

**MEPS HC-094B:
2005 Dental Visits**

August 2007

**Agency for Healthcare Research and Quality
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Table of Contents

A. Data Use Agreement	A-1
B. Background	B-1
1.0 Household Component	B-1
2.0 Medical Provider Component.....	B-1
3.0 Survey Management and Data Collection.....	B-2
C. Technical and Programming Information.....	C-1
1.0 General Information	C-1
2.0 Data File Information	C-2
2.1 Codebook Structure.....	C-3
2.2 Reserved Codes	C-4
2.3 Codebook Format	C-4
2.4 Variable Source and Naming Conventions	C-4
2.4.1 Variable - Source Crosswalk	C-4
2.4.2 Expenditure and Sources of Payment Variables.....	C-5
2.5 File Contents	C-6
2.5.1 Survey Administration Variables	C-6
2.5.1.1 Person Identifiers (DUID, PID, DUPERSID)	C-6
2.5.1.2 Record Identifiers (EVNTIDX, FFEEIDX)	C-6
2.5.1.3 Round Indicator (EVENTRN).....	C-6
2.5.1.4 Panel Indicator (PANEL)	C-7
2.5.2 Dental Event Variables	C-7
2.5.2.1 Date of Visit (DVDATEYR – DVDATEDD).....	C-7
2.5.2.2 Type of Provider Seen (GENDENT - DENTYPE)	C-7
2.5.2.3 Treatment, Procedures, and Services (EXAMINE - DENTMED)	C-7
2.5.3 Flat Fee Variables (FFEEIDX, FFDVTYPE, FFBEF05, FFTOT06).....	C-7
2.5.3.1 Definition of Flat Fee Payments	C-7
2.5.3.2 Flat Fee Variable Descriptions	C-8
2.5.3.2.1 Flat Fee ID (FFEEIDX).....	C-8
2.5.3.2.2 Flat Fee Type (FFDVTYPE).....	C-8
2.5.3.2.3 Counts of Flat Fee Events that Cross Years (FFBEF05, FFTOT06).....	C-8
2.5.3.3 Caveats of Flat Fee Groups.....	C-9
2.5.4 Condition, Procedure, and Clinical Classification Codes.....	C-9
2.5.5 Expenditure Data	C-9
2.5.5.1 Definition of Expenditures	C-9
2.5.5.2 Data Editing and Imputation Methodologies of Expenditure Variables	C-10
2.5.5.2.1 General Data Editing Methodology	C-10

2.5.5.2.2	General Hot-Deck Imputation.....	C-10
2.5.5.2.3	Dental Data Editing and Imputation.....	C-11
2.5.5.3	Imputation Flag Variable (IMPFLAG).....	C-12
2.5.5.4	Flat Fee Expenditures	C-12
2.5.5.5	Zero Expenditures.....	C-12
2.5.5.6	Sources of Payment	C-13
2.5.5.7	Dental Expenditure Variables (DVSF05X-DVTC05X).....	C-14
2.5.5.8	Rounding.....	C-14
3.0	Sample Weight (PERWT05F).....	C-14
3.1	Overview	C-14
3.2	Details on Person Weight Construction	C-15
3.2.1	MEPS Panel 9 Weight	C-15
3.2.2	MEPS Panel 10 Weight	C-16
3.2.3	The Final Weight for 2005	C-16
3.2.4	Coverage	C-17
3.3	Using MEPS Data for Trend Analysis	C-17
4.0	Strategies for Estimation	C-17
4.1	Developing Event-Level Estimates	C-17
4.2	Person-Based Estimates for Dental Care	C-20
4.3	Variables with Missing Values	C-20
4.4	Variance Estimation (VARPSU, VARSTR).....	C-20
5.0	Merging/Linking MEPS Data Files.....	C-21
5.1	Linking to the Person-Level File.....	C-21
5.2	Linking to the Prescribed Medicines File	C-22
5.3	Linking to the Medical Conditions File	C-22
5.4	Pooling Annual Files.....	C-23
5.5	Longitudinal Analysis	C-23
References.....		C-24
D. Variable-Source Crosswalk		D-1

A. Data Use Agreement

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

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

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

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

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

B. Background

1.0 Household Component

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

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

The set of households selected for each panel of the MEPS HC is a subsample of households participating in the previous year's National Health Interview Survey (NHIS) conducted by the National Center for Health Statistics. The NHIS sampling frame provides a nationally representative sample of the U.S. civilian non-institutionalized population and reflects an oversample of blacks and Hispanics. MEPS oversamples additional policy relevant sub-groups such as Asians and low income households. The linkage of the MEPS to the previous year's NHIS provides additional data for longitudinal analytic purposes.

2.0 Medical Provider Component

Upon completion of the household CAPI interview and obtaining permission from the household survey respondents, a sample of medical providers are contacted by telephone to obtain information that household respondents can not accurately provide. This part of the MEPS is called the Medical Provider Component (MPC) and information is collected on dates of visit, diagnosis and procedure codes, charges and payments. The Pharmacy Component (PC), a subcomponent of the MPC, does not collect charges or diagnosis and procedure codes but does collect drug detail information, including National Drug Code (NDC) and medicine name, as well as date filled and sources and amounts of payment.

The MPC is not designed to yield national estimates. It is primarily used as an imputation source to supplement/replace household reported expenditure information.

3.0 Survey Management and Data Collection

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

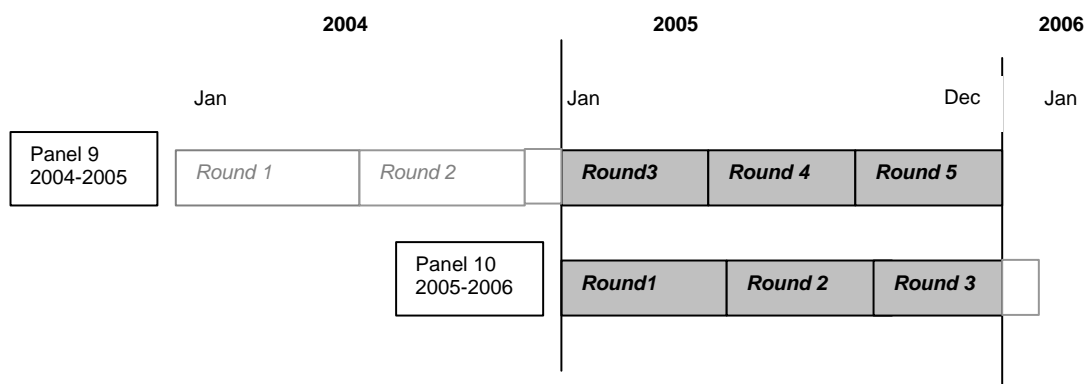
As soon as data collection and editing are completed, the MEPS survey data are released to the public in staged releases of summary reports, micro data files, and tables via the MEPS Web site: www.meps.ahrq.gov. Selected data can be analyzed through MEPSnet, an on-line interactive tool designed to give data users the capability to statistically analyze MEPS data in a menu-driven environment.

Additional information on MEPS is available from the MEPS project manager or the MEPS public use data manager at the Center for Financing Access and Cost Trends, Agency for Healthcare Research and Quality, 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 2005 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 2005 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 2005. The file contains 79 variables and has a logical record length of 314 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 2005 portion of Round 3 and Rounds 4 and 5 for Panel 9, as well as Rounds 1, 2 and the 2005 portion of Round 3 for Panel 10 (i.e., the rounds for the MEPS panels covering calendar year 2005).



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 2005 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 2005 Full Year Consolidated Data File where each record represents a MEPS sampled person.

This document 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: www.meeps.ahrq.gov.

2.0 Data File Information

The 2005 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 2005 Dental public use data set contains 28,464 dental event records; of these records, 28,003 are associated with persons having a positive person-level weight (PERWT05F). 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 2005. Dental visits known to have occurred before January 1, 2005 and after December 31, 2005 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 2005 portion of Round 3, and Rounds 4 and 5 for Panel 9, as well as Rounds 1, 2, and the 2005 portion of Round 3 for Panel 10 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 2005 eligibility (i.e., persons with a positive 2005 full-year person-level weight (PERWT05F > 0)), or
- b) Be an eligible member of a family all of whose key in-scope members have a positive person-level weight (PERWT05F > 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 (FAMWT05F > 0). Note that FAMIDYR and FAMWT05F are variables on the 2005 Population Characteristics file.

Persons with no dental events for 2005 are not included on this event-level DV file but are represented on the person-level 2005 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 2005 Full Year Population Characteristics File using the 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 2005 Prescribed Medicine File. Please see section 5.0 or the 2005 Appendix for details on how to merge MEPS data files.

Analysts should use the clinical classification codes listed in the Conditions PUF document (HC-096) and the Appendix to the Event Files (HC-094I) document when analyzing MEPS conditions data. Although there is a list of clinical classification codes and labels on the Healthcare Cost and Utilization Project (HCUP) Web site, if updates to these codes and/or labels are made on the HCUP Web site after the release of the 2005 MEPS PUFs, these updates will not be reflected in the 2005 MEPS data.

2.1 Codebook Structure

For each variable on the Dental event file, both weighted and unweighted frequencies are provided in the accompanying codebook. 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

Note that the person identifier is unique within this data year. See the section on pooling annual files, 5.4, for details.

2.2 Reserved Codes

The following reserved code values are used:

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

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

2.3 Codebook Format

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

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

2.4 Variable Source and Naming Conventions

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

2.4.1 Variable - Source Crosswalk

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

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

2.4.2 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/CHAMPVA	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 (05). The seventh character, “X”, indicates the variable is edited/imputed.

For example, DVSF05X is the edited/imputed amount paid by self or family for 2005 dental expenditures.

2.5 File Contents

2.5.1 Survey Administration Variables

2.5.1.1 Person Identifiers (DUID, PID, DUPERSID)

The dwelling unit ID (DUID) is a five-digit random number assigned after the case was sampled for MEPS. The three-digit person number (PID) uniquely identifies each person within the dwelling unit. The eight-character variable DUPERSID uniquely identifies each person represented on the file and is the combination of the variables DUID and PID. For detailed information on dwelling units and families, please refer to the documentation for the 2005 Full Year Population Characteristics File.

2.5.1.2 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 2005 Prescribed Medicines file). For details on linking see Section 5.0 or the MEPS 2005 Appendix File, HC-094I.

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.

2.5.1.3 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 9. Likewise, Rounds 1, 2, and 3 (partial) are associated with data collected from Panel 10.

2.5.1.4 Panel Indicator (PANEL)

PANEL is a constructed variable used to specify the panel number for the person. PANEL will indicate either Panel 9 or Panel 10 for each person on the file. Panel 9 is the panel that started in 2004, and Panel 10 is the panel that started in 2005.

2.5.2 Dental Event Variables

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

2.5.2.1 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.

2.5.2.2 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.

2.5.2.3 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.

2.5.3 Flat Fee Variables (FFEEIDX, FFDVTYPE, FFBEF05, FFTOT06)

2.5.3.1 Definition of Flat Fee Payments

A flat fee is the fixed dollar amount a person is charged for a package of services provided during a defined period of time. 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 2005. By definition, a flat fee group can span multiple years. Furthermore, a single person can have multiple flat fee groups.

2.5.3.2 Flat Fee Variable Descriptions

2.5.3.2.1 Flat Fee ID (FFEEIDX)

As noted earlier in Section 2.5.1.2 “Record Identifiers,” the variable FFEEIDX uniquely identifies all events that are part of the same flat fee group for a person. On any 2005 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.

2.5.3.2.2 Flat Fee Type (FFDVTYPE)

FFDVTYPE indicates whether the 2005 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”.

2.5.3.2.3 Counts of Flat Fee Events that Cross Years (FFBEF05, FFTOT06)

As described in Section 2.5.3.1, a flat fee payment covers multiple events and the multiple events could span multiple years. For situations where a 2005 dental visit is part of a group of events, and some of the events occurred before or after 2005, counts of the known events are provided on the dental record. Variables that indicate events occurring before or after 2005 are the following:

FFBEF05 – indicates total number of pre-2005 events in the same flat fee group as the 2005 dental event. This count would not include 2005 dental events.

FFTOT06 – indicates the number of 2006 medical events expected to be in the same flat fee group as the 2005 dental event record.

If there are no 2004 events on the file, FFBEF05 will be omitted. Likewise, if there are no 2006 events on the file, FFTOT06 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.

2.5.3.3 Caveats of Flat Fee Groups

Data users/analysts should note that flat fee payments are common on the dental file. There are 4,353 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 2005, but the remaining visits that were part of this flat fee group occurred in 2006. In this case, the 2005 flat fee group represented on this file would consist of one event (the stem). The 2006 “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 2004 but subsequent visits occurred during 2005. In this case, the initial visit would not be represented on the file. This 2005 flat fee group would then only consist of one or more leaf records and no stem.

2.5.4 Condition, Procedure, and Clinical Classification Codes

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

2.5.5 Expenditure Data

2.5.5.1 Definition of Expenditures

Expenditures on this file refer to what is paid for 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 www.meps.ahrq.gov/data_stats/onsite_datacenter.jsp. If examining trends in MEPS expenditures or performing longitudinal analysis on MEPS expenditures, please refer to section C, sub-section 3.3 for more information.

2.5.5.2 Data Editing and Imputation Methodologies of Expenditure Variables

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

2.5.5.2.1 General Data Editing Methodology

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

2.5.5.2.2 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.

2.5.5.2.3 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 2.5.3 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).

2.5.5.3 Imputation Flag Variable (IMPFLAG)

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

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

IMPFLAG=1 complete HC data

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

IMPFLAG=3 fully imputed

IMPFLAG=4 partially imputed

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

2.5.5.4 Flat Fee Expenditures

The approach used to count expenditures for flat fees was to place the expenditure on the first visit of the flat fee group. The remaining visits have zero payments. Thus, if the first visit in the flat fee group occurred prior to 2005, all of the events that occurred in 2005 will have zero payments. Conversely, if the first event in the flat fee group occurred at the end of 2005, the total expenditure for the entire flat fee group will be on that event, regardless of the number of events it covered after 2005. See Section 2.5.3 for details on the flat fee variables.

2.5.5.5 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) the visit was covered under a flat fee arrangement (flat fee payments are included only on the first event covered by the arrangement), (2) there was no charge for a follow-up visit, (3) the provider was never paid directly for services provided by an individual, insurance plan, or other source, (4) charges were included in another bill, or (5) event was paid through government or privately funded research or clinical trial. If all of the medical events for a person fell into one of these categories, then the total annual expenditures for that person would be zero.

2.5.5.6 Sources of Payment

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

1. Out-of-pocket by user or family,
2. Medicare,
3. Medicaid,
4. Private Insurance,
5. Veterans Administration, excluding TRICARE/CHAMPVA,
6. TRICARE/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. 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.

2.5.5.7 Dental Expenditure Variables (DVSF05X- DVTC05X)

DVSF05X - DVOT05X are the 12 sources of payment. DVTC05X is the total charge, and DVXP05X is the sum of the 12 sources of payment for the Dental expenditures. The 12 sources of payment are: self/family (DVSF05X), Medicare (DVMR05X), Medicaid (DVMD05X), private insurance (DVPV05X), Veterans Administration (DVVA05X), TRICARE/CHAMPVA (DVTR05X), other Federal sources (DVOF05X), State and Local (non-federal) government sources (DVSL05X), Workers' Compensation (DVWC05X), other private insurance (DVOR05X), other public insurance (DVOU05X), and other insurance (DVOT05X).

2.5.5.8 Rounding

Expenditure variables on the 2005 dental file have been rounded to the nearest penny. Person-level expenditure information to be released on the MEPS 2005 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 2005 Appendix File, HC-094I, for details on such rounding differences.

3.0 Sample Weight (PERWT05F)

3.1 Overview

There is a single full year person-level weight (PERWT05F) 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 2005. 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 PERWT05F was developed in several stages. Person-level weights for Panels 9 and 10 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 2005 composite weight was then formed by multiplying each weight from Panel 9 by the factor .5 and each weight from Panel 10 by the factor .5. 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 9 Weight

The person-level weight for MEPS Panel 9 was developed using the 2004 full year weight for an individual as a “base” weight for survey participants present in 2004. For key, in-scope respondents who joined an RU some time in 2005 after being out-of-scope in 2004, the 2004 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 2005. These control figures were derived by scaling back the population totals obtained from the March 2005 CPS to correspond to a national estimate for the civilian noninstitutionalized population provided by the Census Bureau for December 2005. 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, 2005 is 292,372,718. Key, responding persons not in-scope on December 31, 2005 but in-scope earlier in the year retained, as their final Panel 9 weight, the weight after the nonresponse adjustment.

3.2.2 MEPS Panel 10 Weight

The person-level weight for MEPS Panel 10 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 2005 portion of Round 3 as well as raking to the same population control figures for December 2005 used for the MEPS Panel 9 weights. The same five variables employed for Panel 9 raking (census region, MSA status, race/ethnicity, sex, and age) were used for Panel 10 raking. Similarly, for Panel 10, key, responding persons not in-scope on December 31, 2005 but in-scope earlier in the year retained, as their final Panel 10 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 2005 CPS data base.

3.2.3 The Final Weight for 2005

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, 2005 is 292,372,718 (PERWT05F>0 and INSC1231=1). The weights of some persons out-of-scope on December 31, 2005 were also calibrated, this time using poststratification. Specifically, the weights of persons out-of-scope on December 31, 2005 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 2005 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 292,372,718.

3.2.4 Coverage

The target population for MEPS in this file is the 2005 U.S. civilian noninstitutionalized population. However, the MEPS sampled households are a subsample of the NHIS households interviewed in 2003 (Panel 9) and 2004 (Panel 10). New households created after the NHIS interviews for the respective Panels and consisting exclusively of persons who entered the target population after 2003 (Panel 9) or after 2004 (Panel 10) are not covered by MEPS. Neither are previously out-of-scope persons who join an existing household but are unrelated to the current household residents. Persons not covered by a given MEPS panel thus include some members of the following groups: immigrants; persons leaving the military; U.S. citizens returning from residence in another country; and persons leaving institutions. The set of uncovered persons constitutes only a small segment of the MEPS target population.

3.3 Using MEPS Data for Trend Analysis

MEPS began in 1996, and the utility of the survey for analyzing health care trends expands with each additional year of data. However, 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 may be attributable to sampling variation. The length of time being analyzed should also be considered. In particular, large shifts in survey estimates over short periods of time (e.g. from one year to the next) that are statistically significant should be interpreted with caution, unless they are attributable to known factors such as changes in public policy, economic conditions, or MEPS survey methodology. 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 analyses of trends using MEPS data such as comparing pooled time periods (e.g. 1996-97 versus 2004-05), working with moving averages, or using modeling techniques with several consecutive years of MEPS data to test the fit of specified patterns over time. Finally, researchers should be aware of the impact of multiple comparisons on Type I error. Without making appropriate allowance for multiple comparisons, undertaking numerous statistical significance tests of trends increases the likelihood of inappropriately concluding that a change has taken place.

4.0 Strategies for Estimation

4.1 Developing Event-Level Estimates

The data in this file can be used to develop national 2005 event-level estimates for the U.S. civilian noninstitutionalized population on dental visits as well as expenditures, and sources of payment for these visits. The weight assigned to each dental visit reported is the person-level weight of the person who visited the dentist. If a person reported several visits, each visit is assigned that individual's person-level weight. Estimates of total visits are the sum of the weight variable (PERWT05F) across relevant event records

while estimates of other variables must be weighted by PERWT05F to be nationally representative. For example, the appropriate estimate for the mean out-of-pocket payment per dental visit can be represented as follows (the subscript ‘j’ identifies each event and represents a numbering of events from 1 through the total number of events in the file):

$$(\sum W_j X_j)/(\sum W_j), \text{ where,}$$

$W_j = \text{PERWT05F}_j$ (full year person weight for the person associated with event j), and

$X_j = \text{DVSF05X}_j$ (amount paid by self/family for event j)

Estimates and corresponding standard errors (SE) can be derived using an appropriate computer software package for complex survey analysis such as SAS, Stata, SUDAAN or SPSS (www.meps.ahrq.gov/survey_comp/standard_errors.jsp). The tables below contain the correct event-level estimates for several key variables on this file.

Selected Event-Level Estimates

Visits

Estimate of Interest	Variable Name	Estimate (SE)	Estimate (SE) Excluding 0s
Total number of dental visits (in millions)	PERWT05F	307.1 (8.87)	258.1 (7.24)
Proportion of dental visits with expenditures > 0*	DVXP05X	0.841 (0.0054)	-----

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

Expenditures

Estimate of Interest	Variable Name	Estimate (SE)	Estimate (SE) Excluding 0s
Mean total payments per visit	DVXP05X	\$236 (\$4.5)	\$281 (\$5.5)
Mean out-of-pocket payment per visit	DVSF05X	\$116 (\$3.4)	\$138 (\$4.2)
Mean proportion of total expenditures paid by private insurance per visit	DVPV05X /DVXP05X	-----	0.478 (0.0071)

Expenditures: Dental Hygienist Visits (DENTHYG = 1)

Estimate of Interest	Variable Name	Estimate (SE)	Estimate (SE) Excluding 0s
Mean total payments per visit where person saw hygienist	DVXP05X	\$155 (\$4.3)	\$160 (\$4.5)
Mean out-of-pocket payment per visit where person saw hygienist	DVSF05X	\$60 (\$2.7)	\$62 (\$2.8)
Mean proportion of total expenditures per visit paid by private insurance where person saw hygienist	DVPV05X /DVXP05X	-----	0.571 (0.0106)

4.2 Person-Based Estimates for Dental Care

To enhance analyses of dental care, analysts may link information about dental visits by sample persons in this file to the annual full year consolidated file (which has data for all MEPS sample persons), or conversely, link person-level information from the full year consolidated file to this event level file (see section 5 below for more details). Both this file and the full year consolidated file may be used to derive estimates for persons with dental care and annual estimates of total expenditures. However, if the estimate 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. Therefore, the full year consolidated file must be used for person-level analyses that include both persons with and without dental care.

4.3 Variables with Missing Values

It is essential that the analyst examine all variables for the presence of negative values used to represent missing values. For continuous or discrete variables, where means or totals may be estimated, it may be necessary to set negative values to values appropriate to the analytic needs. That is, the analyst should either impute a value or set the value to one that will be interpreted as missing by the 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 include or exclude such cases in the numerator and/or denominator when calculating proportions.

Methodologies used for the editing/imputation of expenditure variables (e.g., sources of payment, flat fee, and zero expenditures) are described in Section 2.5.4.2.

4.4 Variance Estimation (VARPSU, VARSTR)

MEPS has a complex sample design. To obtain estimates of variability (such as the standard error of sample estimates or corresponding confidence intervals) for MEPS estimates, analysts need to take into account the complex sample design of MEPS for both person-level and family-level analyses. Several methodologies have been developed for estimating standard errors for surveys with a complex sample design, including the Taylor-series linearization method, balanced repeated replication, and jackknife replication. Various software packages provide analysts with the capability of implementing these methodologies. Replicate weights have not been developed for the MEPS data. Instead, the variables needed to calculate appropriate standard errors based on the Taylor-series linearization method are included on this file as well as all other MEPS public use files. Software packages that permit the use of the Taylor-series linearization method include SUDAAN, Stata, SAS (version 8.2 and higher), and SPSS (version 12.0 and higher). For complete information on the capabilities of each package, analysts should refer to the corresponding software user documentation.

- 1) Create data set PERSX by sorting the 2005 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 2005 Appendix File, HC-094I, provides examples of how to merge other MEPS data files.

5.2 Linking to the Prescribed Medicines File

The RXLK file provides a link from the MEPS event files to the 2005 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. For detailed linking examples, including SAS code, data users/analysts should refer to the MEPS 2005 Appendix File, HC-094I.

5.3 Linking to the Medical Conditions File

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

5.4 Pooling Annual Files

To facilitate analysis of subpopulations and/or low prevalence events, it may be desirable to pool together more than one year of data to yield sample sizes large enough to generate reliable estimates. For more details on pooling MEPS data files see www.meps.ahrq.gov/data_stats/download_data_files_detail.jsp?cboPufNumber=HC-036.

Starting in Panel 9, values for DUPERSID from previous panels will occasionally be re-used. Therefore, it is necessary to use the panel variable (PANEL) in combination with DUPERSID to ensure unique person-level identifiers across panels. Creating unique records in this manner is advised when pooling MEPS data across multiple annual files that have one or more identical values for DUPERSID.

5.5 Longitudinal Analysis

MEPS Panel Longitudinal Weight files containing estimation variables to facilitate longitudinal analysis are available for downloading in the data section of the MEPS Web site.

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D. VARIABLE-SOURCE CROSSWALK

VARIABLE-SOURCE CROSSWALK

FOR MEPS HC-094B: 2005 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
PANEL	Panel Number	Constructed

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)

Variable	Description	Source
CLENTETH	Cleaning, prophylaxis, or polishing	DN04
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
ABCESS	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)

Variable	Description	Source
REPAIR	Repair of bridges/dentures or relining	DN04
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
FFBEF05	Total # of visits in FF before 2005	FF05
FFTOT06	Total # of visits in FF after 2005	FF10

Imputed Expenditure Variables

Variable	Description	Source
DVSF05X	Amount paid, self/family (Imputed)	CP Section (Edited)
DVMR05X	Amount paid, Medicare (Imputed)	CP Section (Edited)
DVMD05X	Amount paid, Medicaid (Imputed)	CP Section (Edited)
DVPV05X	Amount paid, private insurance (Imputed)	CP Section (Edited)
DVVA05X	Amount paid, Veterans Administration (Imputed)	CP Section (Edited)
DVTR05X	Amount paid, TRICARE/CHAMPVA (Imputed)	CP Section (Edited)
DVOF05X	Amount paid, other federal (Imputed)	CP Section (Edited)

Variable	Description	Source
DVSL05X	Amount paid, state & local government (Imputed)	CP Section (Edited)
DVWC05X	Amount paid, workers' comp (Imputed)	CP Section (Edited)
DVOR05X	Amount paid, other private (Imputed)	Constructed
DVOU05X	Amount paid, other public (Imputed)	Constructed
DVOT05X	Amount paid, other insurance (Imputed)	CP Section (Edited)
DVXP05X	Sum of DVSF05X – DVOT05X (Imputed)	Constructed
DVTC05X	Household reported total charge (Imputed)	CP Section (Edited)
IMPFLAG	Imputation status	Constructed

Weights

Variable	Description	Source
PERWT05F	Expenditure File Person Weight, 2005	Constructed
VARSTR	Variance estimation stratum, 2005	Constructed
VARPSU	Variance estimation PSU, 2005	Constructed