MEPS HC-033E:
1999 Emergency Room Visits

July 2002

Agency for Healthcare Research and Quality
Center for Cost and Financing Studies

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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 18 U.S.C. 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 system.

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 panel 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.

Printed documents and selected public use file data on CD-ROMs are available through the AHRQ Publications Clearinghouse. Write or call:

AHRQ Publications Clearinghouse
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P.O. Box 8547
Silver Spring, MD 20907
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410-381-3150 (callers outside the United States only)
888-586-6340 (toll-free TDD service; hearing impaired only)

Be sure to specify the AHRQ number of the document or CD-ROM you are requesting.

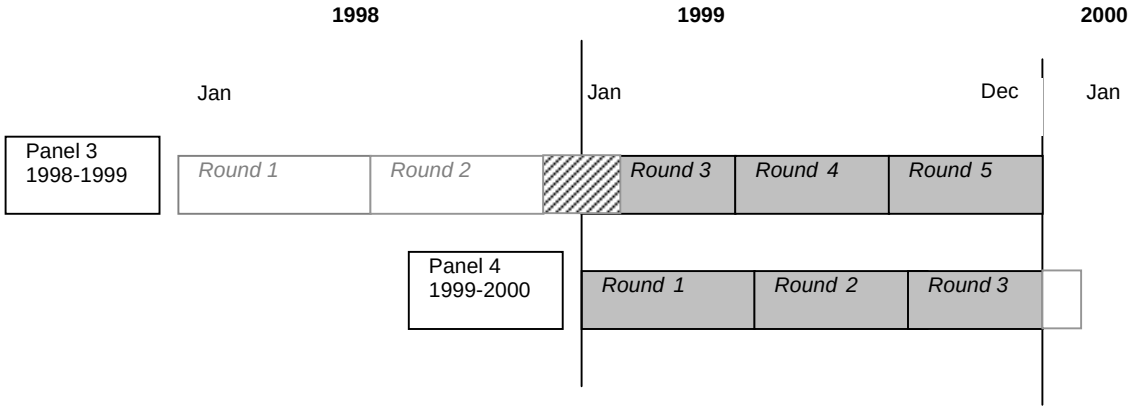
Selected electronic files are available through the Internet on the MEPS Web site:
http://www.meps.ahrq.gov/

Additional information on MEPS is available from the MEPS project manager or the MEPS public use data manager at the Center for Cost and Financing Studies, Agency for Healthcare Research and Quality.

C. Technical and Programming Information

1.0 General Information

This documentation describes one in a series of public use event files from the 1999 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 1999 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 1999. As illustrated below, each record on this file represents a unique emergency room visit reported by a household respondent during the 1999 portion of Round 3 (Round 2 for some cases, see ERR2FLAG in Section 2.5.1.3, "Round Indicators"), and Rounds 4 and 5 for Panel 3, as well as Rounds 1, 2, and the 1999 portion of Round 3 for Panel 4 (i.e., the rounds for the MEPS panels covering calendar year 1999).



NOTE: Typically for MEPS panels, MEPS Round 2 data collection ends in the first year of a panel and Round 3 data collection begins in the first year of the panel and crosses the year boundary into the second year of the panel. The crosshatched area in the above figure signifies that Round 2 data collection for approximately one quarter of the Panel 3 households began in 1998, the first year of the panel, but ended in 1999. For those households, all of the Round 3 data collection occurred in 1999. For the other three quarters of Panel 3 households, Round 2 data collection followed the typical pattern and began and ended in 1998. For those households, Panel 3 Round 3 data collection took place during both the first and second years of the panel, as is typically done for Round 3.

Emergency room events reported in Round 3 (Panel 4) and known to have begun after December 31, 1999 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.

Counts of emergency room visits are based entirely on household reports. Information from the MEPS MPC was used to supplement expenditure and payment data reported by the household.

Data from the EROM event file can be merged with other 1999 MEPS HC data files for the purpose of appending person-level data, such as demographic characteristics or health insurance coverage, to each EROM 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 in 1999 is provided on the MEPS 1999 Full Year Person Level Expenditure 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 and Variance Estimation Variables
Strategies for Estimation
Merging/Linking MEPS Data Files
References
Definitions
Variable - Source Crosswalk

Any variables not found on this file but released on previous MEPS Emergency Room Visits 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 1999 EROM 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 CCFS data center. Please visit the CCFS 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 1999 EROM public use file contains data associated with the characteristics of emergency room visits and imputed expenditure data from both the Household and Medical Provider Components. This data set contains variables and frequency distributions for 3,835 emergency room visits reported during the 1999 portion of Round 3 (Round 2 for some cases, see ERR2FLAG, Section 2.5.1.3 "Round Indicators") and Rounds 4 and 5 for Panel 3, as well as Rounds 1, 2, and the 1999 portion of Round 3 for Panel 4 (i.e., the rounds for the MEPS panels covering calendar year 1999) 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 begun after December 31, 1999 are not included on this file. Of these 3,835 records, 3,676 were associated with persons having positive person-level weights (PERWT99F). 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 1999 eligibility (i.e., persons with a positive 1999 full-year person-level sampling weight (PERWT99F>0)), or

(b) Be classified as either an eligible, non-key person or an eligible out-of-scope person who responded for his or her entire period of 1999 eligibility, and belonged to a family (i.e., all persons with the same value for a particular FAMID variable) in which all eligible family members responded for their entire period of 1999 eligibility, and at least one family member has a positive 1999 full-year person weight (i.e., eligible non-key or eligible out-of-scope persons who are members of a family all of whose members have a positive 1999 full-year MEPS family-level weight).

Please refer to Attachment 1 for definitions of keyness, in-scope, and eligibility. Persons who had no emergency room visits for 1999 are not included on this file (but are represented on MEPS person-level files).

Each EROM 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 1999 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 events can also be linked to the MEPS 1999 Medical Conditions File and the MEPS 1999 Prescribed Medicines File. Section 5.2 and the MEPS 1999 Appendix File contain details on how to link MEPS data files.

Panel 3 cases (PANEL99 = 3 on the 1999 Full Year Population Characteristics File) can also be linked back to the 1998 MEPS HC public use data files. However, data users/analysts should be aware that, at this time, no weight is being provided to facilitate two-year analysis of Panel 3 data.

2.1 Codebook Structure

For each variable on the EROM event file, both weighted and unweighted frequencies are provided in the codebook located on the MEPS web site: <http:\\www.meps.ahrq.gov>. The codebook and data file sequence list variables in the following order:

Unique person identifiers
Unique emergency room event identifiers

Other survey administration variables
Emergency room characteristic variables
ICD-9 condition and procedure codes
Clinical Classification Software codes
Imputed expenditure variables
Weight and variance estimation variables

2.2 Reserved Codes

The following reserved code values are used:

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

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

2.3 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

2.4 Variable Source and Naming Conventions

In general, variable names reflect the content of the variable, with an 8-character limitation.
For questions asked in a specific round, the last digit in the variable name reflects the round in which the question was asked. All imputed/edited variables end with an "X."

2.4.1 Variable-Source Crosswalk

Variables were either derived from the HC questionnaire itself, derived from the MPC data collection instrument, derived from the CAPI, or assigned in sampling. The source of each variable is identified in Section D, "Variable - Source Crosswalk." Sources for each variable are indicated in one of four ways in the Source Column:

1) Variables which are 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 Questionnaire (HC)
   FF - Flat Fee Questionnaire (HC)
   CP - Charge Payment Questionnaire (HC)
   HEF - Hospital Event Form (MPC);

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 Sources of Payment Variables

The imputed expenditure and sources of payment variable names follow a standard naming convention, are 8 characters in length with the last one being an "X" indicating they are fully edited and imputed.

The total sum of payments variable, 12 sources of payment variables, and the total charge variable are named consistently 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 sources of payment variables, the fourth and fifth characters indicate:

SF - self or family	OF - other Federal Government	XP - sum of payments
MR - Medicare	SL - State/local government	
MD - Medicaid	WC – Worker's Compensation	
PV - private insurance	OT - other insurance	
VA - Veterans	OR - other private	
CH - CHAMPUS/CHAMPVA	OU - other public	

The sixth and seventh characters indicate the year (99). The last character of all imputed/edited variables is an "X."

Example: ERFSF99X 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 and ID Variables

2.5.1.1 Person Identifiers (DUID, PID, DUPERSID)

The dwelling unit ID (DUID) is a 5-digit random number assigned after the case was sampled for MEPS. The 3-digit person number (PID) uniquely identifies each person within the dwelling unit. The 8-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 MEPS 1999 Full Year Population Characteristics File or to definitions listed in Attachment 1.

2.5.1.2 Record Identifiers (EVNTIDX, ERHEVIDX, FFEEIDX, MPCDATA)

EVNTIDX uniquely identifies each emergency room visit/event (i.e. each record on the EROM file) and is the variable required to link events to data files containing details on conditions and/or prescribed medicines (MEPS 1999 Medical Conditions File and the MEPS 1999 Prescribed Medicines File, respectively). For details on linking, see Section 5.2 or the MEPS 1999 Appendix File.

ERHEVIDX is a constructed variable identifying an EROM record that has its facility expenditure data 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 1999 EROM file, there are 117 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 situation. For example, if a patient receives stitches in an emergency room and comes back to have the stitches removed ten days later during an outpatient visit, both visits

are covered under one flat fee dollar amount. These two events would be on different files (i.e., the Emergency Room Visit File and the Outpatient Visit File) but would have the same value for FFEEIDX. On the 1999 EROM file, there are 28 Flat Fee variables. Please note that FFEEIDX should be used to link up all MEPS event files (excluding prescribed medicines) in order to determine the full set of events that are part of a flat fee group.

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.

2.5.1.3 Round Indicators (EVENTRN, ERR2FLAG)

EVENTRN indicates the round in which the emergency room visit/event was first reported. Please note: Rounds 3 (Round 2 for some cases, see ERR2FLAG below), 4, and 5 are associated with MEPS survey data collected from Panel 3. Likewise, Round 1, 2, and 3 are associated with data collected from Panel 4.

ERR2FLAG indicates whether or not a Panel 3 Round 2 event occurred in 1999. The ERR2FLAG was assigned a value =1 where an event in Round 2 of Panel 3 occurred in a portion of calendar year 1999. Events from Panel 4 will have ERR2FLAG = -1. Typically, only Round 3 of a MEPS panel covers two calendar years, so the ERR2FLAG was developed to identify where data collection procedures were modified. All utilization data for calendar year 1999 is provided on this file regardless of the round in which it happened to be collected. Data users/analysts need not modify any procedures to deal with this departure from the usual data collection process as the event variables have been developed so that the process is transparent.

2.5.2 Characteristics of Emergency Room Visits

The 1999 EROM event file contains 20 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 are unedited.

2.5.2.1 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). The questionnaire determines 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.

2.5.2.2 Services, Procedures, and Prescription Medicines (LABTEST-DOCOUTF)

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) and, if so, the procedure name (SURGNAME) was also asked. 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. Finally, it was reported if the person saw any of the same doctors or surgeons at their place of practice outside of the emergency room (DOCOUTF).

2.5.3 VA Facility (VAPLACE)

VAPLACE is a constructed variable that indicates whether the provider worked 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 unknown.

2.5.4 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 codes (ERICD1X-ERICD3X) 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 1999 Medical Conditions File. Details on how to link the 1999 EROM event file to the MEPS 1999 Medical Conditions File are provided in Section 5.2.2 and the MEPS 1999 Appendix File. 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 1999 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 1999 Medical Conditions File. For frequencies of conditions by event type, please see the MEPS 1999 Appendix File.

The ICD-9-CM 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 3-digit code categories. The reported ICD-9-CM code values were mapped to the appropriate clinical classification category prior to being collapsed to the 3-digit categories. Details on this procedure are outlined in the 1999 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 chronological order of occurrence and not in order of importance or severity. Labels for all values of the variables ERICD1X-ERICD3X and ERPRO1X are provided in the SAS programming statements in this release. See the H33ESU.TXT file. Data users/analysts who use the MEPS 1999 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.

2.5.5 Flat Fee Variables

2.5.5.1 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 situation. The flat fee groups represented on the EROM file includes flat fee groups where at least one of the health care events, as reported by the HC respondent, occurred during 1999. By definition, a flat fee group can span multiple years. Furthermore, a single person can have multiple flat fee groups.

Four variables on the EROM file describe a flat fee payment situation and the number of emergency room events that are a part of a flat fee group.

2.5.5.2 Flat Fee Variable Descriptions

2.5.5.2.1 Flat Fee ID (FFEEIDX)

As noted earlier in the Section 2.5.1.2 "Record Identifiers," the variable FFEEIDX can be used to uniquely identify all 1999 MEPS events (excluding the prescribed medicines file) that are part of the same flat fee group because FFEEIDX is the same value on all MEPS 1999 Event Files. For the emergency room visits that are not part of a flat fee payment situation, the FFEEIDX is set to -1 INAPPLICABLE.

2.5.5.2.2 Flat Fee Type (FFERTYPE)

FFERTYPE indicates whether the 1999 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 situation, the FFERTYPE is set to -1 INAPPLICABLE.

2.5.5.2.3 Counts of Flat Fee Events that Cross Years (FFBEF99, FFTOT99)

As described in Section 2.5.5.1, a flat fee payment situation may cover multiple events and the multiple events could span multiple years. For situations where the emergency room event occurred in 1999 as a part of a group of events, and some event occurred before or after 1999, counts of the known events are provided on the EROM record. Variables indicating events that occurred before or after 1999 are as follows:

> FFBEF99 – total number of pre-1999 events in the same flat fee group as the emergency room visit(s) that occurred in 1999. This count would not include emergency room visit that occurred in 1999. Because there were no pre-1999 EROM events represented in the flat fee groups, this variable was omitted from the 1999 EROM file.
>
> FFTOT99 – indicates whether or not there are 2000 emergency room visits, including the emergency room visit, in the same flat fee group as the emergency room event that occurred in 1999. Because there were no 2000 EROM event represented in the flat fee groups, this variable was omitted from the 1999 EROM file.

2.5.5.3 Caveats of Flat Fee Groups

There are 28 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 1999, but the remaining visits that were part of this flat fee group occurred in 2000. In this case, the 1999 flat fee group represented on this file would consist of one event, the "stem." The 2000 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 1997 but subsequent visits occurred during 1999. In this case, the initial visit would not be represented on the file. This 1999 flat fee group would then only consist of one or more leaf records and no stem. Another reason for which a flat fee group would not have a stem and a leaf record is that the stems or leaves could have been reported as different event types. In a small number of cases, flat fee groups span event types; that is, the stem may have been reported as one event type and the leaves may have been reported as another event type. In order to determine the different event types in a flat

fee group, the data user/analyst must link all MEPS event files (excluding the prescribed medicines file) using the variable FFEEIDX to create the complete flat fee group.

2.5.6 Expenditure Data

2.5.6.1 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 the following, "Informing American Health Care Policy" (Monheit et al., 1999).

Expenditure data related to emergency room visits are broken out by facility and separately billing doctor expenditures. This file contains five 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 emergency room visit; total expenses, which is the sum of the facility and physician expenses; facility total charge; and physician total charge.

2.5.6.2 Imputation and Data Editing Methodologies of Expenditure Variables

2.5.6.2.1 General Imputation Methodology

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 constructed through the imputation process.

2.5.6.2.2 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 HMO's and private HMO's as payment sources. These edits produced a complete vector of expenditures for some events, and provided the starting point for imputing missing expenditures in the remaining events.

2.5.6.2.3 General Hot-Deck Imputation Methodology

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. 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.

2.5.6.2.4 Imputation Methodology for Emergency Room Visits

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 a 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 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 was assigned to a recipient category based on its pattern of missing data. For example, an event with a known total charge but no expenditures information was assigned to one category, while an event with a known total charge and some expenditures information was assigned to a different category. Similarly, events without a known total charge were assigned to various recipient categories based on the amount of missing data.

The logical edits produced eight recipient categories in which all events had a common pattern 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 cost of free care would be implicitly included in paid events and explicitly included in events that should have been treated as free from provider.

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.

2.5.6.3 Capitation Imputation

Health maintenance organizations (HMOs) receive time-based (capitation) payments to cover their members’ cost of health care. Services provided by HMOs are referred to as "capitated events" in the MEPS expenditure imputations. They are singled out for special treatment because the payments received by HMOs are not tied directly to individual events and services. That is, per person per month payments to an HMO, as opposed to fee-for-service reimbursement for health care, pose a problem in the estimation of health care costs because MEPS uses event-level payments for service as its measure of expenditures. Capitated events are sent through there own imputation procedure.

2.5.6.4 Imputation Flag Variable (IMPFLAG)

Unlike prior data releases, only one imputation flag was created for 1999 event files. This variable, 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. Following is how the new imputation flag is coded; the categories are mutually exclusive.

IMPFLAG=0 (not eligible for imputation)
IMPFLAG=1 (complete HC data)
IMPFLAG=2 (complete MPC data)
IMPFLAG=3 (fully imputed)
IMPFLAG=4 (partially imputed)
IMPFLAG=5 (capitation imputation)

2.5.6.5 Flat Fee Expenditures

The approach used to count expenditures for flat fees was to place the expenditure on the first visit of the flat fee group. The remaining visits have zero payments. Thus, if the first visit in the flat fee group occurred prior to 1999, all of the events that occurred in 1999 will have zero payments. Conversely, if the first event in the flat fee group occurred at the end of 1999, the total expenditure for the entire flat fee group will be on that event, regardless of the number of events it covered after 1999.

2.5.6.6 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, or (4) follow-up visits were provided without a separate charge (e.g. after a surgical procedure). If all of the medical events for a person fell into one of these categories, then the total annual expenditures for that person would be zero.

2.5.6.7 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.

2.5.6.8 Emergency Room/Hospital Inpatient Stay Expenditures

While 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, where ever this relationship could be identified (using MPC start and end date of the events as well as information from the provider), the expenditure associated with the emergency room visit was moved to the hospital facility expenditure (see ERHEVIDX in Section 2.5.1.2). 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 MEPS 1999 Hospital Inpatient Stays File will have the combined expenditures. Please note that any physician expenditures associated with emergency room event 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 hospital stay associated with the emergency room stay.

2.5.6.9 Sources of Payment

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

1) Out-of-pocket by user or family
2) Medicare
3) Medicaid
4) Private Insurance
5) Veteran's Administration, excluding CHAMPVA
6) CHAMPUS or CHAMPVA
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) Worker's Compensation
10) Other Unclassified Sources - includes sources such as automobile, homeowner's, liability, and other miscellaneous or unknown sources.

Two additional sources 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 - Medicaid payments reported for persons who were not reported to be enrolled in the 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 sources 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 program.

2.5.6.10 Imputed Emergency Room Expenditure Variables

This file contains 2 sets of imputed expenditure variables: facility expenditures and physician expenditures.

2.5.6.10.1 Emergency Room Facility Expenditures (ERFSF99X-ERFOT99X, ERFXP99X, ERFTC99X)

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.

Emergency room facility expenditures were obtained primarily through the MPC. If the physician charges were included in the emergency room visit bill, then this expenditure is included in the facility expenditure variables. The imputed facility expenditures provided on this file, ERFSF99X - ERFOT99X are also the 12 sources of payment: self/family, Medicare, Medicaid, private insurance, Veterans Administration, CHAMPUS/CHAMPVA, other federal, state/local governments, Workman's Compensation, other private insurance, other public insurance and other insurance. ERFXP99X is the sum of the 12 sources of payments for the facility expenditure and ERFTC99X is the total charge. Please note that where an emergency room visit record is linked to a hospital inpatient stay record, ERFTC99X has been zeroed out.

2.5.6.10.2 Emergency Room Physician Expenditures (ERDSF99X - ERDOT99X, ERDXP99X ERDTC99X)

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. ERDSF99X - ERDOT99X are the 12 sources of payment, ERDXP99X is the sum of the 12 sources of payments, and ERDTC99X 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).

2.5.6.10.3 Total Expenditures and Charges for Emergency Room Visits (ERXP99X, ERTC99X)

Data users/analysts interested in total expenditure should use the variable ERXP99X, which includes both the facility and physician amounts. Those interested in total charges (see 2.5.7.1 for an explanation of the "charge" concept) should use the variable ERTC99X. However, please note that where the emergency room visit is linked to a hospital inpatient stay record, ERFTC99X has been zeroed out, and thus, ERTC99X may be equal to "0" or the doctor total charge (ERDTC99X).

2.5.6.11 Rounding

The expenditure variables on this file have been rounded to the nearest penny. Person-level expenditure information released on the MEPS 1999 Person Level Use and Expenditure File were rounded to the nearest dollar. It should be noted that using the MEPS 1999 event files to create person-level totals will yield slightly different totals than those found on the 1999 Person Level Use and Expenditure File. These differences are due to rounding only. Moreover, in some instances, the number of persons having expenditures on the MEPS 1999 event files for a particular source of payment may differ from the number of persons with expenditures on the 1999 Person Level Use and Expenditures File for that source of payment. This difference is also artifact of rounding only. Please see the 1999 MEPS Appendix File for details on such rounding differences.

3.0 Sample Weight (PERWT99F)

3.1 Overview

There is a single full year person-level weight (PERWT99F) 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 1999. A key person either was a member of an NHIS household at the time of the NHIS interview, or became a member of 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 Weights Construction

The person-level weight PERWT99F was developed in three stages. A person level weight for Panel 4 was created, including both an adjustment for nonresponse over time and poststratification, controlling to Current Population Survey (CPS) population estimates based on five variables. 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. Then a person level weight for Panel 3 was created, again including an adjustment for nonresponse over time and poststratification, again controlling to CPS population estimates based on the same five variables. When poverty status information derived from income variables became available, a 1999 composite weight was formed from the Panel 3 and Panel 4 weights by multiplying the Panel weights by .5. Then a final poststratification was done on this composite weight variable, including 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 in the establishment of control totals.

3.2.1 MEPS Panel 3 Weight

The person level weight for MEPS Panel 3 was developed using the 1998 full year weight for an individual as a "base" weight for survey participants present in 1998. For key, in-scope respondents who joined a RU some time in 1999 after being out of scope in 1998, the 1998 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 1999. These control figures were derived by scaling back the population totals obtained from the March 1999 CPS to reflect the December, 1999 CPS estimated population distribution across age and sex categories as of December, 1999. 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, 1999 is 273,003,778. Key, responding persons not in-scope on December 31, 1999 but in-scope earlier in the year retained, as their final Panel 3 weight, the weight after the nonresponse adjustment.

3.2.2 MEPS Panel 4 Weight

The person level weight for MEPS Panel 4 was developed using the MEPS Round 1 person-level weight as a 'base" weight. For key, in-scope respondents who joined a 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 1999 portion of Round 3 as well as poststratification to the same population control figures for December 1999 used for the MEPS Panel 3 weights. The same five variables employed for Panel 3 poststratification (census region, MSA status, race/ethnicity, sex, and age) were used for Panel 4 poststratification. Similarly, for Panel 4, key, responding persons not in-scope on December 31, 1999 but in-scope earlier in the year retained, as their final Panel 4 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 1999 CPS data base.

3.2.3 The Final Weight for 1999

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, 1999 is 273,003,778 (PERWT99F>0 and INSC1231=1). The inclusion of key, in-scope persons who were not in-scope on December 31, 1999 brings the estimated total number of persons represented by the MEPS respondents over the course of the year up to 276,410,767 (PERWT99F>0). The weighting process included poststratification to population totals obtained from the 1996 MEPS Nursing Home Component for the number of individuals admitted to nursing homes. For the 1999 full year file an additional poststratification was done to population totals obtained from the 1998 Medicare Current Beneficiary Survey (MCBS) for the number of deaths among Medicare beneficiaries experienced in the 1999 MEPS.

3.2.4 Coverage

The target population for MEPS in this file is the 1999 U.S. civilian, noninstitutionalized population. However, the MEPS sampled households are a subsample of the NHIS households interviewed in 1998 (Panel 3) and 1999 (Panel 4). New households created after the NHIS interviews for the respective Panels and consisting exclusively of persons who entered the target population after 1998 (Panel 3) or after 1999 (Panel 4) are not covered by MEPS. These would include families consisting solely of: immigrants; persons leaving the military; U.S. citizens returning from residence in another country; and persons leaving institutions. It should be noted that this set of uncovered persons constitutes only a tiny proportion of the MEPS target population

4.0 Strategies for Estimation

This file is constructed for efficient estimation of utilization, expenditure, and sources of payment for hospital emergency room visits and to allow for estimates of number of persons with emergency room visits for 1999.

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 2.5.6.2.

4.2 Basic Estimates of Utilization, Expenditure 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, expenditure and sources of payment, the value in each record contributing to the estimates must be multiplied by the weight (PERWT99F) contained on that record.

Example 1

For example, the total number of emergency room visits, for the civilian non-institutionalized population of the U.S. in 1999 is estimated as the sum of the weight (PERWT99F) across all emergency room visit records. That is,

$$\Sigma W_j = 43{,}323{,}557 \qquad (1)$$

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 (for those who had such 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,

$$(\Sigma W_j X_j)/(\Sigma W_j) = \$59.07 \qquad (2)$$

where $X_j = ERFSF99X_j + ERDSF99X_j$ and $\Sigma W_j = 40{,}055{,}276$

for all records with $ERXP99X_j > 0$

This gives $59.07 as the estimated mean amount of out-of-pocket payment of expenditures associated with emergency room visits and 40,055,276 as an estimate of the total number of such emergency room visits with expenditures. Both of these estimates are for the civilian non-institutionalized population of the U.S. in 1999.

Example 3

Another example would be to estimate the average 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,

$$(\sum W_j Y_j)/(\sum W_j) = 0.4527 \qquad (3)$$

where $Y_j = (ERFPV99X_j + ERDPV99X_j)/ERXP99X_j$ and $\sum W_j = 40{,}055{,}276$

for all emergency room visit records with $ERXP99X_j > 0$.

This gives 0.4527 as the estimated mean proportion of total expenditures paid by private insurance for emergency room visits with expenditure for the civilian non-institutionalized population of the U.S. in 1999.

4.3 Estimates of the Number of Persons with Emergency Room Visits

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 non-institutionalized 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

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

where

W_i is the sampling weight (PERWT99F) for person i

and

$X_i = 1$ if $SEEDOC_j = 1$ for any emergency room visit record of person i.

$= 0$ otherwise

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 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,

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

where

W_i is the sampling weight (PERWT99F) for person i

and

$Z_i = \sum ERXP99X_j$ 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 a person level 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 civilian non-institutionalized population of the U.S. with at least one emergency room visit where s/he 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,

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

where

W_i is the sampling weight (PERWT99F) for person i

and

$Z_i = 1$ if $SEEDOC_j = 1$ 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

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 1999 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 VARSTR99 and VARPSU99, 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 VARSTR99 and VARPSU99 as the variance estimation strata and PSUs (within these strata) respectively and specifying a "with replacement" design in a computer software package SUDAAN will yield standard error estimates of $5.31 and 0.0128 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 1999 Emergency Room Visits File can be used alone or in conjunction with other files. This section provides instructions for linking the emergency room visits files with other MEPS public use files, namely, the person-level file, the prescribed medicines file, and the conditions file.

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

Merging characteristics of interest from person-level files (e.g., MEPS 1999 Full Year Population Characteristics File, or MEPS1999 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 1999 Appendix File provides additional detail on how to merge MEPS data files.

1) Create data set PERS by sorting the MEPS 1999 Full Year Population Characteristics File, by the person identifier, DUPERSID. Keep only variables to be merged on to 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=1999 Full Year Population Characteristics File
 (KEEP=DUPERSID AGE SEX RACEX)      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 1999 Emergency Room Visits File to the 1999 Medical Conditions File and/or the 1999 Prescribed Medicines File

Because of survey design issues, data users/analysts must keep limitations and/or 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 1999 Appendix File.

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

The RXLK file provides a link from the MEPS event files to records on the 1999 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 1999 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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Attachment 1

Definitions

Dwelling Units, Reporting Units, Families, and Persons - The definitions of Dwelling Units (DUs) and Group Quarters in the MEPS Household Survey are generally consistent with the definitions employed for the National Health Interview Survey.

The dwelling unit ID (DUID) is a five-digit random ID number assigned after the case was sampled for MEPS. The person number (PID) uniquely identifies all persons within the dwelling unit. The variable DUPERSID is the combination of the variables DUID and PID.

A Reporting Unit (RU) is a person or group of persons in the sampled dwelling unit who are related by blood, marriage, adoption or other family association, and who are to be interviewed as a group in MEPS. Thus, the RU serves chiefly as a family-based "survey operations" unit rather than an analytic unit. Regardless of the legal status of their association, two persons living together as a "family" unit were treated as a single reporting unit if they chose to be so identified.

Unmarried college students under 24 years of age who usually live in the sampled household, but were living away from home and going to school at the time of the Round 1 MEPS interview, were treated as a Reporting Unit separate from that of their parents for the purpose of data collection. These variables can be found on MEPS person level files.

In-Scope - A person was classified as in-scope (IN-SCOPE) if he or she was a member of the U.S. civilian, non-institutionalized population at some time during the Round 1 interview. This variable can be found on MEPS person level files.

Keyness - The term "keyness" is related to an individual's chance of being included in MEPS. A person is key if that person is appropriately linked to the set of NHIS sampled households designated for inclusion in MEPS. Specifically, a key person either was a member of an NHIS household at the time of the NHIS interview, or became a member of such a household after being out-of-scope prior to joining that household (examples of the latter situation include newborns and persons returning from military service, an institution, or living outside the United States).

A non-key person is one whose chance of selection for the NHIS (and MEPS) was associated with a household eligible but not sampled for the NHIS, who happened to have become a member of a MEPS reporting unit by the time of the MEPS Round 1 interview. MEPS data, (e.g., utilization and income) were collected for the period of time a non-key person was part of the sampled unit to permit family level analyses. However, non-key persons who leave a sample household would not be recontacted for subsequent interviews. Non-key individuals are not part of the target sample used to obtain person level national estimates.

It should be pointed out that a person may be key even though not part of the civilian, non-institutionalized portion of the U.S. population. For example, a person in the military may be living with his or her civilian spouse and children in a household sampled for the NHIS. The person in the

military would be considered a key person for MEPS. However, such a person would not receive a person-level sample weight so long as he or she was in the military. All key persons who participated in the first round of a MEPS panel received a person level sample weight except those who were in the military. The variable indicating "keyness" is KEYNESS. This variable can be found on MEPS person level files.

Eligibility - The eligibility of a person for MEPS pertains to whether or not data were to be collected for that person. All key, in-scope persons of a sampled RU were eligible for data collection. The only non-key persons eligible for data collection were those who happened to be living in the same RU as one or more key persons, and their eligibility continued only for the time that they were living with a key person. The only out-of-scope persons eligible for data collection were those who were living with key in-scope persons, again only for the time they were living with a key person. Only military persons meet this description. A person was considered eligible if they were eligible at any time during Round 1. The variable indicating "eligibility" is ELIGRND1, where 1 is coded for persons eligible for data collection for at least a portion of the Round 1 reference period, and 2 is coded for persons not eligible for data collection at any time during the first round reference period. This variable can be found on MEPS person level files.

Pre-imputed - This term describes HC variables that have undergone a series of logical edits to correct for several problems, including outliers, copayments or charges reported as total payments, and reimbursed amounts counted as out of pocket payments. Missing data remain.

Unimputed - This term describes MPC variables that have undergone a series of logical edits to correct for several problems, including outliers, copayments or charges reported as total payments, and reimbursed amounts counted as out of pocket payments. These data were used as the imputation source to account for missing HC data.

Imputation - This term is used to describe the use of predictive models to adjust for missing data items based on data available on the same (or similar) cases. Hot-deck imputation creates a data set with complete data for all nonrespondent cases, often by substituting the data from a respondent case that resembles the nonrespondent on certain known variables.

D. Variable-Source Crosswalk

Survey Administration and ID Variables

Variable	Description	Source
DUID	Dwelling unit ID	Assigned in sampling
PID	Person number	Assigned in sampling
DUPERSID	Sample person ID	Assigned in sampling
EVNTIDX	Event ID	Assigned in Sampling
EVENTRN	Event round number	CAPI derived
ERR2FLAG	Indicates whether or not a Panel 3 Round 2 event occurred in 1999	Constructed
ERHEVIDX	Flag indicate hospital stay associated with the ER visit	Constructed
FFEEIDX	Flat fee ID	CAPI derived
MPCDATA	MPC data flag	CAPI derived

Characteristics of Emergency Room Visit Variables

Variable	Description	Source
ERDATEYR	Event date – year (4-digit)	CAPI derived
ERDATEMM	Event date – month	CAPI derived
ERDATEDD	Event date – day	CAPI derived
SEEDOC	Did the person talk to a medical doctor on this visit	ER01
VSTCTGRY	Best category for care person received on visit to doctor	ER02
VSTRELCN	Was this visit related to a medical condition	ER03
LABTEST	This visit did the person have lab tests	ER05
SONOGRAM	This visit did the person have a sonogram or ultrasound	ER05
XRAYS	This visit did the person have x–rays	ER05
MAMMOG	This visit did the person have mammogram	ER05
MRI	This visit did the person have MRI/CATSCAN	ER05

Variable	Description	Source
EKG	This visit did the person have an EKG or ECG	ER05
EEG	This visit did the person have an EEG	ER05
RCVVAC	This visit did the person receive a vaccination	ER05
ANESTH	This visit did the person receive anesthesia	ER05
OTHSVCE	Other diagnostic test/exams	ER05
SURGPROC	Was a surgical procedure performed on the person this visit	ER06
SURGNAME	Surgical procedure name in categories	ER07
MEDPRESC	Any medicines prescribed for person during this visit	ER08
DOCOUTF	Did the person see any doctors outside of the provider	ER10
VAPLACE	Emergency room is a VA facility	Constructed
ERICD1X	3-digit ICD-9 condition code	Edited
ERICD2X	3-digit ICD-9 condition code	Edited
ERICD3X	3-digit ICD-9 condition code	Edited
ERPRO1X	2-digit ICD-9 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

Variable	Description	Source
FFERTYPE	Flat fee bundle	FF01, FF02
FFBEF99	Total # of events in flat fee before 1999	FF05
FFTOT00	Total # of events in flat fee after 1999	FF10

Imputed Total Expenditure Variables

Variable	Description	Source
ERXP99X	Total expenditure for emergency room visit (ERFXP99X + ERDXP99X)	Constructed
ERTC99X	Total charge for emergency room visit (ERFC99X + ERDTC99X)	Constructed

Imputed Facility Expenditure Variables

Variable	Description	Source
ERFSF99X	Facility amount paid, family (imputed)	CP11 (Edited/Imputed)
ERFMR99X	Facility amount paid, Medicare (imputed)	CP09 (Edited/Imputed)
ERFMD99X	Facility amount paid, Medicaid (imputed)	CP07 (Edited/Imputed)
ERFPV99X	Facility amount paid, private insurance (imputed)	CP07 (Edited/Imputed)
ERFVA99X	Facility amount paid, Veterans (imputed)	CP07 (Edited/Imputed)
ERFCH99X	Facility amount paid, CHAMP/CHAMPVA (imputed)	CP07 (Edited/Imputed)
ERFOF99X	Facility amount paid, other federal (imputed)	CP07 (Edited/Imputed)
ERFSL99X	Facility amount paid, state/local govt. (imputed)	CP07 (Edited/Imputed)
ERFWC99X	Facility amount paid, Worker's Comp (imputed)	CP07 (Edited/Imputed)
ERFOR99X	Facility amount paid, other private (imputed)	Constructed
ERFOU99X	Facility amount paid, other public (imputed)	Constructed
ERFOT99X	Facility amount paid, other insurance (imputed)	CP07 (Edited/Imputed)
ERFXP99X	Facility sum of payments ERFSF99X – ERFOT99X	Constructed
ERFTC99X	Facility total charge (imputed)	CP09 (Edited/Imputed)

Imputed Physician Expenditure Variables

Variable	Description	Source
ERDSF99X	Doctor amount paid, family (imputed)	CP11 (Edited/Imputed)
ERDMR99X	Doctor amount paid, Medicare (imputed)	CP09 (Edited/Imputed)
ERDMD99X	Doctor amount paid, Medicaid (imputed)	CP07 (Edited/Imputed)
ERDPV99X	Doctor amount paid, private insurance (imputed)	CP07 (Edited/Imputed)
ERDVA99X	Doctor amount paid, Veterans (imputed)	CP07 (Edited/Imputed)
ERDCH99X	Doctor amount paid, CHAMP/CHAMPVA (imputed)	CP07 (Edited/Imputed)
ERDOF99X	Doctor amount paid, other federal (imputed)	CP07 (Edited/Imputed)
ERDSL99X	Doctor amount paid, state/local govt. (imputed)	CP07 (Edited/Imputed)
ERDWC99X	Doctor amount paid, Worker's Comp (imputed)	CP07 (Edited/Imputed)
ERDOR99X	Doctor amount paid, other private (imputed)	Constructed
ERDOU99X	Doctor amount paid, other public (imputed)	Constructed
ERDOT99X	Doctor amount paid, other insurance (imputed)	CP07 (Edited/Imputed)
ERDXP99X	Doctor sum of payments ERDSF99X – ERDOT99X	Constructed
ERDTC99X	Doctor total charge (imputed)	CP09 (Edited/Imputed)
IMPFLAG	Imputation status	Constructed

Weights

Variable	Description	Source
PERWT99F	Final person level weight, 1999	Constructed
VARPSU99	Variance estimation PSU 1999	Constructed
VARSTR99	Variance estimation stratum	Constructed