty status (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); census region (Northeast, Midwest, South, West); MSA status (MSA, non-MSA); race/ethnicity (Hispanic, black but non-Hispanic, and other); sex; and age. Overall, the weighted population estimate for the civilian noninstitutionalized population for December 31, 2001 is 280,791,812 (PERWT01F>0 and INSC1231=1). The weights of some persons out-of-scope on December 31, 2001 were also poststratified. Specifically, the weights of persons out-of-scope on December 31, 2001 who were in-scope some time during the year and also entered a nursing home during the year were poststratified to a corresponding control total obtained from the 1996 MEPS Nursing Home Component. The weights of persons who died while in-scope during 2001 were poststratified to corresponding estimates derived using data obtained from the Medicare Current Beneficiary Survey (MCBS) and Vital Statistics information provided by the National Center for Health Statistics (NCHS). Separate control totals were developed for the “65 and older” and “under 65” civilian noninstitutionalized populations. The sum of the person-level weights across all persons assigned a positive person level weight is 284,247,327.

### **3.2.4 Coverage**

The target population for MEPS in this file is the 2001 U.S. civilian noninstitutionalized population. However, the MEPS sampled households are a subsample of the NHIS households interviewed in 1999 (Panel 5) and 2000 (Panel 6). New households created after the NHIS interviews for the respective Panels and consisting exclusively of persons who entered the target population after 1999 (Panel 5) or after 2000 (Panel 6) are not covered by MEPS. Neither are previously out-of-scope persons who join an existing household but are unrelated to the current household residents. Persons not covered by a given MEPS panel thus include some members of the following groups: immigrants; persons leaving the military; U.S. citizens returning from residence in another country; and persons leaving institutions. The set of uncovered persons constitutes only a small segment of the MEPS target population.

## **4.0 Strategies for Estimation**

This file is constructed for efficient estimation of utilization, expenditures, and sources of payment for hospital emergency room visits and to allow for estimates of the number of persons with emergency room visits for 2001.

### **4.1 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 minus 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 computing language 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, hospital/ER, and zero expenditures) are described in Section 2.6.6.2.

## 4.2 Basic Estimates of Utilization, Expenditures and Sources of Payment

While the examples described below illustrate the use of event-level data in constructing person-level total expenditures, these estimates can also be derived from the person-level expenditure file unless the characteristic of interest is event specific.

In order to produce national estimates related to emergency room visits, expenditures, and sources of payment, the value in each record contributing to the estimates must be multiplied by the weight (PERWT01F) contained on that record.

### Example 1

For example, the total number of emergency room visits for the civilian noninstitutionalized population of the U.S. in 2001 is estimated as the sum of the weight (PERWT01F) across all emergency room visit records. That is,

$$\sum W_j = 55,005,259 \quad (1)$$

### Example 2

Subsetting to records based on characteristics of interest expands the scope of potential estimates. For example, the estimate for the mean out-of-pocket payment for emergency room visits (where the visit has a total expense greater than 0) should be calculated as the weighted mean of the facility bill and doctor's bill paid by self/family. That is,

$$(\sum W_j X_j) / (\sum W_j) = \$61.64 \quad (2)$$

where  $X_j = \text{ERFSF01}X_j + \text{ERDSF01}X_j$  and  $\sum W_j = 49,941,321$

for all records with  $\text{ERXP01}X_j > 0$ .

This gives \$61.64 as the estimated mean amount of out-of-pocket payment of expenditures associated with emergency room visits and 49,941,321 as an estimate of the total number of such emergency room visits with expenditures. Both of these estimates are for the civilian noninstitutionalized population of the U.S. in 2001.

### Example 3

Another example would be to estimate the mean proportion of total expenditures paid by private insurance for emergency room visits with expenditure. This should be calculated as the weighted mean of the proportion of total expenditures paid by private insurance at the event level. That is,

$$(\sum W_j Y_j)/(\sum W_j) = 0.4430 \quad (3)$$

where  $Y_j = (ERFPV01X_j + ERDPV01X_j)/ERXP01X_j$  and  $\sum W_j = 49,941,321$

for all emergency room visit records with  $ERXP01X_j > 0$ .

This gives 0.4430 as the estimated mean proportion of total expenditures paid by private insurance for emergency room visits with expenditure for the civilian noninstitutionalized population of the U.S. in 2001.

### 4.3 Estimates of the Number of Persons with Emergency Room Visit Events

When calculating an estimate of the total number of persons with emergency room visits, users can use a person-level file or this event file. However, this event file must be used when the measure of interest is defined at the event level. For example, to estimate the number of persons in the civilian noninstitutionalized population of the U.S. with emergency room visits where the patient sees a doctor, this event file must be used. This would be estimated as

$$\sum W_i X_i \quad \text{across all unique persons } i \text{ on this file} \quad (4)$$

where

$W_i$  is the sampling weight (PERWT01F) for person  $i$

and

$$X_i = \begin{cases} 1 & \text{if SEEDOC}_i = 1 \text{ for any emergency room visit record of person } i \\ 0 & \text{otherwise.} \end{cases}$$

### 4.4 Person-Based Ratio Estimates

#### 4.4.1 Person-Based Ratio Estimates Relative to Persons with Emergency Room Use

This file may be used to derive person-based ratio estimates. However, when calculating ratio estimates where the denominator is at the person level, care should be taken to

properly define and estimate the unit of analysis as person-level. For example, the mean expense for persons with emergency room visits is estimated as

$$(\sum W_i Z_i)/(\sum W_i) \quad \text{across all unique persons } i \text{ on this file} \quad (5)$$

where

$W_i$  is the sampling weight (PERWT01F) for person  $i$

and

$Z_i = \sum ERXP01X_i$  across all emergency room visits for person  $i$ .

#### 4.4.2 Person-Based Ratio Estimates Relative to the Entire Population

If the ratio relates to the entire population, this file cannot be used to calculate the denominator, as only those persons with at least one emergency room visit are represented on this data file. In this case, the Full Year Consolidated File, which has data for all sampled persons, must be used to estimate the total number of persons (i.e., those with use and those without use). For example, to estimate the proportion of the civilian noninstitutionalized population of the U.S. with at least one emergency room visit where the person saw a doctor, the numerator would be derived from data on this event file, and the denominator would be derived from data on the person-level file. That is,

$$(\sum W_i Z_i)/(\sum W_i) \quad \text{across all unique persons } i \text{ on the person-level file} \quad (6)$$

where

$W_i$  is the sampling weight (PERWT01F) for person  $i$

and

$Z_i = 1$  if SEEDOC<sub>j</sub> = 1 for any emergency room visit of person  $i$   
 $= 0$  otherwise.

#### 4.5 Sampling Weights for Merging Previous Releases of MEPS Household Data with this Event File

There have been several previous releases of MEPS Household Survey public use data. Unless a variable name common to several files is provided, the sampling weights contained on these data files are file-specific. The file-specific weights reflect minor adjustments to eligibility and response indicators due to birth, death, or institutionalization among respondents.

For estimates from a MEPS data file that do not require merging with variables from other MEPS data files, the sampling weight(s) provided on that data file are the appropriate weight(s). When merging a MEPS Household data file to another, the major analytical variable (i.e., the dependent variable) determines the correct sampling weight to use.



## **4.6 Variance Estimation (VARSTR01, VARPSU01)**

To obtain estimates of variability (such as the standard error of sample estimates or corresponding confidence intervals) for estimates based on MEPS survey data, one needs to take into account the complex sample design of MEPS. Various approaches can be used to develop such estimates of variance including use of the Taylor Series or various replication methodologies. Replicate weights have not been developed for the MEPS 2001 data. Variables needed to implement a Taylor Series estimation approach are provided in the file and are described in the paragraph below. Using a Taylor Series approach, variance estimation strata and the variance estimation PSUs within these strata must be specified. The corresponding variables on the MEPS full year utilization database are VARSTR01 and VARPSU01, respectively. Specifying a “with replacement” design in a computer software package such as SUDAAN (Shah, 1996) should provide 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 actual number available. For MEPS sample estimates for characteristics generally distributed throughout the country (and thus the sample PSUs), there are over 100 degrees of freedom associated with the corresponding estimates of variance. The following illustrates these concepts using two examples from Section 4.2.

### **Examples 2 and 3 from Section 4.2**

Using a Taylor Series approach, specifying VARSTR01 and VARPSU01 as the variance estimation strata and PSUs (within these strata) respectively and specifying a “with replacement” design in a computer software package (i.e., SUDAAN) will yield standard error estimates of \$3.22 and 0.0108 for the estimated mean of out-of-pocket payment and the estimated mean proportion of total expenditures paid by private insurance respectively.

## **5.0 Merging/Linking MEPS Data Files**

Data from the 2011 Emergency Room Visits File can be used alone or in conjunction with other files. This section provides instructions for linking the emergency room visits file with other MEPS public use files, namely, the person-level file, the prescribed medicines file, and the conditions file.

### **5.1 Merging a 2001 Person-Level File to the 2001 Emergency Room Visit File**

Merging characteristics of interest from person-level file (e.g., MEPS 2001 Full Year Population Characteristics File, or MEPS 2001 Person Level Use and Expenditure File) expands the scope of potential estimates. To estimate the total number of emergency room visits for persons with specific demographic characteristics (e.g., age, race, and

sex), population characteristics from a person-level file need to be merged onto the emergency room visit file. This procedure is illustrated below. The MEPS 2001 Appendix File, HC-059I, provides additional detail on how to merge MEPS data files.

- 1) Create data set PERSX by sorting the MEPS 2001 Full Year Population Characteristics File by the person identifier, DUPERSID. Keep only variables to be merged onto the emergency room visit file and DUPERSID.
- 2) Create data set EROM by sorting the emergency room visit file by person identifier, DUPERSID.
- 3) Create final data set NEWEROM by merging these two files by DUPERSID, keeping only records on the emergency room visit file.

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

```
PROC SORT DATA=2001 Full Year Population Characteristics File
(KEEP= DUPERSID AGE31X AGE42X AGE53X SEX RACEX
EDUCYR) OUT=PERSX;
  BY DUPERSID;
RUN;

PROC SORT DATA=EROM;
  BY DUPERSID;
RUN;

DATA NEWEROM;
  MERGE EROM (IN=A) PERSX(IN=B);
  BY DUPERSID;
  IF A;
RUN;
```

## **5.2 Linking the 2001 Emergency Room Visits File to the 2001 Medical Conditions File and/or the 2001 Prescribed Medicines File**

Due to survey design issues, data users/analysts must keep limitations and caveats in mind when linking the different files. Those limitations/caveats are listed below. For detailed linking examples, including SAS code, data users/analysts should refer to the MEPS 2001 Appendix File, HC-059I.

### **5.2.1 Limitations/Caveats of RXLK (the Prescribed Medicine Link File)**

The RXLK file provides a link from the MEPS event files to the 2001 Prescribed Medicine File. When using RXLK, data users/analysts should keep in mind that one emergency room visit can link to more than one prescribed medicine record. Conversely, a prescribed medicine event may link to more than one emergency room visit or different types of events. When this occurs, it is up to the data user/analyst to determine how the prescribed medicine expenditures should be allocated among those medical events.

### **5.2.2 Limitations/Caveats of CLNK (the Medical Conditions Link File)**

The CLNK provides a link from MEPS event files to the 2001 Medical Conditions File. When using the CLNK, data users/analysts should keep in mind that (1) conditions are self-reported and (2) there may be multiple conditions associated with an emergency room visit. Data users/analysts should also note that not all emergency room visits link to the medical conditions file.

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## **D. Variable-Source Crosswalk**

## VARIABLE-SOURCE CROSSWALK

### FOR MEPS HC-059E: 2001 EMERGENCY ROOM VISITS

#### Survey Administration Variables

Variable	Description	Source
DUID	Dwelling unit ID	Assigned in sampling
PID	Person number	Assigned in sampling
DUPERSID	Person ID (DUID+PID)	Assigned in sampling
EVNTIDX	Event ID	Assigned in sampling
EVENTRN	Event round number	CAPI derived
ERHEVIDX	Event ID for corresponding hospital stay	Constructed
FFEEIDX	Flat fee ID	CAPI derived
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
ERDATEDD	Event date – day	CAPI derived
SEEDOC	Did person talk to MD this visit	ER01
VSTCTGRY	Best category for care person receive on visit date	ER02
VSTRELCN	Was this visit related to spec hlth cond	ER03
LABTEST	This visit did person have lab tests	ER05
SONOGRAM	This visit did person have sonogram or ultrasound	ER05
XRAYS	This visit did person have x-rays	ER05
MAMMOG	This visit did person have a mammogram	ER05
MRI	This visit did person have an MRI/Catscan	ER05
EKG	This visit did person have an EKG or ECG	ER05
EEG	This visit did person have an EEG	ER05
RCVVAC	This visit did person receive a vaccination	ER05

<b>Variable</b>	<b>Description</b>	<b>Source</b>
ANESTH	This visit did person receive anesthesia	ER05
OTHSVCE	This visit did person have other diagnostic tests or exams	ER05
SURGPROC	Was a surgical procedure performed on person this visit	ER06
MEDPRESC	Any medicine prescribed for person this visit	ER08
VAPLACE	VA facility flag	Constructed
ERICD1X	3-digit ICD-9-CM condition code	Edited
ERICD2X	3-digit ICD-9-CM condition code	Edited
ERICD3X	3-digit ICD-9-CM condition code	Edited
ERPRO1X	2-digit ICD-9-CM procedure code	Edited
ERCCC1X	Modified Clinical Classification Code	Constructed/Edited
ERCCC2X	Modified Clinical Classification Code	Constructed/Edited
ERCCC3X	Modified Clinical Classification Code	Constructed/Edited

#### **Flat Fee Variables**

<b>Variable</b>	<b>Description</b>	<b>Source</b>
FFERTYPE	Flat fee bundle	Constructed

#### **Imputed Total Expenditure Variables**

<b>Variable</b>	<b>Description</b>	<b>Source</b>
ERXP01X	Total expenditure for event (ERFXP01X + ERDXP01X)	Constructed
ERTC01X	Total charge for event (ERFTC01X + ERDTC01X)	Constructed

#### **Imputed Facility Expenditure Variables**

<b>Variable</b>	<b>Description</b>	<b>Source</b>
ERFSF01X	Facility amount paid, family (Imputed)	CP Section (Edited)
ERFMR01X	Facility amount paid, Medicare (Imputed)	CP Section (Edited)
ERFMD01X	Facility amount paid, Medicaid (Imputed)	CP Section (Edited)
ERFPV01X	Facility amount paid, private insurance (Imputed)	CP Section (Edited)



<b>Variable</b>	<b>Description</b>	<b>Source</b>
ERFVA01X	Facility amount paid, Veterans Administration (Imputed)	CP Section (Edited)
ERFTR01X	Facility amount paid, TRICARE (Imputed)	CP Section (Edited)
ERFOF01X	Facility amount paid, other federal (Imputed)	CP Section (Edited)
ERFSL01X	Facility amount paid, state & local government (Imputed)	CP Section (Edited)
ERFWC01X	Facility amount paid, Workers' Compensation (Imputed)	CP Section (Edited)
ERFOR01X	Facility amount paid, other private insurance (Imputed)	Constructed
ERFOU01X	Facility amount paid, other public insurance (Imputed)	Constructed
ERFOT01X	Facility amount paid, other insurance (Imputed)	CP Section (Edited)
ERFXP01X	Facility sum payments ERFSF01X – ERFOT01X	Constructed
ERFTC01X	Total facility charge (Imputed)	CP Section (Edited)

### **Imputed Physician Expenditure Variables**

<b>Variable</b>	<b>Description</b>	<b>Source</b>
ERDSF01X	Doctor amount paid, family (Imputed)	Constructed
ERDMR01X	Doctor amount paid, Medicare (Imputed)	Constructed
ERDMD01X	Doctor amount paid, Medicaid (Imputed)	Constructed
ERDPV01X	Doctor amount paid, private insurance (Imputed)	Constructed
ERDVA01X	Doctor amount paid, Veterans Administration (Imputed)	Constructed
ERDTR01X	Doctor amount paid, TRICARE (Imputed)	Constructed
ERDOF01X	Doctor amount paid, other federal (Imputed)	Constructed
ERDSL01X	Doctor amount paid, state & local government (Imputed)	Constructed

<b>Variable</b>	<b>Description</b>	<b>Source</b>
ERDWC01X	Doctor amount paid, Workers' Comp (Imputed)	Constructed
ERDOR01X	Doctor amount paid, other private insurance (Imputed)	Constructed
ERDOU01X	Doctor amount paid, other public insurance (Imputed)	Constructed
ERDOT01X	Doctor amount paid, other insurance (Imputed)	Constructed
ERDXP01X	Doctor sum payments ERDSF01X – ERDOT01X	Constructed
ERDTC01X	Total doctor charge (Imputed)	Constructed
IMPFLAG	Imputation status	Constructed

### **Weights**

<b>Variable</b>	<b>Description</b>	<b>Source</b>
PERWT01F	Final person level weight, 2001	Constructed
VARSTR01	Variance estimation stratum, 2001	Constructed
VARPSU01	Variance estimation PSU, 2001	Constructed