

**MEPS HC-085B:
2004 Dental Visits**

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

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

1. No one is to use the data in this data set in any way except for statistical reporting and analysis; and
2. If the identity of any person or establishment should be discovered inadvertently, then (a) no use will be made of this knowledge, (b) the Director, Office of Management, AHRQ will be advised of this incident, (c) the information that would identify any individual or establishment will be safeguarded or destroyed, as requested by AHRQ, and (d) no one else will be informed of the discovered identity; and
3. No one will attempt to link this data set with individually identifiable records from any data sets other than the Medical Expenditure Panel Survey or the National Health Interview Survey.

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, also known as NMES-1) was conducted in 1977 and the National Medical Expenditure Survey (NMES-2) in 1987. Since 1996, MEPS continues 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 two 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, eligibility requirements, 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 Bureau of the Census.

To provide an integrated picture of health insurance, data collected from the first sampling frame (employers and insurance providers identified by MEPS HC

respondents) are linked back to data provided by those respondents. Data 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 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 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 as electronic files.

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

AHRQ Publications Clearinghouse
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800-358-9295
410-381-3150 (callers outside the United States only)
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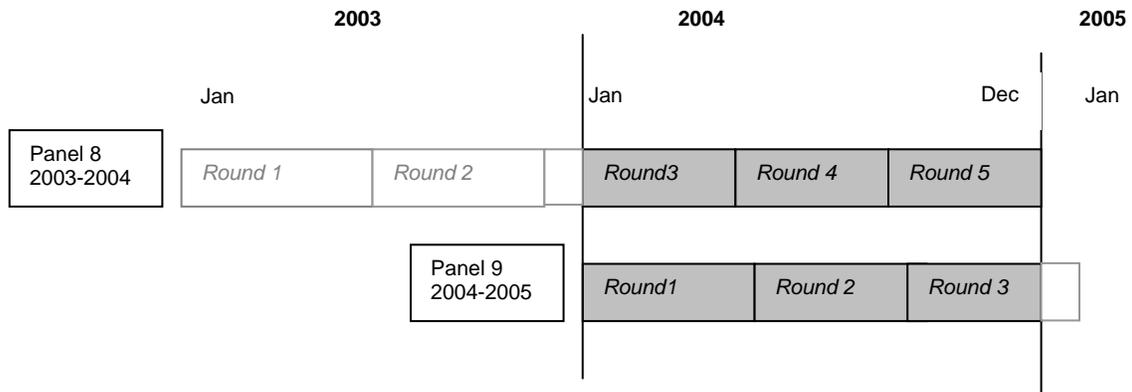
Be sure to specify the AHRQ number of the document you are requesting.

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 2004 Medical Expenditure Panel Survey (MEPS) Household Component (HC). Released as an ASCII data file (with related SAS and SPSS programming statements) and a SAS transport file, the 2004 Dental public use file provides detailed information on dental events for a nationally representative sample of the civilian noninstitutionalized population of the United States. Data from the Dental file can be used to make estimates of dental event utilization and expenditures for calendar year 2004. The file contains 76 variables and has a logical record length of 308 with an additional 2-byte carriage return/line feed at the end of each record. As illustrated below, this file consists of MEPS survey data obtained in the 2004 portion of Round 3 and Rounds 4 and 5 for Panel 8, as well as Rounds 1, 2 and the 2004 portion of Round 3 for Panel 9 (i.e., the rounds for the MEPS panels covering calendar year 2004).



Each record on this event file represents a unique dental event; that is, a dental event reported by the household respondent. Counts of dental event utilization are based entirely on household reports. Dental events were not included in the Medical Provider Component (MPC); therefore, all expenditure and payment data on the Dental event file are reported by the household.

Data from this event file can be merged with other 2004 MEPS HC data files for the purposes of appending person-level data such as demographic characteristics or health insurance coverage to each dental record.

This file can also be used to construct summary variables of expenditures, sources of payment, and related aspects of the dental event. Aggregate annual person-level information on the use of dental events and other health services use is provided on the

MEPS 2004 Full Year Consolidated Data File where each record represents a MEPS sampled person.

The following documentation offers a brief 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

For more information on MEPS HC survey design, see S. Cohen, 1997; J. Cohen, 1997; and S. Cohen, 1996. A copy of the MEPS HC survey instrument used to collect the information on the dental file is available on the MEPS web site at the following address: <http://www.meps.ahrq.gov>.

2.0 Data File Information

The 2004 Dental public use data set consists of one event-level data file. The file contains characteristics associated with the dental event and imputed expenditure data.

The 2004 Dental public use data set contains 29,572 dental event records; of these records, 29,088 are associated with persons having a positive person-level weight (PERWT04F). This file includes dental event records for all household survey respondents who resided in eligible responding households and reported at least one dental event. Each record represents one household-reported dental event that occurred during calendar year 2004. Dental visits known to have occurred before January 1, 2004 and after December 31, 2004 are not included on this file. Some household respondents may have multiple dental events and thus will be represented in multiple records on this file. Other household respondents may have reported no dental events and thus will have no records on this file. These data were collected during the 2004 portion of Round 3, and Rounds 4 and 5 for Panel 8, as well as Rounds 1, 2, and the 2004 portion of Round 3 for Panel 9 of the MEPS HC. The persons represented on this file had to meet either (a) or (b) below:

- a) Be classified as a key in-scope person who responded for his or her entire period of 2004 eligibility (i.e., persons with a positive 2004 full-year person-level weight (PERWT04F > 0)), or

- b) Be an eligible member of a family all of whose key in-scope members have a positive person-level weight ($PERWT04F > 0$). (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 ($FAMWT04F > 0$). Note that FAMIDYR and FAMWT04F are variables on the 2004 Population Characteristics file.

Persons with no dental events for 2004 are not included on this event-level DV file but are represented on the person-level 2004 Full Year Population Characteristics file.

Each dental event record includes the following: date of the dental event; type of provider seen; procedure(s) associated with the dental event; whether or not medicines were prescribed; flat fee information; imputed sources of payment; total payment and total charge of the dental event expenditure; and a full-year person-level weight.

Data from this file can be merged with the MEPS 2004 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. Dental events can also be linked to the MEPS 2004 Prescribed Medicine File. Please see section 5.0 or the 2004 Appendix 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 expenditure 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 trend 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.

The records on this file can be linked to all other 2004 MEPS-HC public use data sets by the sample person identifier (DUPERSID).

2.2 Codebook Structure

For each variable on the Dental event file, both weighted and unweighted frequencies are provided in the codebook files (H85BCB.PDF and H85BCB.ASP). The codebook and data file sequence list variables in the following order:

- Unique person identifier
- Unique dental event identifier
- Dental characteristic variables
- 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/survey.htm>).

2.4 Codebook Format

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

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

2.5 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 Variable - Source Crosswalk

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

- (1) Variables derived from CAPI or assigned in sampling are so indicated as “CAPI derived” or “Assigned in sampling,” respectively;
- (2) Variables which come from one or more specific questions have those questionnaire sections and question numbers indicated in the “Source” column; questionnaire sections are identified as:
 - FF - Flat Fee section
 - DN - Dental Event section
 - CP - Charge Payment section
- (3) Variables constructed from multiple questions using complex algorithms are labeled “Constructed” in the “Source” column; and
- (4) Variables that have been edited or imputed are so indicated.

2.5.2 Expenditure and Sources of Payment Variables

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

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

The first two characters indicate the type of event:

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

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

SF - self or family	OF - other Federal Government
MR - Medicare	SL - State/local government
MD - Medicaid	WC - Workers' Compensation
PV - private insurance	OT - other insurance
VA - Veterans Administration	OR - other private
TR - TRICARE	OU - other public
	XP - sum of payments

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

The fifth and sixth characters indicate the year (04). The seventh character, “X”, indicates the variable is edited/imputed.

For example, DVSF04X is the edited/imputed amount paid by self or family for 2004 dental expenditures.

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 2004 Full Year Population Characteristics File.

2.6.1.2 Record Identifiers (EVNTIDX, FFEEIDX)

EVNTIDX uniquely identifies each dental event (i.e., each record on the dental file) and is the variable required to link dental events to data files containing details on prescribed medicines (MEPS 2004 Prescribed Medicines file). For details on linking see Section 5.0 or the MEPS 2004 Appendix File, HC-085I.

FFEEIDX is a constructed variable that uniquely identifies a flat fee group, that is, all events that were part of a flat fee payment. For example, a charge for orthodontia is typically covered in a flat fee arrangement where all visits are covered under one flat fee dollar amount. These events would have the same value for FFEEIDX. FFEEIDX identifies a flat fee payment that was identified using information from the Household Component.

2.6.1.3 Round Indicator (EVENTRN)

EVENTRN indicates the round in which the dental event was reported. Please note: Rounds 3 (partial), 4, and 5 are associated with MEPS survey data collected from Panel 8. Likewise, Rounds 1, 2, and 3 (partial) are associated with data collected from Panel 9.

2.6.2 Dental Event Variables

This file contains variables describing dental events reported by household respondents in the Dental Section of the MEPS HC survey questionnaire.

2.6.2.1 Date of Visit (DVDATEYR – DVDATEDD)

There are three variables which indicate the day, month, and year a dental event occurred (DVDATEDD, DVDATEMM, DVDATEYR, respectively). These variables have not been edited or imputed.

2.6.2.2 Type of Provider Seen (GENDENT - DENTYPE)

Respondents were asked about the type of provider seen during the dental visit (e.g., general dentist, dental hygienist, or orthodontist). More than one type of provider may have been identified on an event record.

2.6.2.3 Treatment, Procedures, and Services (EXAMINE - DENTMED)

Respondents were asked about the types of services or treatments received during the visit (EXAMINE - TMDTMJ), such as root canal or x-rays. More than one type of service or treatment may have been identified on an event record. Some procedures or services identified in DENTOTHR as "Dental services other specify" have been edited to appropriate procedure and service categories. While the unedited versions of these variables are included in the DV file every year, an edited version of a particular variable is included only if editing was done for that category. Please note that the crosswalk in this document lists all possible edited procedure and service category variables; the edited variables in the data file will differ by year. The DENTMED variable indicates whether or not the respondent received a prescription medication during the dental visit.

2.6.3 Flat Fee Variables (FFEEIDX, FFDVTYPE, FFBEF04, FFTOT05)

2.6.3.1 Definition of Flat Fee Payments

A flat fee is the fixed dollar amount a person is charged for a package of services provided during a defined period of time. Examples would be an orthodontist's fee, which covers multiple visits; or a dental surgeon's fee, which covers surgical procedure and post-surgical care. A flat fee group is the set of medical services that are covered under the same flat fee payment. The flat fee groups represented on the dental file include flat fee groups where at least one of the health care events, as reported by the HC respondent, occurred during 2004. By definition, a flat fee group can span multiple years. Furthermore, a single person can have multiple flat fee groups.

2.6.3.2 Flat Fee Variable Descriptions

2.6.3.2.1 Flat Fee ID (FFEEIDX)

As noted earlier in Section 2.6.1.2 "Record Identifiers," the variable FFEEIDX uniquely identifies all events that are part of the same flat fee group for a person. On any 2004 MEPS event file, every event that is part of a specific flat fee group will have the same value for FFEEIDX. Note that prescribed medicine and home health events are never included in a flat fee group and none of the flat fee variables is on those event files.

2.6.3.2.2 Flat Fee Type (FFDVTYPE)

FFDVTYPE indicates whether the 2004 dental event is the "stem" or "leaf" of a flat fee group. A stem (records with FFDVTYPE = 1) is the initial dental service (event) which is followed by other dental events that are covered under the same flat fee payment. The leaves of the flat fee group (records with FFDVTYPE = 2) are those dental 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 dental visits that are not part

of a flat fee payment, the FFDVTYPE is set to -1, “INAPPLICABLE”.

2.6.3.2.3 Counts of Flat Fee Events that Cross Years (FFBEF04, FFTOT05)

As described in Section 2.6.3.1, a flat fee payment covers multiple events and the multiple events could span multiple years. For situations where a 2004 dental visit is part of a group of events, and some of the events occurred before or after 2004, counts of the known events are provided on the dental record. Variables that indicate events occurring before or after 2004 are the following:

FFBEF04 – indicates total number of pre-2004 events in the same flat fee group as the 2004 dental event. This count would not include 2004 dental events.

FFTOT05 – indicates the number of 2005 medical events expected to be in the same flat fee group as the 2004 dental event record.

If there are no 2003 events on the file, FFBEF04 will be omitted. Likewise, if there are no 2005 events on the file, FFTOT05 will be omitted. If there are no flat fee data related to the records in this file, FFEEIDX and FFDVTYPE will be omitted as well. Please note that the crosswalk in this document lists all possible flat fee variables.

2.6.3.3 Caveats of Flat Fee Groups

Data users/analysts should note that flat fee payments are common on the dental file. There are 4,656 dental events that are identified as being part of a flat fee payment group. In general, every flat fee group should have an initial visit (stem) and at least one subsequent visit (leaf). There are some situations where this is not true. For some of these flat fee groups, the initial visit reported occurred in 2004, but the remaining visits that were part of this flat fee group occurred in 2005. In this case, the 2004 flat fee group represented on this file would consist of one event (the stem). The 2005 “leaf” events that are part of this flat fee group are not represented on the file. Similarly, the household respondent may have reported a flat fee group where the initial visit began in 2003 but subsequent visits occurred during 2004. In this case, the initial visit would not be represented on the file. This 2004 flat fee group would then only consist of one or more leaf records and no stem.

2.6.4 Expenditure Data

2.6.4.1 Definition of Expenditures

Expenditures on this file refer to what is paid for dental services. More specifically, expenditures in MEPS are defined as the sum of payments for care received, including out-of-pocket payments and payments made by private insurance, Medicaid, Medicare and other sources. The definition of expenditures used in MEPS differs slightly from its predecessors, the 1987 NMES and 1977 NMCES surveys, where “charges” rather than sum of payments were used to measure expenditures. This change was adopted because charges became a less appropriate proxy for medical expenditures during the 1990s due to the increasingly common practice of discounting. Although measuring expenditures as the sum of payments incorporates discounts in the MEPS expenditure estimates, the estimates do not incorporate any payment not directly tied to specific medical care visits, such as bonuses or retrospective payment adjustments paid by third party payers. Another general change from the two prior surveys is that charges associated with uncollected liability, bad debt, and charitable care (unless provided by a public clinic or hospital) are not counted as expenditures because there are no payments associated with those classifications. While charge data are provided on this file, data users/analysts should use caution when working with 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 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., 2000). 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 at <http://www.meps.ahrq.gov/datacenter.htm>. 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.

2.6.4.2 Data Editing and Imputation Methodologies of Expenditure Variables

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

2.6.4.2.1 General Data Editing Methodology

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

2.6.4.2.2 General Hot-Deck Imputation

A weighted sequential hot-deck procedure was used to impute for 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.

2.6.4.2.3 Dental Data Editing and Imputation

Expenditures on visits to dentists were developed in a sequence of logical edits and imputations. The household edits were used to correct obvious errors in the reporting of expenditures, and to identify actual and potential sources of payments. Some of the edits were global (i.e., applied to all events). Others were hierarchical and mutually exclusive. One of the more important edits separated flat fee events from simple events. This edit was necessary because groups of events covered by a flat fee (i.e., a flat fee bundle) were edited and imputed separately from individual events each covered by a single charge (i.e., simple events). Dental services were imputed as flat fee events if the charges covered a package of health care services (e.g., orthodontia), and all of the services were part of the same event type (i.e., a pure bundle). If a bundle contained more than one type of event, the services were treated as simple events in the imputations (See Section 2.6.3 for more detail on the definition and imputation of events in flat fee bundles.)

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

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

2.6.4.4 Imputation Flag Variable (IMPFLAG)

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

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

IMPFLAG=1 complete HC data

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

IMPFLAG=3 fully imputed

IMPFLAG=4 partially imputed

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

2.6.4.5 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 2004, all of the events that occurred in 2004 will have zero payments. Conversely, if the first event in the flat fee group occurred at the end of 2004, the total expenditure for the entire flat fee group will be on that event, regardless of the number of events it covered after 2004. See Section 2.6.3 for details on the flat fee variables.

2.6.4.6 Zero Expenditures

As noted above, there are some dental 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.

2.6.4.7 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 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.

2.6.4.8 Dental Expenditure Variables (DVSF04X- DVTC04X)

DVSF04X - DVOT04X are the 12 sources of payment. DVTC04X is the total charge, and DVXP04X is the sum of the 12 sources of payment for the Dental expenditures. The 12 sources of payment are: self/family (DVSF04X), Medicare (DVMR04X), Medicaid (DVMD04X), private insurance (DVPV04X), Veterans Administration (DVVA04X), TRICARE (DVTR04X), other Federal sources (DVOF04X), State and Local (non-federal) government sources (DVSL04X), Worker’s Compensation (DVWC04X), other private insurance (DVOR04X), other public insurance (DVOU04X), and other insurance (DVOT04X).

2.6.4.9 Rounding

Expenditure variables on the 2004 dental file have been rounded to the nearest penny. Person-level expenditure information to be released on the MEPS 2004 Person-Level Expenditure File will be rounded to the nearest dollar. It should be noted that using the MEPS event files to create person-level totals will yield slightly different totals than those found on the 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 expenditure file for that source of payment. This difference is also an artifact of rounding only. Please see the MEPS 2004 Appendix File, HC-085I, for details on such rounding differences.

3.0 Sample Weight (PERWT04F)

3.1 Overview

There is a single full year person-level weight (PERWT04F) 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 2004. 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 (the latter circumstance includes newborns as well as 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 PERWT04F was developed in several stages. Person-level weights for Panels 8 and 9 were created separately. The weighting process for each panel included an adjustment for nonresponse over time and calibration to independent population figures. The calibration was initially accomplished separately for each panel by raking the corresponding sample weights to Current Population Survey (CPS) population estimates based on five variables. The five variables used in the establishment of the initial person-level control figures were: census region (Northeast, Midwest, South, West); MSA status (MSA, non-MSA); race/ethnicity (Hispanic, non-Hispanic with black as sole reported race, non-Hispanic with Asian as sole reported race, and other); sex; and age. A 2004 composite weight was then formed by multiplying each weight from Panel 8 by the factor .49 and each weight from Panel 9 by the factor .51. 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 again raked to the same set of CPS-based control totals. When poverty status information derived from income variables became available, a final raking was undertaken on the previously established weight variable. Control totals were established using poverty status (five categories: below poverty, from 100 to 125 percent of poverty, from 125 to 200 percent of poverty, from 200 to 400 percent of poverty, at least 400 percent of poverty) as well as the original five variables used in the previous calibrations.

3.2.1 MEPS Panel 8 Weight

The person-level weight for MEPS Panel 8 was developed using the 2003 full year weight for an individual as a “base” weight for survey participants present in 2003. For key, in-scope respondents who joined an RU some time in 2004 after being out-of-scope in 2003, the 2003 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 raking to population control figures for December 2004. These control figures were derived by scaling back the population totals obtained from the March 2004 CPS to correspond to a national estimate for the civilian noninstitutionalized population provided by the Census Bureau for December 2004. Variables used in the establishment of person-level control figures included: census region (Northeast, Midwest, South, West); MSA status (MSA, non-MSA); race/ethnicity (Hispanic, black but non-Hispanic, Asian but non-Hispanic, and other); sex; and age. Overall, the weighted population estimate for the civilian noninstitutionalized population on December 31, 2004 is 289,659,890. Key, responding persons not in-scope on December 31, 2004 but in-scope earlier in the year retained, as their final Panel 8 weight, the weight after the nonresponse adjustment.

3.2.2 MEPS Panel 9 Weight

The person-level weight for MEPS Panel 9 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 2004 portion of Round 3 as well as raking to the same population control figures for December 2004 used for the MEPS Panel 8 weights. The same five variables employed for Panel 8 raking (census region, MSA status, race/ethnicity, sex, and age) were used for Panel 9 raking. Similarly, for Panel 9, key, responding persons not in-scope on December 31, 2004 but in-scope earlier in the year retained, as their final Panel 9 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 2004 CPS data base.

3.2.3 The Final Weight for 2004

Variables used in the establishment of person-level 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, non-Hispanic with black as sole reported race, non-Hispanic with Asian as sole reported race, and other); sex; and age. Overall, the weighted population estimate for the civilian noninstitutionalized population for December 31, 2004 is 289,659,890 (PERWT04F>0 and INSC1231=1). The weights of some persons out-of-scope on December 31, 2004 were also calibrated, this time using poststratification. Specifically, the weights of persons out-of-scope on December 31, 2004 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 2004 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 293,527,003.

3.2.4 Coverage

The target population for MEPS in this file is the 2004 U.S. civilian noninstitutionalized population. However, the MEPS sampled households are a subsample of the NHIS households interviewed in 2002 (Panel 8) and 2003 (Panel 9). New households created after the NHIS interviews for the respective Panels and consisting exclusively of persons who entered the target population after 2002 (Panel 8) or after 2003 (Panel 9) 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 dental events and to allow for estimates of number of persons with dental utilization in 2004.

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, and zero expenditures) are described in Section 2.6.4.

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 dental visits utilization, expenditures, and sources of payment, the value in each record contributing to the estimates must be multiplied by the weight (PERWT04F) contained on that record.

Example 1

For example, the total number of dental visits, for the civilian noninstitutionalized population of the U.S. in 2004 is estimated as the sum of the weight (PERWT04F) across all dental visit event records. That is,

$$\sum W_j = 315,713,161 \quad (1)$$

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 per dental visit (where the visit has a total expense greater than 0) should be calculated as the weighted mean of amount paid by self/family. That is,

$$(\sum W_j X_j) / (\sum W_j) = \$132.30 \quad (2)$$

where

$$\sum W_j = 260,510,804 \text{ and } X_j = \text{DVSF04}X_j$$

for all records with $\text{DVXP04}X_j > 0$.

This gives \$132.30 as the estimated mean amount of out-of-pocket payment of expenditures associated with dental visits and 260,510,804 as an estimate of the total number of dental visits with expenditures. Both of these estimates are for the civilian noninstitutionalized population of the U.S. in 2004.

Example 3

Another example would be to estimate the average proportion of total expenditures (where event expense is greater than 0) paid by private insurance per dental visit. This should be calculated as the weighted mean of the proportion of the total dental visit expenditures paid by private insurance at the dental visit-level. That is,

$$(\sum W_j Y_j)/(\sum W_j) = 0.4706 \quad (3)$$

where

$$\sum W_j = 260,510,804 \text{ and } Y_j = \text{DVPV04X}_j / \text{DVXP04X}_j$$

for all records with $\text{DVXP04X}_j > 0$.

This gives 0.4706 as the estimated mean proportion of total expenditures paid by private insurance for dental visits with expenditures for the civilian noninstitutionalized population of the U.S. in 2004.

4.3 Estimates of the Number of Persons with Dental Visits

When calculating an estimate of the total number of persons with dental 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 a dental visit in 2004 where an orthodontist was seen, 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 (PERWT04F) for person i

and

$X_i = 1$ if $\text{ORTHODNT}_i = 1$ for any dental visit record of person i
 $= 0$ otherwise.

4.4 Person-Based Ratio Estimates

4.4.1 Person-Based Ratio Estimates Relative to Persons with Dental Visits

This file may be used to derive person-based ratio estimates. However, when calculating ratio estimates where the denominator is persons, care should be taken to properly define and estimate the unit of analysis up to person-level. For example, the mean expense for persons with dental 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 (PERWT04F) for person i

and

$$Z_i = \sum DVXP04X_j \quad \text{across all dental visit events of person } i.$$

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 dental 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 events and those without events).

For example, to estimate the proportion of civilian noninstitutionalized population of the U.S. with at least one dental visit occurred where an orthodontist was seen, 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,

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

where

W_i is the sampling weight (PERWT04F) for person i

and

$$\begin{aligned} Z_i &= 1 && \text{if } ORTHODNT_i = 1 \text{ for any dental visit record of person } i \\ &= 0 && \text{otherwise.} \end{aligned}$$

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 one 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 (VARPSU, VARSTR)

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 2004 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 VARSTR and VARPSU, respectively. Prior to 2003, MEPS variance strata and PSUs were developed independently from year to year, and the last two characters of the strata and PSU variable names denoted the year. However, beginning with the 2003 Point-in-Time PUF, the variance strata and PSUs have been developed to be compatible with all future PUFs. Thus, data from future years can be pooled and the variance strata and PSU variables provided can be used without modification for variance estimation purposes for estimates covering multiple years of data. There are 203 variance estimation strata, each stratum with either two or three variance estimation PSUs. 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 VARSTR and VARPSU 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 estimate of \$3.31 and 0.0071 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 this file can be used alone or in conjunction with other files. This section provides instructions for linking the 2004 dental file with other 2004 MEPS public use files, including the 2004 prescribed medicines file and a 2004 person-level file.

5.1 Linking a 2004 Person-Level File to the 2004 Dental File

Merging characteristics of interest from other MEPS files (e.g., 2004 Full Year Population Characteristics File or 2004 Prescribed Medicines File) expands the scope of potential estimates. For example, to estimate the total number of dental events of persons with specific demographic characteristics (such as age, race, and sex), population characteristics from a person-level file needs to be merged onto the dental file. This procedure is shown below. The MEPS 2004 Appendix File, HC-085I, provides additional details of how to merge other MEPS data files.

- 1) Create data set PERSX by sorting the 2004 Full Year Population Characteristics File, by the person identifier, DUPERSID. Keep only variables to be merged onto the dental file and DUPERSID.
- 2) Create data set DENT by sorting the dental event file by person identifier, DUPERSID.
- 3) Create final data set NEWDENT by merging these two files by DUPERSID, keeping only records on the dental event file.

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

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

PROC SORT DATA=DENT;
  BY DUPERSID;
RUN;

DATA NEWDENT;
  MERGE DENT (IN=A) PERSX(IN=B);
```

BY DUPERSID;
IF A;
RUN;

The MEPS 2004 Appendix File, HC-085I, provides examples of how to merge other MEPS data files.

5.2 Linking the 2004 Dental File to the 2004 Prescribed Medicines File

Due to survey design issues, there are limitations/caveats that data users/analysts must keep in mind when linking the different files. These limitations/caveats are listed below. For detailed linking examples, including SAS code, data users/analysts should refer to the MEPS 2004 Appendix File, HC-085I.

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 2004 Prescribed Medicine Event File. When using RXLK, data users/analysts should keep in mind that one dental visit can link to more than one prescribed medicine record. Conversely, a prescribed medicine event may link to more than one dental 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.

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D. VARIABLE-SOURCE CROSSWALK

VARIABLE-SOURCE CROSSWALK

FOR MEPS HC-085B: 2004 DENTAL 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
FFEEIDX	Flat fee ID	CAPI derived

Dental Events Variables

Variable	Description	Source
DVDATEYR	Event date – year	CAPI derived
DVDATEMM	Event date – month	CAPI derived
DVDATEDD	Event date – day	CAPI derived
GENDENT	General dentist seen	DN03
DENTHYG	Dental hygienist seen	DN03
DENTTECH	Dental technician seen	DN03
DENTSURG	Dental surgeon seen	DN03
ORTHODNT	Orthodontist seen	DN03
ENDODENT	Endodontist seen	DN03
PERIODNT	Periodontist seen	DN03
DENTYPE	Other dental specialist seen	DN03
EXAMINE	General exam or consultation	DN04
CLENTETX	Edited CLENTETH	DN04 (Edited)
CLENTETH	Cleaning, prophylaxis, or polishing	DN04

Variable	Description	Source
JUSTXRYX	Edited JUSTXRAY	DN04 (Edited)
JUSTXRAY	X-rays, radiographs or bitewings	DN04
FLUORIDE	Fluoride treatment	DN04
SEALANTX	Edited SEALANT	DN04 (Edited)
SEALANT	Sealant application	DN04
FILLINGX	Edited FILLING	DN04 (Edited)
FILLING	Fillings	DN04
INLAY	Inlays	DN04
CROWNSX	Edited CROWNS	DN04 (Edited)
CROWNS	Crowns or caps	DN04
ROOTCANX	Edited ROOTCANL	DN04 (Edited)
ROOTCANL	Root canal	DN04
GUMSURGX	Edited GUMSURG	DN04 (Edited)
GUMSURG	Periodontal scaling, root planing or gum	DN04
RECLVISX	Edited RECLVIS	DN04 (Edited)
RECLVIS	Periodontal recall visit	DN04
EXTRACT	Extraction, tooth pulled	DN04
IMPLANTX	Edited IMPLANT	DN04 (Edited)
IMPLANT	Implants	DN04
ABSCCESS	Abscess or infection treatment	DN04
ORALSURX	Edited ORALSURG	DN04 (Edited)
ORALSURG	Oral surgery	DN04
BRIDGESX	Edited BRIDGES	DN04 (Edited)
BRIDGES	Bridges	DN04
DENTUREX	Edited DENTURES	DN04 (Edited)
DENTURES	Dentures or partial dentures	DN04
REPAIRX	Edited REPAIR	DN04 (Edited)
REPAIR	Repair of bridges/dentures or relining	DN04

Variable	Description	Source
ORTHDONX	Edited ORTHDONT	DN04 (Edited)
ORTHDONT	Orthodontia, braces or retainers	DN04
WHITENX	Edited WHITEN	DN04 (Edited)
WHITEN	Bonding, whitening or bleaching	DN04
TMDTMJ	Treatment for TMD or TMJ	DN04
DENTPROX	Edited DENTPROC	DN04OV (Edited)
DENTPROC	Other dental procedures	DN04OV
DENTOTHX	Edited DENTOTHR	DN04OV (Edited)
DENTOTHR	Other specified dental procedures	DN04OV
DENTMED	Received medicine including free sample	DN05

Flat Fee Variables

Variable	Description	Source
FFDVTYPE	Flat fee bundle	Constructed
FFBEF04	Total # of visits in FF before 2004	FF05
FFTOT05	Total # of visits in FF after 2004	FF10

Imputed Expenditure Variables

Variable	Description	Source
DVSF04X	Amount paid, self/family (Imputed)	CP Section (Edited)
DVMR04X	Amount paid, Medicare (Imputed)	CP Section (Edited)
DVMD04X	Amount paid, Medicaid (Imputed)	CP Section (Edited)
DVPV04X	Amount paid, private insurance (Imputed)	CP Section (Edited)
DVVA04X	Amount paid, Veterans Administration (Imputed)	CP Section (Edited)
DVTR04X	Amount paid, TRICARE (Imputed)	CP Section (Edited)
DVOF04X	Amount paid, other federal (Imputed)	CP Section (Edited)
DVSL04X	Amount paid, state & local government (Imputed)	CP Section (Edited)

Variable	Description	Source
DVWC04X	Amount paid, workers comp (Imputed)	CP Section (Edited)
DVOR04X	Amount paid, other private (Imputed)	Constructed
DVOU04X	Amount paid, other public (Imputed)	Constructed
DVOT04X	Amount paid, other insurance (Imputed)	CP Section (Edited)
DVXP04X	Sum of DVSF04X – DVOT04X (Imputed)	Constructed
DVTC04X	Household reported total charge (Imputed)	CP Section (Edited)
IMPFLAG	Imputation status	Constructed

Weights

Variable	Description	Source
PERWT04F	Expenditure File Person Weight, 2004	Constructed
VARSTR	Variance estimation stratum, 2004	Constructed
VARPSU	Variance estimation PSU, 2004	Constructed