MEPS HC-220A:
2020 Prescribed Medicines

July 2022

Due to the COVID-19 pandemic, changes were made to the 2020 MEPS data collection that analysts should keep in mind when doing trend analysis and pooling years of data. 1) The MEPS moved primarily to a phone rather than in-person survey. 2) Panels 23 and 24 were extended to nine rounds (four years) of data collection as opposed to the historical five rounds (two years). Because of the unforeseeable nature of the pandemic, data collection for 2020 included Round 5 interviews for Panel 23 that were fielded under the assumption that that interview would be the panel's last interview. Researchers using variables related to the first interview of the calendar year should read the documentation for their specific variables to understand the sources of the values for Panel 23.

Agency for Healthcare Research and Quality
Center for Financing, Access, and Cost Trends
5600 Fishers Lane
Rockville, MD 20857
(301) 427-1406

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A. Data Use Agreement

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

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

1. No one is to use the data in this data set in any way except for statistical reporting and analysis; and

2. If the identity of any person or establishment should be discovered inadvertently, then (a) no use will be made of this knowledge, (b) the Director Office of Management AHRQ will be advised of this incident, (c) the information that would identify any individual or establishment will be safeguarded or destroyed, as requested by AHRQ, and (d) no one else will be informed of the discovered identity; and

3. No one will attempt to link this data set with individually identifiable records from any data sets other than the Medical Expenditure Panel Survey or the National Health Interview Survey. Furthermore, linkage of the Medical Expenditure Panel Survey and the National Health Interview Survey may not occur outside the AHRQ Data Center, NCHS Research Data Center (RDC) or the U.S. Census RDC network.

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

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

B. Background

1.0 Household Component (HC)

The Medical Expenditure Panel Survey (MEPS) provides nationally representative estimates of health care use, expenditures, sources of payment, and health insurance coverage for the U.S. civilian noninstitutionalized population. The MEPS Household Component (HC) also provides estimates of respondents' health status, demographic and socio-economic characteristics, employment, access to care, and satisfaction with health care. Estimates can be produced for individuals, families, and selected population subgroups. The panel design of the survey, which includes 5 Rounds of interviews covering 2 full calendar years (and two additional rounds in 2020 covering a third year to compensate for the smaller number of completed interviews in Panel 25), 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 (NCHS). The NHIS sampling frame provides a nationally representative sample of the U.S. civilian noninstitutionalized population. In 2006, the NHIS implemented a new sample design, which included Asian persons in addition to households with Black and Hispanic persons in the oversampling of minority populations. NHIS introduced a new sample design in 2016 that discontinued oversampling of these minority groups.

2.0 Medical Provider Component (MPC)

Upon completion of the household CAPI interview and obtaining permission from the household survey respondents, a sample of medical providers are contacted by telephone to obtain information that household respondents cannot accurately provide. This part of the MEPS is called the Medical Provider Component (MPC) and information is collected on dates of visits, diagnosis and procedure codes, charges and payments. The Pharmacy Component (PC), a subcomponent of the MPC, does not collect charges or diagnosis and procedure codes but does collect drug detail information, including National Drug Code (NDC) and medicine name, as well as amounts of payment. The MPC is not designed to yield national estimates. It is primarily used as an imputation source to supplement/replace household-reported expenditure information.

3.0 Survey Management and Data Collection

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

As soon as data collection and editing are completed, the MEPS survey data are released to the public in staged releases of micro data files and tables via the MEPS website.

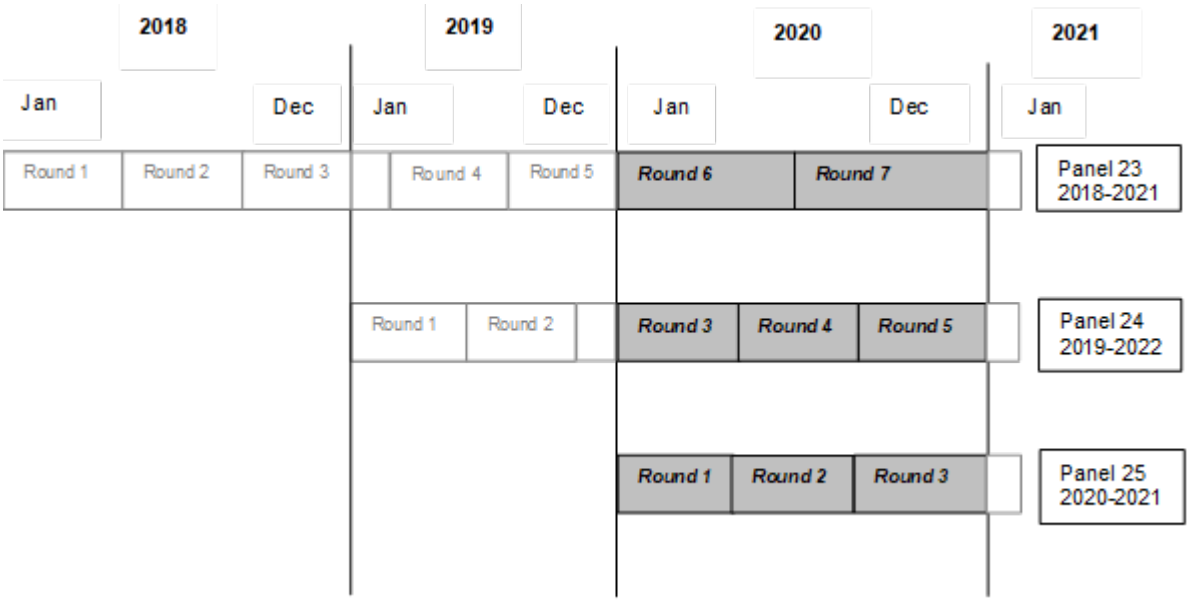
Additional information on MEPS is available from the MEPS project manager or the MEPS public use data manager at the Center for Financing Access and Cost Trends, Agency for Healthcare Research and Quality, 5600 Fishers Lane, Rockville, MD 20857 (301-427-1406).

C. Technical Information

1.0 General Information

This documentation describes one in a series of public use event files from the 2020 Medical Expenditure Panel Survey (MEPS) Household Component (HC) and Medical Provider Component (MPC). Released as an ASCII data file (with related SAS, SPSS, Stata, and R programming statements and data user information) and SAS data set, SAS transport file, Stata data set, and Excel file, the 2020 Prescribed Medicines public use file provides detailed information on household-reported prescribed medicines for a nationally representative sample of the civilian noninstitutionalized population of the United States. Data from the Prescribed Medicines event file can be used to make estimates of retail prescribed medicine utilization and expenditures for calendar year 2020. The file contains 64 variables and has a logical record length of 587 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 Round 6 and the 2020 portion of Round 7 for Panel 23; the 2020 portions of Rounds 3 and 5 and all of Round 4 for Panel 24; and Rounds 1, 2 and the 2020 portion of Round 3 for Panel 25 (i.e., the rounds for the MEPS panels covering calendar year 2020).

Full year (FY) 2020 is the first data year to include three panels of data; Panel 23 was extended to include Rounds 6 and 7.



Each record on this event file represents a unique prescribed medicine event; that is, a prescribed medicine reported by the respondent as being obtained by a member of the household at any pharmacy, including mail-order or on-line. In addition to expenditures related to the prescribed medicine, each record contains household-reported characteristics.

Data from this event file can be merged with other 2020 MEPS HC data files, for purposes of appending person characteristics such as demographic or health insurance coverage to each prescribed medicine record.

Counts of prescribed medicine utilization are based entirely on household reports. Information from the Pharmacy Component (PC) (within the MEPS MPC, see Section B 2.0 for more details on the MPC) was used to provide expenditure and payment data, as well as details of the medication (e.g., strength, quantity, etc.).

The file can be used to construct summary variables of expenditures, sources of payment, and other aspects of utilization of prescribed medicines. Aggregate annual person-level information on the use of prescribed medicines and other health services use is provided on the 2020 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 files and the codebook. It contains the following sections:

- Data File Information
- Survey Sample Information
- General Data Editing and Imputation Methodology
- Strategies for Estimation
- Merging/Linking MEPS Data Files
- References
- Variable-Source Crosswalk

For more information on the MEPS HC sample design, see Chowdhury et al (2019). For information on the MEPS MPC design, see RTI (2019). A copy of the survey instrument used to collect the information on this file is available on the MEPS website.

2.0 Data File Information

The 2020 Prescribed Medicines public use data set contains 279,755 prescribed medicine records. Each record represents one household-reported prescribed medicine that was purchased during calendar year 2020 at any pharmacy, including mail-order or on-line. Of the 279,755 prescribed medicine records, 275,857 records are associated with persons having a positive person-level weight (PERWT20F). 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 2020 eligibility (i.e., persons with a positive 2020 full-year person-level weight (PERWT20F > 0)), or

b) Be an eligible member of a family all of whose key in-scope members have a positive person-level weight (PERWT20F > 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 (FAMWT20F > 0). Note that FAMIDYR and FAMWT20F are variables on the 2020 Full Year Consolidated Data File.

Persons with no prescribed medicine use for 2020 are not included on this file (but are represented on MEPS person-level files). A codebook for the Prescribed Medicines data file is provided.

This file includes prescribed medicine records for all household members who resided in eligible responding households and for whom at least one prescribed medicine was reported. Only prescribed medicines that were obtained in calendar year 2020 are represented on this file. This file includes prescribed medicines identified in the Prescribed Medicines (PM) section of the HC survey instrument, as well as those prescribed medicines identified in association with other medical events. Each record on this file represents a single acquisition of a prescribed medicine reported by household respondents. Some household members may have multiple acquisitions of prescribed medicines and thus will be represented in multiple records on this file. Other household members may have no reported acquisitions of prescribed medicines and thus will have no records on this file.

Prior to Panel 21 Round 5 and Panel 22 Round 3, when diabetic supplies, such as syringes and insulin, were mentioned in the Other Medical Expenses (OM) section of the MEPS HC, the interviewer was directed to collect information on these items in the Prescribed Medicines section of the MEPS questionnaire. To the extent that these items are purchased without a prescription, they represent a non-prescription addition to the MEPS prescription drug expenditure and utilization data. Although these items may be purchased without a prescription, a prescription purchase may be required to obtain third party payments. Analysts are free to code and define diabetic supply/equipment and insulin events utilizing their own coding mechanism. If desired, this would enable analysts to subset the Prescribed Medicines file to exclude these types of events. Starting in Panel 21 Round 5 and Panel 22 Round 3, diabetic supply/equipment and insulin are no longer mentioned in the OM section but are mentioned and collected in the Prescribed Medicines section. Therefore, diabetic supply/equipment and insulin are collected as other Prescribed Medicines. The charges and payments are no longer collected for Prescribed Medicines in the MEPS Household Component.

It should also be noted that refills are included on this file. The HC obtains information on the name of the prescribed medicine and the number of times the medicine was obtained. The data collection design for the HC does not allow separate records to be created for multiple acquisitions of the same prescribed medicine. However, in the PC, each original purchase, as well as any refill, is considered a unique prescribed medicine event. Therefore, for the purposes of editing, imputation, and analysis, all records in the HC were “unfolded” to create separate records for each original purchase and each refill. Please note that for multiple acquisitions of the same drug, MEPS did not collect information in the HC to distinguish between the original purchase and refills. The survey only collected data on the number of times a prescribed medicine was acquired during a round. In some cases, all purchases may have been refills of an original purchase in a prior round or prior to the survey year.

Each record on this file includes the following: an identifier for each unique prescribed medicine; detailed characteristics associated with the event (e.g., national drug code (NDC), medicine name, selected Multum Lexicon variables [see Section 2.6.3 for more information on the Multum Lexicon variables included on this file], etc.); when the person first used the medicine; total expenditure and sources of payments; types of pharmacies that filled the household's prescriptions; and a full-year person-level weight.

Data from this file can be merged with previously released MEPS HC person-level data using the unique person identifier, DUPERSID, to append person characteristics such as demographic or health insurance coverage to each record. Data from this file can also be merged with the 2020 Full Year Consolidated Data File to estimate expenditures for persons with prescribed medicines. The Prescribed Medicines event file can also be linked to the MEPS 2020 Medical Conditions File and additional MEPS 2020 event files. Please see the 2020 Appendix File for details on how to link MEPS data files.

2.1 Codebook Structure

For most variables on the file, both weighted and unweighted frequencies are provided in the accompanying codebook. The exceptions to this are weight variables and variance estimation variables. Only unweighted frequencies of these variables are included in the accompanying codebook file. See the Weights Variables list in Section D, Variable-Source Crosswalk. The codebook and data file sequence list variables in the following order:

- Unique person identifiers
- Unique prescribed medicine identifiers
- Other survey administration variables
- Prescribed medicine characteristics variables
- Multum Lexicon variables
- Expenditure variables
- Weight and variance estimation variables

2.2 Reserved Codes

The following reserved code values are used:

Value	Definition
-1 INAPPLICABLE	Question was not asked due to skip pattern
-7 REFUSED	Question was asked and respondent refused to answer question

Value	Definition
-8 DK	Question was asked and respondent did not know answer or the information could not be ascertained
-14 NOT YET TAKEN/USED	Respondent answered that the medicine has not yet been used
-15 CANNOT BE COMPUTED	Value cannot be derived from data

The value -15 (CANNOT BE COMPUTED) is assigned to MEPS constructed variables in cases where there is not enough information from the MEPS instrument to calculate the constructed variables. “Not enough information” is often the result of skip patterns in the data or from missing information resulting from MEPS responses of -7 (REFUSED) or -8 (DK). Note that reserved code -8 includes cases where the information from the question was “not ascertained” or where the respondent chose “don’t know”.

Generally, values of -1, -7, -8 and -15 have not been edited on this file. However, this is not true if a prescription drug name was determined to be a confidentiality risk. In these instances, the corresponding NDC was replaced with -15, the Multum Lexicon therapeutic class replaced the RXDRGNAM (Multum drug name) determined to be a confidentiality risk, and RXNAME (pharmacy drug name) was set to -15. The values of -1 and -15 can be edited by analysts by following the skip patterns in the questionnaire. The value -14 was a valid value only for the variable representing the year the household member first used the medicine (RXBEGYRX). RXBEGYRX = -14 means that when the interviewer asked the respondent the year the household member first started using the medicine, he/she responded that the household member had not yet started using the medicine (See section C, 2.6.2).

A copy of the Household Component questionnaire can be found in the Survey Questionnaires section of the MEPS website and selecting Prescribed Medicines (PM) from the questionnaire section.

2.3 Codebook Format

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

Identifier	Description
Name	Variable name
Description	Variable descriptor
Format	Number of bytes
Type	Type of data: numeric (indicated by NUM) or character (indicated by CHAR)

Identifier	Description
Start	Beginning column position of variable in record
End	Ending column position of variable in record

2.4 Variable Naming Conventions

In general, variable names reflect the content of the variable. Generally, all imputed/edited variables end with an "X."

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

2.4.1 General

Variables contained on this file were derived from the HC questionnaire itself, the MPC data collection instrument, or from the Multum Lexicon database from Cerner Multum, Inc. The source of each variable is identified in Section D, entitled "Variable-Source Crosswalk." Sources for each variable are indicated in one of five ways:

1. Variables which are 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 numbers and the questionnaire section indicated in the "Source" column;

3. Variables constructed from multiple questions using complex algorithms are labeled "Constructed" in the "Source" column;

4. Variables which have been imputed are so indicated; and

5. Variables derived from the Multum Lexicon database are so indicated.

2.4.2 Expenditure and Source of Payment Variables

Only imputed/edited versions of the expenditure variables are provided on the file. Expenditure variables on this event file follow a standard naming convention.

The 10 source of payment variables and one sum of payments variable are named consistently in the following way:

The first two characters indicate the type of event:

IP - inpatient stay

OB - office-based visit

ER - emergency room visit

OP - outpatient visit

HH - home health visit

DV - dental visit

OM - other medical equipment

RX - prescribed medicine

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/CHAMPVA

TR - TRICARE

XP - sum of payments

The fifth and sixth characters indicate the year (20). The seventh character being "X" indicates the variable is edited/imputed.

For example, RXSF20X is the edited/imputed amount paid by self or family for the 2020 prescribed medicine expenditure.

2.5 Data Collection

Data regarding prescription drugs were obtained through the HC questionnaire and a pharmacy follow-back component (within the Medical Provider Component).

2.5.1 Methodology for Collecting Household-Reported Variables

During each round of the MEPS HC, respondents were asked to supply the name of any prescribed medicine they or their family members purchased or otherwise obtained during that round at any pharmacy, including mail-order or on-line. For each medicine in each round, the following information was collected: the name(s) of any health problems the medicine was prescribed for; the number of times the prescription medicine was obtained or purchased; the year and month in which the person first used the medicine; and a list of the names, addresses, and types of pharmacies that filled the household's prescriptions.

In consultation with an industry expert, outlier values for the number of times a household reported purchasing or otherwise obtaining a prescription drug in a particular round were

determined by comparing the number of days a person was in the round to the number of times the person was reported to have obtained the drug in the round. For these events, a new value for the number of times a drug was purchased or otherwise obtained by a person in a round was imputed. In addition, for rounds in which a household respondent did not know/remember the number of times a certain prescribed medicine was purchased or otherwise obtained, the number of fills or refills was imputed.

For those rounds that spanned two years, drugs mentioned in that round were allocated between the years based on the number of times the respondent said the drug was purchased in the respective year, the year the person started taking the drug, the length of the person's round, the dates of the person's round, and the number of drugs for that person in the round.

2.5.2 Methodology for Collecting Pharmacy-Reported Variables

If the household member with the prescription gave written permission to release his or her pharmacy records, pharmacy providers identified by the household were contacted by telephone for the pharmacy follow-back component. Following an initial telephone contact, the signed permission forms and materials explaining the study were faxed (or mailed) to cooperating pharmacy providers. The materials informed the providers of all persons participating in the survey who had prescriptions filled at their place of business and requested a computerized printout of all prescriptions filled for each person. Pharmacies can choose to report information in computer assisted telephone interviews (CATI). The CATI instrument was also used to enter information from printouts. For each medication listed, the following information was requested: national drug code (NDC), medication name, strength of medicine (amount and unit), quantity (package size/amount dispensed), days supplied, and payments by source. When an NDC was provided, often the drug name and other drug characteristics were obtained from secondary proprietary data sources.

2.6 File Contents

2.6.1 Survey Administration Variables

Person Identifier Variables (DUID, PID, DUPERSID)

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

For detailed information on dwelling units and families, please refer to the documentation for the 2020 Full Year Population Characteristics File.

Record Identifier Variables (RXRECIDX, LINKIDX, DRUGIDX)

The variable RXRECIDX uniquely identifies each record on the file. This 19-character variable comprises the following components: prescribed medicine drug-round-level identifier generated through the HC (positions 1-16) + enumeration number (positions 17-19). The prescribed medicine drug-round-level ID generated through the HC (positions 1-16) can be used to link a prescribed medicine event to the conditions file and to other event files, via link files, and is provided on this file as the variable LINKIDX. For more details on linking, please refer to Section 6.2 and to the 2020 Appendix File. The prescribed medicine drug-level ID generated through the HC, DRUGIDX, can be used to link drugs across rounds. DRUGIDX was first added to the file for 2009; for 1996 through 2008, the RXNDC linked drugs across rounds.

The following hypothetical example illustrates the structure of these ID variables. This example illustrates a person in Rounds 1 and 2 of the household interview who reported having purchased Amoxicillin three times. The following example shows three acquisition-level records, all having the same DRUGIDX (2500002026002), for one person (DUPERSID=2500002026) in two rounds. Generally, within a round, one NDC is associated with a prescribed medicine event because matching was performed at a drug level, as opposed to an acquisition level. The LINKIDX (2500002026002103) remains the same for both records in Round 1 but varies across rounds. The RXRECIDX (2500002026002103001, 2500002026002103002, 2500002026002203001) differs for all three records.

DUPERSID	PURCHRD	RXRECIDX	LINKIDX	DRUGIDX	RXNDC
2500002026	1	2500002026002103001	2500002026002103	2500002026002	00093310905
2500002026	1	2500002026002103002	2500002026002103	2500002026002	00093310905
2500002026	2	2500002026002203001	2500002026002203	2500002026002	00003010955

There can be multiple RXNDCs for a LINKIDX. All the acquisitions in the LINKIDX represent the same drug (active ingredients), but the RXNDCs may represent different manufacturers. (For more details on matching, please see Section 4.0).

Panel Variable (PANEL)

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

Round Variable (PURCHRD)

The variable PURCHRD indicates the round in which the prescribed medicine was purchased and takes on the value of 1, 2, 3, 4, 5, 6, or 7. Rounds 6 and 7 (partial) are associated with MEPS survey data collected from Panel 23. Likewise, Rounds 3 (partial), 4, and 5 (partial) are

associated with MEPS survey data collection from Panel 24, and Rounds 1, 2, and 3 (partial) are associated with data collected from Panel 25.

2.6.2 Characteristics of Prescribed Medicine Events

When Prescribed Medicine Was First Taken (RXBEGMM-RXBEGYRX)

There are two variables to indicate when a prescribed medicine was first taken (used), as reported by the household respondent. They are the following: RXBEGMM denotes the month in which a person first started taking a medication, and RXBEGYRX reflects the year in which a person first started taking a medicine. These "first taken" questions are only asked the first time a prescription is mentioned by the household respondent. These questions are not asked about refills of the prescription in subsequent rounds. Values are carried forward from prior rounds for all medications. Users should also note that the value -14 (not yet used or taken) is not relevant for refills. The variable DRUGIDX (see Section 2.6.1) can be used to determine whether a medication was reported in a prior round. For purposes of confidentiality, RXBEGYRX may be bottom-coded at 1935.

Prescribed Medicine Attributes (RXNAME-RXDAYSUP)

For each prescribed medicine included on this file, several data items collected describe in detail the medication obtained or purchased. These data items are the following:

a) Medication name - pharmacy reported (RXNAME)

b) Medication name - Multum Lexicon (RXDRGNAM)

c) National drug code (RXNDC)

d) Quantity of the prescribed medicine dispensed (RXQUANTY), e.g., number of tablets in the prescription

e) Form of the prescribed medicine (RXFORM), e.g., powder

f) Unit of measurement for form of Rx/prescribed medicine (RXFRMUNT), e.g., oz

g) Strength of the dose of the prescribed medicine (RXSTRENG), e.g., 10

h) Unit of measurement for the strength of the dose of the prescribed medicine (RXSTRUNT), e.g., gm

i) Days supplied (RXDAYSUP)

j) Diabetic supplies/equipment (DiabEquip)

Days supplied was first collected and released to the public on the 2010 Prescribed Medicines file. Many pharmacies did not provide this information, and imputation was not attempted in these cases. A value of 999 indicates the medication is to be taken as needed. No edits were implemented to impose consistency between the quantity and days supplied, and no edits were implemented for very high values.

The 2020 file contains multiple values of RXFORM and RXFRMUNT not found in Prescribed Medicines files in prior years. There was no reconciliation of inconsistencies or duplication between RXFORM and RXFRMUNT. Please refer to Appendices 1, 2, and 3 for definitions for RXFORM, RXFRMUNT, and RXSTRUNT abbreviations, codes and symbols. Please refer to Appendix 4 for therapeutic class code definitions.

The national drug code (NDC) is an 11-digit code. The first 5 digits indicate the manufacturer of the prescribed medicine. The next 4 digits indicate the form and strength of the prescription, and the last 2 digits indicate the package size from which the prescription was dispensed. NDC values were imputed from a proprietary database to certain PC prescriptions because the NDC reported by the pharmacy provider was not valid. These records are identified by RXFLG = 3.

For the years 1996-2004, AHRQ's licensing agreement for the proprietary database precluded the release of the imputed NDC values to the public, so for these prescriptions, the household-reported name of the prescription (RXHHNAME) and the original NDC (RXNDC) and prescription name (RXNAME) reported by the pharmacy were provided on the file to allow users to do their own imputation. In addition, for the years 1996-2004, the imputed NDC values for the RXFLG = 3 cases could be accessed through the AHRQ Data Center. For those events not falling into the RXFLG = 3 category, the reserved code (-13) was assigned to the household-reported medication name (RXHHNAME). The household-reported name of the prescription (RXHHNAME) is no longer provided on this file; however, this variable may be accessed through the AHRQ Data Center as can the original pharmacy-reported name and NDC. For information on accessing data through the AHRQ Data Center, see the Data Center section of the MEPS website. Beginning with the 2013 data, the variable RXDRGNAM is included on the file. This drug name is the generic name of the drug most commonly used by prescribing physicians. It is supplied by the Multum Lexicon database. RXDRGNAM for earlier years can be found in the Multum Lexicon Addendum Files to MEPS Prescribed Medicines Files for 1996-2013. Additionally, the 2013 addendum file contains a version of RXDRGNAM that has corrected values for some records. See the documentation for the addendum files.

Generally, orphan drugs and drugs AHRQ estimated were used by fewer than 200,000 people are masked to ensure confidentiality of the data, unless use of the drug does not reveal specific information about the condition treated (for example, cold remedies). For these drugs, details are generally recoded as missing and RXNAME is recoded to whatever therapeutic class information remains. Prospective researchers seeking access to restricted data must complete a MEPS Data Center application. See the Data Center section of the MEPS website.

Starting in the 2018 Prescribed Medicines PUF, the variable DiabEquip (OTHER DIABETIC EQUIPMENT OR SUPPLIES) indicates the record is for diabetic supplies/equipment that were first reported in response to question PM40, which asks whether the person obtained "any other diabetic equipment or supplies, typically prescribed by a physician; for example, syringes, a

blood glucose monitor machine, glucose meter, insulin pumps, lancets, alcohol swabs or control solution."

Imputed data on this event file, unlike other MEPS event files, may still have missing data. This is because imputed data on this file are imputed from the PC or from a proprietary database. These sources did not always include complete information for each variable but did include an NDC, which would typically enable an analyst to obtain any missing data items. For example, although there are a substantial number of missing values for the strength of the prescription that were not supplied by the pharmacist, these missing values were not imputed because this information is embedded in the NDC.

Type of Pharmacy (PHARTP1-PHARTP9)

Household respondents were asked to list the type of pharmacy from which household members purchased their medications. A respondent could list multiple pharmacies associated with each member's prescriptions in a given round or over the course of all rounds combined covering the survey year. All household-reported pharmacies are provided on this file, but there is no link in the survey or in the data file enabling users to know the type of pharmacy from which a specific prescription was obtained if multiple pharmacies are listed. The variables PHARTP1 through PHARTP9 identify the types of pharmacy providers from which the person's prescribed medicines were purchased. The possible types of pharmacies include the following: (1) mail-order, (2) another store, (3) HMO/clinic/hospital, (4) drug store, and (5) on-line. A -1 value for PHARTPn indicates that the household did not report "n^{th}" pharmacy. The pharmacy types are those reportedly used by the person in the purchase round and any prior rounds.

Analytic Flag Variables (RXFLG-INPCFLG)

There are four flag variables included on this file (RXFLG, IMPFLAG, PCIMPFLG, and INPCFLG).

RXFLG indicates whether or not there was any imputation performed on this record for the NDC variable, and if imputed, from what source the NDC was imputed. If no imputation was performed, RXFLG = 1. If the imputation source was another PC record, RXFLG = 2. Similarly, if the imputation source was a secondary, proprietary database and not the PC database, RXFLG = 3.

IMPFLAG indicates the method of creating the expenditure data on this record: IMPFLAG = 2 indicates complete PC data, IMPFLAG = 4 indicates fully imputed data, and IMPFLAG = 5 indicates partially imputed data. Beginning with the 2017 data, the MEPS ceased asking households to report payments for any drugs and diabetic equipment and supplies, so the values 1 and 3 are irrelevant for prescribed medicine events.

PCIMPFLG indicates the type of match between a household-reported event and a PC-reported event. PCIMPFLG = 1 indicates an exact match for a specific event for a person between the PC and the HC. PCIMPFLG = 2 indicates not an exact match between the PC and HC for a specific person (i.e., a person's household-reported event did not have a matched counterpart in the person's corresponding PC records). PCIMPFLG assists analysts in determining which records

have the strongest link to data reported by a pharmacy. It should be noted that whenever there are multiple purchases of a unique prescribed medication in a given round, MEPS did not collect information that would enable designating any single purchase as the "original" purchase at the time the prescription was first filled, and then designating other purchases as "refills." The user needs to keep this in mind when the purchases of a medication are referred to as "refills" in the documentation. Because matching was performed at a drug level as opposed to an acquisition level, the values for PCIMPFLG are either 1 or 2. For more details on general data editing/imputation methodology, please see Section 4.0.

INPCFLG denotes whether or not a household member had at least one prescription drug purchase in the PC (0 = NO, 1 = YES).

Clinical Classification Software Refined Codes

Information on household-reported medical conditions (ICD-10-CM condition codes) and aggregated clinically meaningful categories generated using Clinical Classification Software Refined (CCSR) associated with each prescribed medicine are not provided on this file. For information on ICD-10-CM condition codes and associated CCSR codes, see the MEPS 2020 Medical Conditions file and the 2020 Appendix to MEPS Event Files.

2.6.3 Multum Lexicon Variables from Cerner Multum, Inc.

Each record on this file contains the following Multum Lexicon variables:

RXDRGNAM	generic name of the drug most commonly used by prescribing physicians
PREGCAT	pregnancy category variable - identifies the FDA pregnancy category to which a particular drug has been assigned
TCn	therapeutic classification variable - assigns a drug to one or more therapeutic/chemical categories; can have up to three categories per drug
TCnSn	therapeutic sub-classification variable - assigns one or more sub-categories to a more general therapeutic class category given to a drug
TCnSn_n	therapeutic sub sub-classification variable - assigns one or more sub sub-categories to a more general therapeutic class category and sub-category given to a drug

Users should carefully review the data when conducting trend analyses or pooling years or panels because Multum's therapeutic classification has changed across the years of the MEPS. The Multum variables on each year of the MEPS Prescribed Medicines files reflect the most recent classification available in the year the data were released. Since the release of the 1996 Prescribed Medicines file, the Multum classification has been changed by the addition of new classes and subclasses, and by changes in the hierarchy of classes. Three examples follow: 1) In the 1996-2004 Prescribed Medicines files, antidiabetic drugs are a subclass of the hormone class,

but in subsequent files, the antidiabetic subclass is part of a class of metabolic drugs. 2) In the 1996-2004 files, antihyperlipidemic agents are categorized as a class with a number of subclasses including HMG-COA reductase inhibitors (statins). In subsequent files, antihyperlipidemic drugs are a subclass, and HMG-COA reductase inhibitors are a sub-subclass, in the metabolic class. 3) In the 1996-2004 files, the psychotherapeutic class comprises drugs from four subclasses: antidepressants, antipsychotics, anxiolytics/sedatives/hypnotics, and CNS stimulants. In subsequent files, the psychotherapeutic class comprises only antidepressants and antipsychotics. Changes may occur between any years. For additional information on these and other Multum Lexicon variables, as well as the Multum Lexicon database itself, please refer to the Cerner Multum file.

Users should also be aware of a problem discovered with the linking between the MEPS Prescribed Medicines files and the Cerner Multum file that resulted in some incorrect therapeutic classes being assigned. In particular, some diagnostic tests and medical devices were inadvertently assigned to be in a therapeutic class when they should not have been. Specifically, from 1996-2002, some diabetic supplies were assigned to be in TC1S1 = 101 (sex hormone), and from 2003 through 2010 some diabetic supplies were assigned to be in TC1S1 = 37 (toxoids). In addition, starting in 2006, NDC 00169750111 should have been assigned to TC1 = 358 and TC1S1 = 99. Analysts should use caution when using the Cerner Multum therapeutic class variables for analysis and should always check for accuracy.

Researchers using the Multum Lexicon variables are requested to cite Multum Lexicon as the data source.

2.6.4 Expenditure Variables (RXSF20X-RXXP20X)

Definition of Expenditures

Expenditures on this file refer to what is paid for health care services. More specifically, expenditures in MEPS are defined as the sum of payments for care received, 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 because of the increasingly common practice of discounting charges. Although measuring expenditures as the sum of payments incorporates discounts in the MEPS expenditure estimates, the estimates do not incorporate any manufacturer or other rebates paid to pharmacy benefit managers, health plans, Medicaid programs, or other purchasers. 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. For details on expenditure definitions, please reference the following, “Informing American Health Care Policy” (Monheit, Wilson, Arnett, 1999).

If examining trends in MEPS expenditures or performing longitudinal analysis on MEPS expenditures please refer to Section C, sub-sections 3.5 and 6.3 respectively for more information.

Sources of Payment

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

1. Out-of-pocket by User (self or family) - includes any deductible, coinsurance, and copayment amounts not covered by other sources, as well as payments for services and providers not covered by the person's insurance or other sources,
2. Medicare,
3. Medicaid,
4. Private Insurance,
5. Veterans Administration/CHAMPVA, excluding TRICARE,
6. TRICARE,
7. Other Federal Sources - includes Indian Health Service, military treatment facilities, and other care by the federal government,
8. Other State and Local Source - includes community and neighborhood clinics, state and local health departments, and state programs other than Medicaid,
9. Workers' Compensation, and
10. Other Unclassified Sources - includes sources such as automobile, homeowner's, and liability insurance, and other miscellaneous or unknown sources.

Pharmacies rarely report discounts. Manufacturer discounts and coupons reported by pharmacies are excluded from the total expenditure and source of payment variables, because the manufacturer is paying itself. Free drugs are included in this file, but discounts, write-offs, and free drugs at commercial pharmacies are not counted toward the total expenditure and source of payment variables, because these reflect pharmacy pricing strategies. Discounts, write-offs, and free drugs at safety net providers and government pharmacies are paid with public sector funds, are included in total expenditures, and are assigned to a public source of payment or other unclassified sources based on the type of pharmacy and the person's insurance coverage.

Prior to 2019, for cases where reported insurance coverage and sources of payment are inconsistent, the positive amount from a source inconsistent with reported insurance coverage was moved to one or both of the source categories Other Private and Other Public. Beginning in 2019, this step was removed and the inconsistency between the payment sources and insurance

coverage is allowed to remain - the amounts are not moved to Other Private and Other Public categories any more. The two source of payment categories, Other Private and Other Public, are no longer available.

3.0 Survey Sample Information

3.1 Discussion of Pandemic Effects on Quality of 2020 MEPS Data

3.1.1 Summary

Data collection for in-person sample surveys in 2020 presented real challenges after the onset of the COVID-19 pandemic at a national level in mid-March of that year. After major modifications to the standard MEPS study design, it was possible to collect data safely, but there were naturally concerns about the quality of the data after such modifications. Some issues related to data quality were identified and are discussed below. As with most in-person surveys conducted in 2020, researchers are counseled to take care in the interpretation of 2020 estimates including the comparison of such estimates with those of other years.

3.1.2 Overview

The onset of the COVID-19 pandemic in 2020 had a major impact on the MEPS Household Component (MEPS-HC) as it did for most major federal surveys and, of course, American life generally. The following discussion describes 1) the general impact of the pandemic on three major federal surveys (the effects on two of which also affect MEPS); 2) modifications to the MEPS sample design and field operations in 2020 due to the pandemic; and 3) potential data quality issues in the FY 2020 MEPS data related to the COVID-19 pandemic.

3.1.3 The Impact of the Pandemic on some Major Federal Surveys

Many important federal surveys were collecting data when much of the nation shut down in the face of the pandemic in March 2020. Among them were the Current Population Survey (CPS), the American Community Survey (ACS), and the National Health Interview Survey (NHIS). The ACS and the NHIS field new samples each year. The CPS includes rotating panels, meaning some of the sampled households fielded had participated in prior years while others were fresh. Two of these surveys have important roles in MEPS. Estimates of CPS subgroups serve as benchmarks for the MEPS weighting process (referred to below as “raking control totals”) while households fielded for Round 1 of MEPS in each year are selected as a subsample of the NHIS responding households from the prior year.

Because data collection in 2020 occurred under such unusual circumstances, all three of these surveys have reported bias concerns. (In fact, the ACS decided not to release a standard database for 2020 due to the uncertain quality of the data, while the CPS and the NHIS released data but included reports discussing concerns about bias.) All three surveys have reported evidence of

nonresponse bias, specifically, that households in higher socio-economic levels were relatively more likely to respond and the sample weighting was unable to fully compensate for this. As a result, analysts have been cautioned about the accuracy of survey estimates and the ability to compare resulting estimates with estimates obtained in the years prior to the pandemic.

The quality of CPS data is of particular importance to Full Year 2020 MEPS PUFs as CPS estimates serve as the control totals for the raking component of the MEPS weighting process. These control totals are based on the following demographic variables: age, sex, race/ethnicity, region, MSA status, educational attainment, and poverty status. The CPS estimates used in the development of the FY 2020 MEPS PUF weights that were based on the variables age, sex, race/ethnicity, region, and MSA status were evaluated by the Census Bureau and determined to be of high quality. However, similar evaluations of the corresponding CPS estimates associated with educational attainment and poverty status found that these estimates suffered from bias.

A set of references discussing the fielding of these three surveys during the pandemic and resulting bias concerns can be found in the References section of this document.

3.1.4 Modifications to the MEPS-HC 2020 Sample Design and Implementation Effort in Response to the Pandemic

For the MEPS-HC, face-to-face interviewing ceased due to the COVID-19 pandemic on March 17, 2020. At that time, there were two MEPS panels in the field for which 2020 data were being collected: Round 1 of Panel 25 and Round 3 of Panel 24. The sampled households for Panel 25 were being contacted and asked to participate in MEPS for the first time while those from Panel 24 had already participated in MEPS for two rounds. A third MEPS panel was also in the field in early 2020, Round 5 of Panel 23, collecting data for the last portion of 2019.

In developing a plan for how best to resume MEPS data collection, the primary issues were how to do so safely for both sampled household members and interviewers and the potential impact on data quality. Telephone data collection, although not the preferred method of data collection in general for MEPS-HC, was the natural option because it did not require in-person contact with respondents and could be implemented relatively quickly. The impact of changing to telephone on both response rates and data quality was expected to be larger for Panel 25 Round 1 (e.g., no experience with reporting health care events in the recent past). At the time in-person interviewing stopped in mid-March 2020 completion rates for Panels 23 and 24 were substantially higher than those for Panel 25.

AHRQ decided to field Panel 23 for at least one more year, asking Panel 23 respondents if they would be open to further participation in MEPS in newly added Rounds 6 and 7. Extending Panel 23 was meant to both offset the decrease in the number of cases in the FY 2020 data related to lower expected sample yields for Panel 25 and to improve data quality by retaining a set of participants who were familiar with MEPS. These decisions required major changes in survey operations, including adding a fall Panel 23 Round 6 interview covering all 2020 events from January 1, 2020 to the date of the interview.

3.1.5 Data Quality Issues for MEPS for FY 2020

Numerous analyses were conducted to examine potential impacts on data quality and to gain a more complete understanding of these issues. Zuvekas and Kashihara (2021) discuss some of these analyses and provide additional background information on how the MEPS study design was modified in 2020 in response to the pandemic. Three sources of potential bias that were identified are noted here: the long recall period for Round 6 of Panel 23; switching from in-person to telephone interviewing which likely had a larger impact on Panel 25; and the impact of CPS bias on the MEPS weights. Each is considered in turn.

Comparisons of health care utilization data for Panel 24 and Panel 23 indicated that the extended reference period for Panel 23 Round 6 may have resulted in recall issues for respondents. Round 6 was initially fielded in the late summer and early fall of 2020, and because the Round 5 reference period ended on December 31, 2019, the recall period for health care events and related information extended back to January 1, 2020, much longer than for typical MEPS rounds. For Panel 23 Round 6 respondents, events of a less salient nature, such as dental visits and office-based physician visits, occurring in early 2020 were under-reported. Underreporting was confirmed through both an examination of differential utilization across 2020 for Panel 23 respondents as well as statistical comparisons of Panel 23 and Panel 24 event estimates. Adjustments were made to the sample weights for Panel 23 to help address this concern. Details on these adjustments can be found in Section 3.3.1.

Comparisons of Panel 25 with Panel 24 health care utilization data found that the difference in estimates reached statistical significance for several event types with those from Panel 25 generally being the higher. The same comparisons between first and second year panels in MEPS in recent years showed relatively few such differences with no differences at all in 2019.

Finally, AHRQ decided to calibrate, via raking, the FY 2020 Consolidated PUF weights to control totals reflecting CPS 2021 poverty status data. As discussed earlier, bias was identified by the Census Bureau in the 2020 and 2021 CPS income data and correlates. Nevertheless, the Census Bureau decided to use its standard sample weighting approach for both the 2020 and 2021 CPS ASEC data sets while recognizing some deficiencies in the nonresponse adjustment approach for the two years as a result of data collection during the pandemic. Similarly, MEPS has used poverty status based on the CPS estimates for calibration for many years and continued to do so for the 2020 Full Year Consolidated PUF as it was decided that the advantages of doing so outweighed the disadvantages.

3.1.6 Discussion and Guidance

The additional procedures for developing person-level and family-level final weights for the 2020 Consolidated MEPS data were designed to correct for potential biases in the data due to changes in data collection and response bias. However, evaluations of MEPS data quality in 2020 - corroborated in analyses of other Federal surveys fielded in 2020 - suggest that users of the MEPS FY 2020 Consolidated PUF should exercise caution when interpreting estimates and assessing analyses based on these data as well as in comparing 2020 estimates to those of prior years.

3.2 Sample Weight (PERWT20F)

There is a single full-year person-level weight (PERWT20F) 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 2020. A key person was either a member of a responding NHIS household at the time of interview or joined a family associated with such a household after being out-of-scope at the time of the NHIS (the latter circumstance includes newborns as well as those returning from military service, an institution, or residence in a foreign country). A person is in-scope whenever he or she is a member of the civilian noninstitutionalized portion of the U.S. population.

3.3 Details on Person Weight Construction

The person-level weight PERWT20F was developed in several stages. Person-level weights for Panel 23, Panel 24, and Panel 25 were created separately. The weighting process for each panel included an adjustment for nonresponse over time and calibration to independent population figures. The calibration was initially accomplished separately for each panel by raking the corresponding sample weights for those in-scope at the end of the calendar year to Current Population Survey (CPS) population estimates based on six variables. The six variables used in the establishment of the initial person-level control figures were: educational attainment of the reference person (no degree, high school/GED no college, some college, bachelor's degree or higher); census region (Northeast, Midwest, South, West); MSA status (MSA, non-MSA); race/ethnicity (Hispanic; Black, non-Hispanic; Asian, non-Hispanic; and other); sex; and age. A 2020 composite weight was then formed by multiplying each weight from Panel 23 by the factor .29, each weight from Panel 24 by the factor .36, and each weight from Panel 25 by the factor .35. The choice of factors reflected the relative sample sizes of the three panels, helping to limit the variance of estimates obtained from pooling the three samples. The composite weight was raked to the same set of CPS-based control totals.

The standard approach for MEPS weighting is as follows. When the poverty status information derived from income variables becomes available, a final raking is undertaken. The full sample weight appearing on the Population Characteristics PUF for a given year is re-raked, establishing control figures reflecting poverty status rather than educational attainment. Thus, control totals are established using poverty status (five categories: below poverty, from 100 to 125 percent of poverty, from 125 to 200 percent of poverty, from 200 to 400 percent of poverty, at least 400 percent of poverty) as well as the other five variables previously used in the weight calibration.

This approach was modified for the full sample weights appearing on the FY 2020 Consolidated PUF. The raking of the Panel 23 weights was re-done as described in Section 3.3.1 below, and then the resulting Panel 23 weights were composited with those previously established for Panels 24 and 25 with the same factors as described previously, producing a new full sample weight. This new weight was then raked to control figures reflecting the standard five variables plus poverty status.

3.3.1 MEPS Panel 23 Weight Development Process

The person-level weight for MEPS Panel 23 was developed using the 2019 full-year weight for an individual as the initially assigned weight for 2019 survey participants present in 2020. For key, in-scope members who joined an RU some time in 2020 after being out-of-scope in 2019, the initially assigned person-level weight was the corresponding 2019 family weight. The weighting process included an adjustment for person-level nonresponse over Rounds 6 and 7 as well as raking to population control figures for December 2020 for key, responding persons in-scope on December 31, 2020. These control totals were derived by scaling back the population distribution obtained from the March 2021 CPS to reflect the December 31, 2020 estimated population total (estimated based on Census projections for January 1, 2021). Variables used for person-level raking included: education of the reference person (three categories: no degree; high school/GED only or some college; Bachelor's or higher degree); Census region (Northeast, Midwest, South, West); MSA status (MSA, non-MSA); race/ethnicity (Hispanic; Black, non-Hispanic; Asian, non-Hispanic; and other); sex; and age. (It may be noted that for confidentiality reasons, the MSA status variables are no longer released for public use. This started with the Full-Year 2013 Person-Level Use PUF.) The final weight for key, responding persons who were not in-scope on December 31, 2020 but were in-scope earlier in the year was the nonresponse-adjusted person weight without raking.

In developing the person-level weight for Panel 23, an additional raking dimension was included beyond those based on the usual six variables. This dimension was added to adjust the distribution of event-based (i.e., office-based [MV] and/or outpatient [OP]) estimates to align with corresponding Panel 24 weighted estimates. The table below shows ratios of weighted totals (population estimates) associated with this additional raking dimension, reflecting the extent to which the Panel 23 estimates were modified in order to correspond to Panel 24 estimates. Generally, the weights of the records with any event in Q1 are inflated to account for the under reporting of events in Q1.

Ratio of Adjusted to Unadjusted Weights

# of Events	Ratio
1: No MV/OP Events	0.8375
2: At least 1 event in Q1 and no events in other quarters	2.7509
3: At least 1 event in Q2 and no events in other quarters	0.9456
4: At least 1 event in Q3 and no events in other quarters	0.7811
5: At least 1 event in Q4 and no events in other quarters	0.7149
6: At least 1 event in Q1 and at least 1 event in at least 1 other quarter	1.3188
7: At least 1 event in Q2 and at least 1 event in at least 1 Q3 or Q4	0.7199
8: Other	0.6908

The Panel 23 2019 full-year weight used as the base weight for Panel 23 was derived from the 2018 MEPS Round 1 weight and reflected adjustment for nonresponse over the remaining data

collection rounds in 2018 and 2019 as well as raking to the December 2018 and December 2019 population control figures.

For the raking variable “education of the reference person” there were four raking categories in prior years: no degree; high school/GED no college; some college; and Bachelor's or a higher degree. However, as mentioned in the discussion of data quality issues in 2020 in Section 3.1, there was evidence that the onset of the COVID-19 pandemic in the years of 2020 and 2021 affected estimates associated with income and education (further details can be found in the references associated with the CPS data quality issues in 2020 and 2021 in the References section). For the full-year 2019 weights, March 2019 CPS was utilized instead of March 2020 CPS in the construction of control totals to avoid data quality issues connected to the COVID-19 pandemic. For the full-year 2020 weights, since there are no reliable education estimates from 2020 or 2021 CPS, a regression approach was implemented to derive education control figures. The regression approach involved two steps. The first step fit a linear regression model for each of the four education categories using the 2013-2018 CPS education of reference person distributions as the predictors in order to estimate the distribution for 2020, and the second step derived the education of reference person control figures by applying the estimated 2020 education distribution to the December 31, 2020 population total. The models for “no degree” and “Bachelor's or a higher degree” performed extremely well with R^2 values of 0.97 and 0.98, respectively. The models for “high school/GED no college” and “some college” showed a lower goodness of fit, especially for some college, with a R^2 value of 0.74. A linear regression for the two categories combined improved the R^2 value to 0.89, so the two levels were combined for the 2020 weight development.

3.3.2 MEPS Panel 24 Weight Development Process

The person-level weight for MEPS Panel 24 was developed using the 2019 full-year weight for an individual as a “base” weight for survey participants present in 2019. For key, in-scope members who joined an RU some time in 2020 after being out-of-scope in 2019, the initially assigned person-level weight was the corresponding 2019 family weight. The weighting process included an adjustment for person-level nonresponse over Rounds 4 and 5 as well as raking to population control totals for December 2020 used for the MEPS Panel 23 weights for key, responding persons in-scope on December 31, 2020. The six standard variables employed for Panel 23 raking (education level, census region, MSA status, race/ethnicity, sex, and age) were also used for Panel 24 raking. Similar to Panel 23, the Panel 24 final weight for key, responding persons not in-scope on December 31, 2020 but in-scope earlier in the year was the nonresponse-adjusted person weight without raking.

Note that the 2019 full-year weight that was used as the base weight for Panel 24 was derived as follows; adjustment of the 2019 MEPS Round 1 weight for nonresponse over the remaining data collection rounds in 2019; and raking the resulting nonresponse adjusted weight to December 2019 population control figures.

3.3.3 MEPS Panel 25 Weight Development Process

The person-level weight for MEPS Panel 25 was developed using the 2020 MEPS Round 1 person-level weight as a "base" weight. The MEPS Round 1 weights incorporated the following components: the original household probability of selection for the NHIS, use of a subsample of the NHIS panels and quarters reserved for MEPS, an adjustment for NHIS nonresponse, the probability of selection for MEPS from NHIS responding households, adjustment for nonresponse at the dwelling unit level for Round 1, and poststratification to control figures at the person level obtained from the March CPS of the corresponding year. For key, in-scope members who joined an RU after Round 1, the Round 1 family weight served as a "base" weight.

The weighting process also included an adjustment for nonresponse over the remaining data collection rounds in 2020 as well as raking to the same population control figures for December 2020 used for the MEPS Panel 23 and Panel 24 weights for key, responding persons in-scope on December 31, 2020. The six standard variables employed for Panel 23 and Panel 24 raking (educational attainment of the reference person, census region, MSA status, race/ethnicity, sex, and age) were also used for Panel 25. The event-based raking dimension used for Panel 23 was not employed for Panel 25. Similar to Panel 23 and Panel 24, the Panel 25 final weight for key, responding persons who were not in-scope on December 31, 2020 but were in-scope earlier in the year was the person weight after the nonresponse adjustment.

3.3.4 The Final Weight for 2020

The final raking of those in-scope at the end of the year has been described above. In addition, the composite weights of three groups of persons who were out-of-scope on December 31, 2020 were adjusted for expected undercoverage. Specifically, the weights of those who were in-scope some time during the year, out-of-scope on December 31, and entered a nursing home during the year and still residing in a nursing home at the end of the year were poststratified to an estimate of the number of persons who were residents of Medicare- and Medicaid-certified nursing homes for part of the year (approximately 3-9 months) during 2014. This estimate was developed from data on the Minimum Data Set (MDS) of the Center for Medicare and Medicaid Services (CMS). The weights of persons who died while in-scope were poststratified to corresponding estimates derived using data obtained from the Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Underlying Cause of Death, 1999-2020 on CDC WONDER Online Database, released in 2022, the latest available data at the time. Separate decedent control totals were developed for the "65 and older" and "under 65" civilian noninstitutionalized populations.

Overall, the weighted population estimate for the civilian noninstitutionalized population for December 31, 2020 is 324,539,180 (PERWT20F >0 and INSC1231=1). The sum of person-level weights across all persons assigned a positive person-level weight is 328,545,297.

3.4 Coverage

The target population for MEPS in this file is the 2020 U.S. civilian noninstitutionalized population. However, the MEPS sampled households are a subsample of the NHIS households

interviewed in 2017 (Panel 23), 2018 (Panel 24), and 2019 (Panel 25). New households created after the NHIS interviews for the respective panels and consisting exclusively of persons who entered the target population after 2017 (Panel 23), after 2018 (Panel 24), or after 2019 (Panel 25) are not covered by MEPS. Neither are previously out-of-scope persons who join an existing household but are unrelated to the current household residents. Persons not covered by a given MEPS panel thus include some members of the following groups: immigrants; persons leaving the military; U.S. citizens returning from residence in another country; and persons leaving institutions. The set of uncovered persons constitutes a relatively small segment of the MEPS target population.

3.5 Using MEPS Data for Trend Analysis

First, of course, we note that there are uncertainties associated with 2020 data quality as discussed in Section 3.1. Evaluations described in that section suggest that care should be taken in the interpretation of estimates based on data collected in 2020 as well as in comparisons over time. Trend analyses are challenging since the advent of the COVID-19 pandemic resulted in uncertain data quality for MEPS as well as standard benchmark sources such as the CPS, ACS, and NHIS while the pandemic also had an impact on the health and access to health care of the U.S. population. For such reasons, the extent to which 2020 health care parameters may differ from those of prior years is difficult to assess.

In terms of other factors to be aware of, 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. Tests of statistical significance should be conducted to assess the likelihood that observed trends are not 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.

With respect to methodological considerations, in 2013 MEPS introduced an effort focused on field procedure changes such as interviewer training to obtain more complete information about health care utilization from MEPS respondents with full implementation in 2014. This effort likely resulted in improved data quality and a reduction in underreporting starting in the second half of 2013 and throughout 2014 full year files and have had some impact on analyses involving trends in utilization across years. The aforementioned changes in the NHIS sample design in 2016 could also potentially affect trend analyses. The new NHIS sample design is based on more up-to-date information related to the distribution of housing units across the U.S. As a result, it can be expected to better cover the full U.S. civilian, noninstitutionalized population, the target population for MEPS as well as many of its subpopulations. Better coverage of the target population helps to reduce the potential for bias in both NHIS and MEPS estimates.

Another change with the potential to affect trend analyses involved modifications to the MEPS instrument design and data collection process, particularly in the events sections of the instrument. These were introduced in the Spring of 2018 and thus affected data beginning with Round 1 of Panel 23, Round 3 of Panel 22, and Round 5 of Panel 21. Since the Full Year 2017

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

Process changes, such as data editing and imputation, may also affect trend analyses. For example, users should refer to the 2020 Consolidated file (HC-224) and, for more detail, the documentation for the prescription drug file (HC-220A) when analyzing prescription drug spending over time.

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

Analysts may wish to consider using techniques to smooth or stabilize analyses of trends using MEPS data such as comparing pooled time periods (e.g. 1996-1997 versus 2011-2012), working with moving averages, or using modeling techniques with several consecutive years of MEPS data to test the fit of specified patterns over time.

Finally, statistical significance tests should be conducted to assess the likelihood that observed trends are not attributable to sampling variation. In addition, researchers should be aware of the impact of multiple comparisons on Type I error. Without making appropriate allowance for multiple comparisons, undertaking numerous statistical significance tests of trends increases the likelihood of concluding that a change has taken place when one has not.

4.0 General Data Editing and Imputation Methodology

The general approach to preparing the household prescription data for this file was to utilize the PC prescription data to impute information collected from pharmacy providers to the household drug mentions. A matching program was adopted to link PC drugs and the corresponding drug information to household drug mentions. To improve the quality of these matches, all drugs on the household and pharmacy files were coded using a proprietary database on the basis of the medication names provided by the household respondent and pharmacy, and, when available, the NDC provided in the pharmacy follow-back component. The matching process was done at a drug (active ingredient) level, as opposed to an acquisition level. Considerable editing was done prior to the matching to correct data inconsistencies in both data sets and to fill in missing data and correct outliers on the pharmacy file.

Drug price-per-unit outliers were analyzed on the pharmacy file by first identifying the national average drug acquisition cost (NADAC) per unit, wholesale acquisition unit cost (WAUC), and average wholesale unit price (AWUP) of the drug by linkage through the NDC to secondary data files. In general, prescription drug unit prices were deemed to be outliers by comparing unit prices reported in the pharmacy database to the NADAC per unit reported in the secondary data files and were edited, as necessary.

Prior to 2020, AWUP was the benchmark used to identify outlier prices for prescription medications in the PC. Beginning with the 2007 data, the rules used to identify outlier prices changed. New outlier thresholds were established based on the distribution of the ratio of retail unit prices relative to the AWUP in the 2006 MarketScan Outpatient Pharmaceutical Claims database. The new thresholds vary by patent status, whereas in prior years they did not. These changes improve data quality in three ways: (1) the distribution of prices in the MEPS better benchmarks to MarketScan, overall and by patent status (Zodet et al. 2010), (2) fewer pharmacy-reported payments and quantities (for example, number of pills) are edited, and (3) imputed prices reflect prices paid, rather than AWUPs. As a result, compared with earlier years of the MEPS, starting with 2007 there is more variation in prices for generics, lower mean prices for generics, higher mean prices for brand name drugs, greater differences in prices between generic and brand name drugs, and a somewhat lower proportion of spending on drugs by families, as opposed to third-party payers. Pharmacy reports of free antibiotics were not edited as if they were outliers. Beginning with the 2010 data, some additional free drugs obtained through commercial pharmacies were not edited.

Beginning with the 2009 data, three changes in editing sources of payment data were made to improve data quality, based on a validation study (Hill et al., 2011). Two changes were made in editing fills for which pharmacies reported partial payment data. First, if the third party amount was missing and the third party payer was a public payer, then pharmacy reports of zero out-of-pocket amounts were preserved rather than imputed. Second, somewhat tighter outlier thresholds were implemented for the fills with partial payment data, and somewhat looser outlier thresholds were implemented for fills with complete payment data. Another change affected Medicare beneficiaries with both Part D and Medicaid coverage--reported Medicaid and other state and local program payments were no longer edited to be Medicare payments.

Beginning with the 2010 data, improvements in the payment imputation methods for pharmacy data (1) better utilize pharmacy-reported quantities to impute missing payment amounts, and (2) preserve within-NDC variation in the prices on the records for which third party payment amounts are imputed.

Beginning with the 2017 data, higher imputed prices were allowed. Imputed prices are capped to prevent the creation of unreasonable prices in cases with unreasonable quantity data. For the 2017 data, the cap was raised to account for the rising prices of specialty drugs. While there are relatively few cases for which the cap is relevant, these are expensive drugs, and this change in editing procedures accounts for more than 95% of the increase in total expenditures for prescribed medicines relative to 2016.

Beginning with the 2020 data, the rules used to identify outlier prices for prescription medications in the PC were improved based on newer price benchmarks and analyses (Ding and

Hill 2022). New outlier thresholds were established based on the distribution of the ratio of retail unit prices relative to the NADAC per unit, collected for the Centers for Medicare and Medicaid Services. When the NADAC per unit is not available, then the WAUC is used, and if neither are available, the AWUP is used. AWUP and WAUC are list prices, not averages, so the NADAC per unit better reflects the prices paid for drugs, and as a result the prices paid for generics are lower in the 2020 data, compared with the 2019 data, and fewer generic fills have third party payments.

Beginning with the 2011 data, the imputation of the number of fills for a drug was improved. In the 2011 data, for 10% of household-reported drugs the respondent did not know or remember the number of times the drug was obtained during the round. For missing and implausible values, a hot-deck procedure imputed a new number of acquisitions, drawing from the donor pool of drugs with valid values. Prior to 2011, the imputation method gave greater weight to donors with more acquisitions in the round. The new method conditions on insurance status, age, and geography, as well as drug. In the 2017 data for Panel 22 Round 3 and Panel 21 Round 5, more implausibly high numbers of fills were reported than in prior years, and so there was more extensive imputation of number of fills.

Drug matches between household drug mentions and pharmacy drug events for a person in the PC were based on drug code, medication name, and the round in which the drug was reported. The matching of household drug mentions to pharmacy drugs was performed so that the most detailed and accurate information for each prescribed medicine event was obtained. The matching program assigned scores to potential matches. Numeric variables required exact matches to receive a high score, while partial scores could be assigned to matches between character variables, such as prescription name, depending on the degree of similarity in the spelling and sound of the medication names. Household drug mentions that were deemed exact matches to PC drugs for the same person in the same round required sufficiently high scores to reflect a high quality match. Initially, exact matches were used only once and were taken out of the donor pool from that point on (i.e., these matches were made without replacement). For remaining persons with pharmacy data from any round and unmatched household drugs, additional matches are made with replacement across rounds. Any refill of a household drug mention that had been matched to a pharmacy drug event was matched to the same pharmacy drug event. All remaining unmatched household drug mentions for persons either in or out of the PC were statistically matched to the entire pharmacy donor base with replacement by medication name, drug code, type of third party coverage, health conditions, age, sex, and other characteristics of the individual. PC records containing an NDC imputed without an exact match on a generic code were omitted from the donor pool. Beginning with the 2008 Prescribed Medicines file, the criteria for matching were changed to allow multiple NDCs for the same drug reported by pharmacies (for example, different manufacturers) to match to one drug reported by the household. Beginning with the 2010 data, the matching process was improved for diabetic supplies to better utilize pharmacy reports of the diversity of supplies individuals purchased.

Some matches have inconsistencies between the PC donor's potential sources of payment and those of the HC recipient, and these were resolved. Beginning with the 2008 data, the method used to resolve inconsistencies in potential payers was changed to better reflect the distribution of sources of payment among the acquisitions with consistent sources of payment. This change (1) reduced Medicare payments and increased private payments among Medicare beneficiaries,

and (2) reduced out-of-pocket payments and increased Medicaid payments among Medicaid enrollees. In addition, Medicare, Medicaid, and private drug expenditures better benchmark totals in the National Health Expenditure Accounts.

Also beginning with the 2011 data, many aspects of the specifications were modified so that imputations and edits better reflect Medicare Part D donut hole rules and Medicare Part B coverage of a few medications and diabetic supplies. Discounts on brand name drugs in the donut hole do not count towards total expenditures and are not included in source of payment variables.

For more information on the MEPS Prescribed Medicines editing and imputation procedures, please see Hill et al, 2014, Methodology Report.

4.1 Rounding

Expenditure variables on the 2020 Prescribed Medicines file have been rounded to the nearest penny. Person-level expenditure variables released on the 2020 Full Year Consolidated Data File were rounded to the nearest dollar. It should be noted that using the 2020 MEPS event files to create person-level totals will yield slightly different totals than those found on the 2020 Full Year Consolidated data file. These differences are due to rounding only. Moreover, in some instances, the number of persons having expenditures on the 2020 event files for a particular source of payment may differ from the number of persons with expenditures on the 2020 Full Year Consolidated data file for that source of payment. This difference is also an artifact of rounding only.

4.2 Edited/Imputed Expenditure Variables (RXSF20X-RXXP20X)

There are 11 expenditure variables included on this event file. All of these expenditures have gone through an editing and imputation process and have been rounded to the second decimal place. There is a sum of payments variable (RXXP20X) which, for each prescribed medicine event, sums all the expenditures from the various sources of payment. The 10 sources of payment expenditure variables for each prescribed medicine event are the following: amount paid by self or family (RXSF20X), amount paid by Medicare (RXMR20X), amount paid by Medicaid (RXMD20X), amount paid by private insurance (RXPV20X), amount paid by the Veterans Administration/CHAMPVA (RXVA20X), amount paid by TRICARE (RXTR20X), amount paid by other federal sources (RXOF20X), amount paid by state and local (non-federal) government sources (RXSL20X), amount paid by Worker's Compensation (RXWC20X), and amount paid by some other source of insurance (RXOT20X). Please see Section 2.6.4 for details on all sources of payment variables.

5.0 Strategies for Estimation

5.1 Developing Event-Level Estimates

The data in this file can be used to develop national 2020 event-level estimates for the U.S. civilian noninstitutionalized population on prescribed medicine purchases (events) as well as expenditures, and sources of payment for these purchases. Estimates of total number of purchases are the sum of the weight variable (PERWT20F) across relevant event records while estimates of other variables must be weighted by PERWT20F to be nationally representative. The tables below contain event-level estimates for selected variables.

Selected Event (Purchase) Level Estimates

All Prescribed Medicine Purchases

Estimate of Interest	Variable Name	Estimate (SE)
Number of purchases (in millions)	PERWT20F	3,006.4 (97.99)
Mean total payments per purchase	RXXP20X	$157 (7.2)
Mean out-of-pocket payment per purchase	RXSF20X	$15 (0.8)
Mean proportion of expenditures paid by private insurance per purchase	RXPV20X /RXXP20X	0.166 (0.0049)

Example by Drug Type: Statins (TC1S1_1 = 173 or TC1S1_2 = 173 or TC1S2_1 = 173 or TC1S3_1 = 173 or TC2S1_1 = 173 or TC2S1_2 = 173)

Estimate of Interest	Variable Name	Estimate (SE)
Number of purchases (in millions)	PERWT20F	206.2 (7.63)
Mean total payments per purchase	RXXP20X	$24 (1.3)
Mean annual total payments per person	RXXP20X (aggregated across purchases within person)	$106 (5.9)

5.2 Person-Based Estimates for Prescribed Medicine Purchases

To enhance analyses of prescribed medicine purchases, analysts may link information about prescribed medicine purchases 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 6 below for more details). Both this file and the full year consolidated file may be used to derive estimates for persons with prescribed medicine purchases and annual estimates of total expenditures for these purchases. However, for estimates that pertain to those who did not have prescribed medicine purchases as well as those who did (for example, the percentage of adults with at least one prescribed medicine purchase during the past year or the mean number of prescribed medicine purchases in the past year among those 65 or older), this file cannot be used. Only those persons with at least one prescribed medicine purchase 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 prescribed medicine events.

5.3 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 calculated, the analyst should either impute a value or set the value such that it will be interpreted as missing by the software package used. For categorical and dichotomous variables, the analyst may want to consider whether to recode or impute a value for cases with negative values or whether to exclude or include such cases in the numerator and/or denominator when calculating proportions.

Methodologies used for the editing/imputation of expenditure variables (e.g., total expenditures and sources of payment) are described in Section 4.2.

5.4 Variance Estimation (VARSTR, VARPSU)

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. MEPS analysts most commonly use the Taylor Series approach. Although this data file does not contain replicate weights, the capability of employing replicate weights constructed using the Balanced Repeated Replication (BRR) methodology is also provided if needed to develop variances for more complex estimators (see Section 5.4.2).

5.4.1 Taylor-series Linearization Method

The variables needed to calculate appropriate standard errors based on the Taylor-series linearization method are included on this and all other MEPS public use files. Software packages that permit the use of the Taylor-series linearization method include SUDAAN, R, Stata, SAS (version 8.2 and higher), and SPSS (version 12.0 and higher). For complete information on the

capabilities of a package, analysts should refer to the corresponding software user documentation.

Using the Taylor-series linearization method, variance estimation strata and the variance estimation PSUs within these strata must be specified. The variables VARSTR and VARPSU on this MEPS data file serve to identify the sampling strata and primary sampling units required by the variance estimation programs. Specifying a "with replacement" design in one of the previously mentioned computer software packages will provide estimated standard errors appropriate for assessing the variability of MEPS survey estimates. It should be noted that the number of degrees of freedom associated with estimates of variability indicated by such a package may not appropriately reflect the number available. For variables of interest distributed throughout the country (and thus the MEPS sample PSUs), one can generally expect to have at least 100 degrees of freedom associated with the estimated standard errors for national estimates based on this MEPS database.

Prior to 2002, MEPS variance strata and PSUs were developed independently from year to year, and the last two characters of the strata and PSU variable names denoted the year. However, beginning with the 2002 Point-in-Time PUF, the variance strata and PSUs were developed to be compatible with all future PUFs until the NHIS design changed. Thus, when pooling data across years 2002 through the Panel 11 component of the 2007 files, the variance strata and PSU variables provided can be used without modification for variance estimation purposes for estimates covering multiple years of data. There were 203 variance estimation strata, each stratum with either two or three variance estimation PSUs.

From Panel 12 of the 2007 files, a new set of variance strata and PSUs were developed because of the introduction of a new NHIS design. There are 165 variance strata with either two or three variance estimation PSUs per stratum, starting from Panel 12. Therefore, there are a total of 368 (203+165) variance strata in the 2007 Full Year file as it consists of two panels that were selected under two independent NHIS sample designs. Since both MEPS panels in the Full Year files from 2008 through 2016 are based on the next NHIS design, there are only 165 variance strata. These variance strata (VARSTR values) have been numbered from 1001 to 1165 so that they can be readily distinguished from those developed under the former NHIS sample design in the event that data are pooled for several years.

As discussed, a complete change was made to the NHIS sample design in 2016, effectively changing the MEPS design beginning with calendar year 2017.

There were 117 variance strata originally formed under this new design intended for use until the next fully new NHIS design was implemented. In order to make the pooling of data across multiple years of MEPS more straightforward, the numbering system for the variance strata has changed. Those strata associated with the new design (implemented in 2016) were numbered from 2001 to 2117.

However, the new NHIS sample design implemented in 2016, was further modified in 2018. With the modification in the 2018 NHIS sample design, the MEPS variance structure for the 2019 Full Year file has also had to be modified, reducing the number of variance strata to 105. Consistency was maintained with the prior structure in that the 2019 Full Year file variance

strata were also numbered within the range of values from 2001-2117, although there are now gaps in the values assigned within this range.

Some analysts may be interested in pooling data across multiple years of MEPS data. As noted on the cover page of this document, due to data quality issues arising from collecting data during the COVID-19 pandemic in 2020, caution should be taken when interpreting the results of such pooling.

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

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

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

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

5.4.2 Balanced Repeated Replication (BRR) Method

BRR replicate weights are not provided on this MEPS PUF for the purposes of variance estimation. However, a file containing a BRR replication structure is made available so users can form replicate weights, if desired, from the final MEPS weight to compute variances of MEPS estimates using either BRR or Fay's modified BRR (Fay 1989) methods. The replicate weights are useful to compute variances of complex non-linear estimators for which a Taylor linear form is not easy to derive and not available in commonly used software. For instance, it is not possible to calculate the variances of a median or the ratio of two medians using the Taylor linearization method. For these types of estimators, users may calculate a variance using BRR or Fay's modified BRR methods. However, it should be noted that the replicate weights have been derived from the final weight through a shortcut approach. Specifically, the replicate weights are not computed starting with the base weight and all adjustments made in different stages of weighting are not applied independently in each replicate. Thus, the variances computed using this one-step BRR do not capture the effects of all weighting adjustments that would be captured in a set of fully developed BRR replicate weights. The Taylor Series approach does not fully capture the effects of the different weighting adjustments either.

The dataset, HC-036BRR, MEPS 1996-2018 Replicates for Variance Estimation File, contains the information necessary to construct the BRR replicates. It contains a set of 128 flags (BRR1-BRR128) in the form of half sample indicators, each of which is coded 0 or 1 to indicate whether the person should or should not be included in that particular replicate. These flags can be used in conjunction with the full-year weight to construct the BRR replicate weights. For analysis of MEPS data pooled across years, the BRR replicates can be formed in the same way using the HC-036, MEPS 1996-2018 Pooled Linkage Variance Estimation File. For more information about creating BRR replicates, users can refer to the documentation for the HC-036BRR pooled linkage file on the AHRQ website.

6.0 Merging/Linking MEPS Data Files

Data from this file can be used alone or in conjunction with other files for different analytic purposes. This section summarizes various scenarios for merging/linking MEPS files. Each MEPS panel can also be linked back to the previous year's National Health Interview Survey public use data files. For information on obtaining MEPS/NHIS link files please see the data files section of the MEPS website.

6.1 Linking to the Person-Level File

Merging characteristics of interest from the person-level file (e.g., MEPS 2020 Full Year Consolidated File) expands the scope of potential estimates. For example, to estimate the total number of prescribed medicine purchases of persons with specific demographic characteristics (such as age, race, sex, and education), population characteristics from a person-level file need to be merged onto the prescribed medicines file. This procedure is illustrated below. The MEPS 2020 Appendix File, HC-220I, provides additional detail on how to merge MEPS data files.

1. Create data set PERSX by sorting the 2020 Full Year Consolidated File by the person identifier, DUPERSID. Keep only variables to be merged onto the prescribed medicines file and DUPERSID.

2. Create data set PMEDS by sorting the 2020 Prescribed Medicines File by person identifier, DUPERSID.

3. Create final data set NEWPMEDS by merging these two files by DUPERSID, keeping only records on the prescribed medicines file.

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

```
PROC SORT DATA=IN.HCXXX (KEEP=DUPERSID AGE31X AGE42X AGE53X
SEX RACEV1X EDUCYR HIDEG)
OUT=PERSX;
   BY DUPERSID;
RUN;
```

```
PROC SORT DATA=IN.HCXXXA;
OUT=PMEDS;
   BY DUPERSID;
RUN;

DATA NEWPMEDS;
MERGE PMEDS (IN=A) PERSX (IN=B);
   BY DUPERSID;
      IF A;
RUN;
```

6.2 Linking to the Medical Conditions File

The condition-event link file (CLNK) provides a link from MEPS event files to the 2020 Medical Conditions File. When using the CLNK, data users/analysts should keep in mind that (1) conditions are self-reported, (2) there may be multiple conditions associated with a prescribed medicine purchase, and (3) a condition may link to more than one prescribed medicine purchase or any other type of purchase. Users should also note that not all prescribed medicine purchases link to the condition file.

6.3 Longitudinal Analysis

Panel-specific longitudinal files are available for downloading in the data section of the MEPS website. For all three panels (Panel 23, Panel 24, and Panel 25), the longitudinal file comprises MEPS survey data obtained in Rounds 1 through 5 of the panel and can be used to analyze changes over a two-year period. In addition, for Panel 23 a file representing a three-year period will also be established. Variables in the file pertaining to survey administration, demographics, employment, health status, disability days, quality of care, patient satisfaction, health insurance, and medical care use and expenditures were obtained from the MEPS full-year Consolidated files from the two years covered by that panel.

For more details or to download the data files, please see Longitudinal Weight Files on the MEPS website.

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D. Variable-Source Crosswalk

FOR MEPS HC-220A: 2020 Prescribed Medicines Events

Survey Administration Variables

Variable	Description	Source
DUID	Panel # + encrypted DU identifier	Assigned in sampling
PID	Person number	Assigned in sampling
DUPERSID	Sample person ID (DUID + PID)	Assigned in sampling
RXRECIDX	Record ID - Unique Prescribed Medicine Identifier	Constructed
LINKIDX	Link to condition and other event files	CAPI derived
DRUGIDX	Link to drugs across rounds	CAPI derived
PANEL	Panel indicator	Assigned in sampling
PURCHRD	Round in which the Rx/prescribed medicine was obtained/purchased	CAPI derived

Prescribed Medicines Events Variables

Variable	Description	Source
RXBEGMM	Month person first used medicine	PM130_02
RXBEGYRX	Year person first used medicine	PM130_01
RXNAME	Medicine name (Imputed)	Imputed
RXDRGNAM	Multum medicine name (Imputed)	Imputed
RXNDC	NDC (Imputed)	Imputed
RXQUANTY	Quantity of Rx/prescribed medicine (Imputed)	Imputed
RXFORM	Dosage form (Imputed)	Imputed
RXFRMUNT	Quantity unit of medication (Imputed)	Imputed
RXSTRENG	Strength of medication (Imputed)	Imputed
RXSTRUNT	Unit of medication (Imputed)	Imputed
RXDAYSUP	Days supplied of prescribed med(Imputed)	Imputed
PHARTP1-PHARTP9	Type of pharmacy prov - (1st-9th)	PM160LU

Variable	Description	Source
RXFLG	Flag variable indicating imputation source for NDC on pharmacy donor record	Constructed
IMPFLAG	Method of expenditure data creation	Constructed
PCIMPFLG	Flag indicating type of household to pharmacy prescription match	Constructed
DiabEquip	Other diabetic equipment or supplies	CAPI derived
INPCFLG	Flag indicating if the person has at least one record in the pharmacy component	Constructed
PREGCAT	Multum pregnancy category	Cerner Multum, Inc.
TC1	Multum therapeutic class #1	Cerner Multum, Inc.
TC1S1	Multum therapeutic sub-class #1 for TC1	Cerner Multum, Inc.
TC1S1_1	Multum therapeutic sub-sub-class for TC1S1	Cerner Multum, Inc.
TC1S1_2	Multum therapeutic sub-sub-class for TC1S1	Cerner Multum, Inc.
TC1S2	Multum therapeutic sub-class #2 for TC1	Cerner Multum, Inc.
TC1S2_1	Multum therapeutic sub-sub-class for TC1S2	Cerner Multum, Inc.
TC1S3	Multum therapeutic sub-class #3 for TC1	Cerner Multum, Inc.
TC1S3_1	Multum therapeutic sub-sub-class for TC1S3	Cerner Multum, Inc.
TC2	Multum therapeutic class #2	Cerner Multum, Inc.
TC2S1	Multum therapeutic sub-class #1 for TC2	Cerner Multum, Inc.
TC2S1_1	Multum therapeutic sub-sub-class for TC2S1	Cerner Multum, Inc.
TC2S1_2	Multum therapeutic sub-sub-class for TC2S1	Cerner Multum, Inc.
TC2S2	Multum therapeutic sub-class #2 for TC2	Cerner Multum, Inc.
TC3	Multum therapeutic class #3	Cerner Multum, Inc.
TC3S1	Multum therapeutic sub-class #1 for TC3	Cerner Multum, Inc.
TC3S1_1	Multum therapeutic sub-sub-class for TC3S1	Cerner Multum, Inc.
RXSF20X	Amount paid, self or family (Imputed)	Edited/Imputed
RXMR20X	Amount paid, Medicare (Imputed)	Edited/Imputed
RXMD20X	Amount paid, Medicaid (Imputed)	Edited/Imputed
RXPV20X	Amount paid, private insurance (Imputed)	Edited/Imputed
RXVA20X	Amount paid, Veteran's Administration/CHAMPVA (Imputed)	Edited/Imputed
RXTR20X	Amount paid, TRICARE (Imputed)	Edited/Imputed
RXOF20X	Amount paid, other Federal (Imputed)	Edited/Imputed
RXSL20X	Amount paid, state and local government (Imputed)	Edited/Imputed

Variable	Description	Source
RXWC20X	Amount paid, Worker's Compensation (Imputed)	Edited/Imputed
RXOT20X	Amount paid, other insurance (Imputed)	Edited/Imputed
RXXP20X	Sum of payments RXSF20X - RXOU20X (Imputed)	Edited/Imputed

Weights

Variable	Description	Source
PERWT20F	Final person-level weight	Constructed
VARSTR	Variance estimation stratum, 2020	Constructed
VARPSU	Variance estimation PSU, 2020	Constructed

Appendix 1
Definitions for RXFORM, Dosage Form

Definitions for RXFORM, Dosage Form

Dosage Form	Definition
-7	refused
-8	don't know
-15	cannot be computed
ACC	accessory
ACETONIDE	acetonide
ACT	actuation
ADR	acetic acid drop
AE	aerosol
AEPB	aerosol powder, breath activated
AER	aerosol
AER SPRAY	aerosol spray
AERA	aerosol with adapter
AERB	aerosol, breath activated
AERO	aerosol
AEROP	aerosol powder
AEROSOL	aerosol
AERS	aerosol, solution
ALM	*
AMI	*
AMO	*
AMP	ampule
ARA	aerosol liquid w/adapter (inhaler)
ARD	aerosol solid w/adapter
ARO	aerosol solid
ASS	*
AUIJ	*
AUTO INJ	auto-injection

Dosage Form	Definition
BACK SUPPORT BELT	back support belt
BAG	bag
BAL	balm
BALM	balm
BAN	bandage
BANDAGE	bandage
BAR	bar
BATTERY	battery
BENCH	bench
BLO	block
BOT	bottle
BOTTLE	bottle
BOX	box
BOXES	boxes
BRACE	brace
BRIEF	brief
BUT	butterfly
C	capsules, or cream (varies)
C12	12 hour extended-release capsule
C12A	*
C24	24 hour extended-release capsule
CA	capsule
CANE	cane
CAP	capsule, caplets
CAP-CAPLETS	caplets
CAP-CAPSULE	capsule
CAP DR	delayed-release capsule
CAP ER	extended-release capsule
CAP SA	slow-acting capsule
CAPLET	caplet
CAPLT	caplet
CAPS	capsules
CAPSULE	capsule
CAPSULE SA	slow-acting capsule

Dosage Form	Definition
CAT	catheter
CATHETER	catheter
CC	cubic centimeter
CER	capsule, extended-release tablet, extended-release
CHAMBER	chamber
CHER	*
CHEW	chewable tablet
CHEW TAB	chewable tablet
CHEW TABS	chewable tablets
CHEWABLE	chewable
CHW	chewable tablets
CLEANSER	cleanser
COLLAR	collar
COMBO	*
COMPOUND	compound
CON	condom
CONC	concentrate
CONDOM	condom
CONTAINER	container
COS	*
COTTON	cotton
CP12	capsule, extended-release, 12 hour
CP24	capsule, extended-release, 24 hour
CPCR	capsule, extended-release
CPDR	capsule, delayed release
CPEP	capsule, delayed release particles
CPSP	capsule sprinkle
CPSR	slow-release capsule
CR	cream
CRE	cream
CREA	cream
CREAM	cream
CRM	cream

Dosage Form	Definition
CRY	crystal
CRYS	crystals
CRYSTAL	crystal
CS24	*
CSDR	*
CTB	chewable tablets
CTG	cartridge
CURVE	curve
CUTTER	cutter
DEV	device
DEVI	device
DEVICE	device
DIA	diaper
DIAPER	diaper
DIAPHRAGM	diaphragm
DIHYDROCHLOR	dihydrochloride
DIPROPION	dipropionate
DIS	disk, or dermal infusion system
DISC	DISC
DISK	disk
DISKUS	diskus
DISPOSABLE	disposable
DOS PAK	dose pack
DPRH	diaphragm
DR	drop
DRC	delayed-release capsule
DRE	dressing
DRESSING	dressing
DRO	drop
DROP	drop
DROPS	drops
DROPS OPTH OTI	ophthalmic/otic drops
DROPS SUSP	drops suspension
DRP	drop

Dosage Form	Definition
DRPS	drops
DSK	disk
DSPK	tablets in a dose pack
DSPT	tablet, dispersible
DT	tablet, disintegrating
EAM	*
EAR DROP	ear drop
EAR DROPS	ear drops
EAR DRP	ear drop
EAR SUSP	ear suspension
EC TABS	enteric coated tablets
ECC	enteric coated capsules
ECO	*
ECT	enteric coated tablets
ELI	elixir
ELIX	elixir
ELIXER	elixir
ELIXIR	elixir
ELX	elixir
EMERGENCY KIT	emergency kit
EMO	emollient
EMU	emulsion
EMUL	emulsion
EMULSION	emulsion
ENE	enema
ENEM	enema
ENEMA	enema
ER	*
ERC	capsule, extended-release
ERSUS	suspension, extended-release
ERT	tablet, extended-release
ERTA	extended-release-tablets
ERTC	tablet, chewable, extended-release
ESI	*

Dosage Form	Definition
EST	*
ETA	*
EXTN CAP	extended-release capsule
EXTRACT	extract
EYE DRO	eye drop
EYE DROP	eye drop
EYE DROPS	eye drops
EYE DRP	eye drop
EYE EMU	*
EYE OIN	eye ointment
EYE SO	eye solution
EYEDRO	eye drop
FIL	film
FILM	film
FILM ER	film, extended-release
FILMTAB	filmtab
FILMTABS	filmtabs
FLI	film
FLOWMETER	flowmeter
FOA	foam
FOAM	foam
GAU	gauze
GAUZE	gauze
GEF	effervescent granules
GEL	gel
GELC	*
GEL CAP	gel capsule
GELS	gel-forming solution
GER	granule, extended-release
GFS	gel-forming solution
GLOVE	glove
GRA	granules
GRAN	granules
GRANULES	granules

Dosage Form	Definition
GRAR	granules for reconstitution
GRR	grams
GTT	drops
GUL	*
GUM	gum
HFA	*
HOSE	medical hosiery
HU	capsule
HYDROBROMIDE	hydrobromide
ICR	control-release insert
IMPL	implant
IMPLANT	implant
IN	injectable
INH	inhalant, inhaler
INH-INHALANT	inhalant
INH-INHALER	inhaler
INHA	inhaler
INH AER	inhalant aerosol
INHAL	inhalant
INHAL SOL	inhalant solution
INHALER	inhaler
INHL	inhalant
INJ	injectable
INJECTION (S)	injection (s)
INSERT	insert
INST	insert
INSULIN	insulin
IPA	*
IUD	intrauterine devise
IV	intravenous
JEL	jelly
JELLY	jelly
KI	*
KIT	kit

Dosage Form	Definition
L	lotion
LAN	*
LANCET	lancet
LANCETS	lancets
LI	liquid
LINIMENT	liniment
LIP	*
LIQ	liquid
LIQD	liquid
LIQUID	liquid
LO	*
LOLLIPOP	lollipop
LOT	lotion
LOTION	lotion
LOTN	lotion
LOZ	lozenge
LOZENGE	lozenge
LOZG	lozenge
LPOP	lollipop
LQCR	liquid, extended-release
MALEATE	maleate
MASK	mask
MCG	microgram
MEQ	milliequivalent
METER	meter
MG	milligram
MIS	miscellaneous
MISC	miscellaneous
MIST	mist
MONITOR	monitor
MONOH	*
MOUTHWASH	mouthwash
NAS	nasal spray
NASAL	nasal

Dosage Form	Definition
NASAL INHALER	nasal inhaler
NASAL POCKET HL	nasal inhaler, pocket
NASAL SOLN	nasal solution
NASAL SPR	nasal spray
NASAL SPRAY	nasal spray
NDL	needle
NE	nebulizer
NEB	nebulizer
NEBU	nebulization solution
NEBULIZER	nebulizer
NEEDLE	needle
NEEDLES	needles
NHL	*
NMA	enema
NMO	nanomole, millimicromole
NOP	*
NOS	*
NOSE DROPS	nose drops
ODR	ophthalmic drop (ointment)
ODT	oral disintegrating tablet
OIL	oil
OIN	ointment
OINT	ointment
OINT TOP	topical ointment
OINTA	ointment with applicator
OINTMENT	ointment
OLN	*
OMB	*
ONT	ointment
OP	ophthalmic solution
OP DROPS	ophthalmic drops
OP SOL	ophthalmic solution
OPA	*
OPH	ophthalmic

Dosage Form	Definition
OPH S	ophthalmic solution or suspension
OPH SOL	ophthalmic solution
OPH SOLN	ophthalmic solution
OPHT SOL	ophthalmic solution
OPHTH DROP (S)	ophthalmic drops
OPHTH OINT	ophthalmic ointment
OPHTH SOLN	ophthalmic solution
OPT SLN	ophthalmic solution
OPT SOL	ophthalmic solution
OPTH	ophthalmic solution or suspension or ointment
OPTH S	ophthalmic solution or suspension
OPTH SLN	ophthalmic solution
OPTH SOL	ophthalmic solution
OPTH SUSP	ophthalmic suspension
OPTIC	optic
ORA	*
ORAL	oral
ORAL INHL	oral inhalant
ORAL INHALER	oral inhaler
ORAL PWD	oral powder
ORAL RINSE	oral rinse
ORAL SOL	oral solution
ORAL SUS	oral suspension
ORAL SUSP	oral suspension
ORM	*
OSE	*
OTHER	other
OTI	otic solution
OTIC	otic
OTIC SOL	otic solution
OTIC SOLN	otic solution
OTIC SUS	otic suspension
OTIC SUSP	otic suspension

Dosage Form	Definition
PA	tablet pack, pad or patch (varies)
PAC	pack
PACK	pack
PAD	pad
PADS	pads
PAK	pack
PAS	paste
PASTE	paste
PAT	patch
PATCH	patch
PATCHES	patches
PCH	patch
PDI	powder for injection
PDR	powder
PDS	powder for reconstitution
PEDIATRIC DROPS	pediatric drops
PEL	pellets
PEN	pen
PI1	powder for injection, 1 month
PI3	powder for injection, 3 months
PIH	powder for inhalation
PKG	package
PKT	packet
PLASTER	plaster
PLEDGETS	pledgets
PLLT	pellet
PNKT	*
PO-SYRUP	syrup by mouth (oral syrup)
POD	POD
POPSICLE	popsicle
POUCH	pouch
POW	powder
POWD	powder
POWDER	powder

Dosage Form	Definition
POWDER FOR SOLUTION	*
POWDER/SUSPENS	powder/suspension
PRO	prophylactic
PRSY	*
PSKT	*
PST	paste
PSTE	paste
PT24	patch, 24 hour
PT72	patch, 72 hour
PTCH	patch
PTTW	patch, biweekly
PTWK	patch, weekly
PULVULE	pulvule
PWD	powder
PWD F/SOL	powder for solution
PWDI	powder for injection
PWDIE	powder for injection, extended-release
PWDR	powder for reconstitution
PWDRD	powder for reconstitution, delayed-release
RAL	*
RCTL SUPP	rectal suppository
RECTAL CREAM	rectal cream
REDITABS	reditabs
REF	*
RIN	rinse
RING	ring
RINSE	rinse
RMO	*
ROLL	roll
RTL	*
S	syrup, suspension, solution (varies)
SA CAPS	slow-acting capsules

Dosage Form	Definition
SA TAB	slow-acting tablet
SA TABLETS	slow-acting tablets
SA TABS	slow-acting tablets
SAL	salve
SALIC	*
SCRUB	scrub
SE	*
SER	extended-release suspension
SET	set
SGL	soft b23gel cap
SHA	shampoo
SHAM	shampoo
SHAMPOO	shampoo
SHMP	shampoo
SHOE	shoe
SLT	sublingual tablet
SL TAB	sublingual tablet
SO	solution
SOA	soap
SOAJ	*
SOCT	*
SOL	solution
SOLG	gel forming solution
SOLN	solution
SOLR	solution, reconstituted
SOLUTION	solution
SOLU	solution
SOPN	*
SOSY	*
SOTJ	*
SP	spray
SPG	sponge
SPN	*
SPONGE	sponge

Dosage Form	Definition
SPR	spray
SPRAY	spray
SQU	*
SRER	*
SRN	syringe
ST	*
STA	*
STAT	immediately
STK	stick
STOCKING	stocking
STP	strip
STR	strip
STRIP	strip
STRIPS	strips
STRP	strip
SU	suspension, solution, suppository, powder, or granules for reconstitution (varies)
SUB	sublingual
SUBL	tablet, sublingual
SUBLINGUAL	sublingual
SUER	*
SUP	suppository
SUPN	*
SUPP	suppository
SUPPOSITORIES	suppositories
SUPPOSITORY	suppository
SUS	suspension
SUS/LIQ	suspension/liquid
SUSP	suspension
SUSPEN	suspension
SUSPENDED RELEASE CAPLET	suspended release caplet
SUSPENSION	suspension
SUSR	suspension, reconstituted

Dosage Form	Definition
SUSY	*
SWA	swab
SWAB	swab
SWABS	swabs
SYG	*
SYP	syrup
SYR	syrup
SYRG	syringe
SYRINGE	syringe
SYRP	syrup
SYRUP	syrup
T	tablet
T12	12 hour extended-release tablet
T12A	12 hour extended-release tablet
T24	24 hour extended-release tablet
T24A	24 hour extended-release tablet
TA	tablet
TAB	tablet
TAB CHEW	chewable tablet
TAB DR	delayed-release tablet
TAB EC	enteric coated tablet
TAB SL	slow-acting tablet
TAB SUBL	sublingual tablet
TABL	tablet
TABLET	tablet
TABLET CUTTER	tablet cutter
TABLET SPLITTER	tablet splitter
TABLETS	tablets
TABS	tablets
TAM	tampon
TAP	tape
TAPE	tape
TB	tablet
TB12	tablet, extended-release 12 hour

Dosage Form	Definition
TB24	tablet, extended-release 24 hour
TBCH	chewable tablet
TBCR	tablet, extended-release
TBDD	*
TBDP	tablet, dispersible
TBEC	tablet, delayed-release
TBED	*
TBEF	tablet effervescent
TBPK	*
TBS	tablets
TBSL	sublingual tablet
TBSO	tablet, soluble
TBSR	slow-release tablet
TC	tablet, chewable
TCP	tablet, coated particles
TDM	extended-release film
TDR	orally disintegrating tablets
TDS	transdermal system
TEF	effervescent tablet
TER	extended-release tablet
TERF	film, extended-release
TES	test
TEST	test
TEST STRIP	test strip
TEST STRIPS	test strips
TIN	tincture
TINC	tincture
TOP CREAM	topical cream
TOP OINT	topical ointment
TOP SOL	topical solution
TOP SOLN	topical solution
TOPICAL	topical
TOPICAL CREAM	topical cream
TOPICAL GEL	topical gel

Dosage Form	Definition
TOPICAL OINTMENT	topical ointment
TOPICAL SOLUTION	topical solution
TOPICAL-UNSPECIFIED	topical-unspecified
TRO	troche
TROC	troche
TROCHE	troche
TTB	time release tablet
TUB	tube
TUBE	tube
UNDERWEAR	underwear
UNIT DOSE	unit dose
UNT	unit
VAGINAL CREAM	vaginal cream
VAGINAL RING	*
VAPORIZER	vaporizer
VIA	vial
VIAL	vial
VIAL(S)	vial(s)
VIL	vial
WAB	*
WAF	wafer
WAFR	wafer
WALKER	walker
WASH	wash
WIPES	wipes
Z-PAK	z-pak

* No definition for the dosage form.

Appendix 2
Definitions for RXFRMUNT, Quantity Unit of Medication

Definitions for RXFRMUNT, Quantity Unit of Medication

Code	Description
-1	inapplicable
-7	refused
-8	don't know
-15	cannot be computed
ALCOHOL PADS	alcohol pads
BLISTERS	*
CAPLT	caplet
CAPS	capsule
CC	cubic centimeter
DEVICE	device
EA	each
G	gram
GELC	*
GM	gram
GR	gram
INH	inhaler
INHALERS	*
L	liter
LANCETS	lancets
LOZ	lozenge
MCL	microliter
MCM	micrometer
MCN	*
MG	milligram
ML	milliliter
MONITOR	monitor

Code	Description
NDL	*
OTHER	other
PA	*
PADS	pads
PEN NEEDLES	*
PT	*
SRN	*
SUP	*
SWABS	swabs
TEST STRIPS	test strips
TROCHES	troches
OZ	ounce
QT	quart
TAB	tablet

*** No description for the code.**

Appendix 3
Definitions for RXSTRUNT, Unit of Medication

Definitions for RXSTRUNT, Unit of Medication

Abbreviations, Codes and Symbols	Definition
-7	refused
-8	don't know
-15	cannot be computed
%	percent
%/OTHER	percent/other
09	compound
9HR	9hr
24HR	24hr
91	other specify
ACT	actuation
ACTIVATION	activation
ACTUATION	actuation
BLIST	blister
B CELL	b cell
CC	cubic centimeters
CM2	square centimeter
DAYS	days
DOSE	dose
DROP	drop
DRP	drop
EL	ELISA (enzyme linked immunosorbent assay)
G	gram
GM	gram
GM/SCOOP	*

Abbreviations, Codes and Symbols	Definition
GR	grain
HR or HRS	hour, hours
INH	inhalation
IU	international unit
MCG	microgram
MEQ	milliequivalent
MG	milligram
MG/MG/ACT	*
MG/ML/MG/ML	milligram/milliliter/milligram/milliliter
ML	milliliter
MM	millimeter
MMU	millimass units
MU	*
OTHER	other
OZ	ounce
PACKET	packet
PFU	plaque forming units
SPRAY	spray
SQ CM	square centimeter
U or UNIT	units
U/ML/U/ML	units/milliliter/units/milliliter
UNT	unit
UT/ML	*
VIAL	vial

* No definition for the abbreviations, codes and symbols.

Appendix 4
Definitions of Therapeutic Class Code

Definitions of Therapeutic Class Code

Therapeutic Class Code	Definition
-15	cannot be computed
-1	inapplicable
1	anti-infectives
2	amebicides
3	anthelmintics
4	antifungals
5	antimalarial agents
6	antituberculosis agents
7	antiviral agents
8	carbapenems
9	cephalosporins
10	leprostatics
11	macrolide derivatives
12	miscellaneous antibiotics
13	penicillins
14	quinolones
15	sulfonamides
16	tetracyclines
17	urinary anti-infectives
18	aminoglycosides
19	antihyperlipidemic agents
20	antineoplastics
21	alkylating agents
22	antineoplastic antibiotics
23	antimetabolites
24	antineoplastic hormones
25	miscellaneous antineoplastics
26	mitotic inhibitors

Therapeutic Class Code	Definition
27	radiopharmaceuticals
28	biologicals
30	antitoxins and antivenins
31	bacterial vaccines
32	colony stimulating factors
33	immune globulins
34	in vivo diagnostic biologicals
36	recombinant human erythropoietins
37	toxoids
38	viral vaccines
39	miscellaneous biologicals
40	cardiovascular agents
41	agents for hypertensive emergencies
42	angiotensin converting enzyme inhibitors
43	antiadrenergic agents, peripherally acting
44	antiadrenergic agents, centrally acting
45	antianginal agents
46	antiarrhythmic agents
47	beta-adrenergic blocking agents
48	calcium channel blocking agents
49	diuretics
50	inotropic agents
51	miscellaneous cardiovascular agents
52	peripheral vasodilators
53	vasodilators
54	vasopressors
55	antihypertensive combinations
56	angiotensin II inhibitors
57	central nervous system agents
58	analgesics
59	miscellaneous analgesics
60	narcotic analgesics
61	nonsteroidal anti-inflammatory agents
62	salicylates
63	analgesic combinations
64	anticonvulsants

Therapeutic Class Code	Definition
65	antiemetic/antivertigo agents
66	antiparkinson agents
67	anxiolytics, sedatives, and hypnotics
68	barbiturates
69	benzodiazepines
70	miscellaneous anxiolytics, sedatives and hypnotics
71	CNS stimulants
72	general anesthetics
73	muscle relaxants
74	neuromuscular blocking agents
76	miscellaneous antidepressants
77	miscellaneous antipsychotic agents
79	psychotherapeutic combinations
80	miscellaneous central nervous system agents
81	coagulation modifiers
82	anticoagulants
83	antiplatelet agents
84	heparin antagonists
85	miscellaneous coagulation modifiers
86	thrombolytics
87	gastrointestinal agents
88	antacids
89	anticholinergics/antispasmodics
90	antidiarrheals
91	digestive enzymes
92	gallstone solubilizing agents
93	GI stimulants
94	H2 antagonists
95	laxatives
96	miscellaneous GI agents
97	hormones/hormone modifiers
98	adrenal cortical steroids
99	antidiabetic agents
100	miscellaneous hormones
101	sex hormones
102	contraceptives

Therapeutic Class Code	Definition
103	thyroid hormones
104	immunosuppressive agents
105	miscellaneous agents
106	antidotes
107	chelating agents
108	cholinergic muscle stimulants
109	local injectable anesthetics
110	miscellaneous uncategorized agents
111	psoralens
112	radiocontrast agents
113	genitourinary tract agents
114	illicit (street) drugs
115	nutritional products
116	iron products
117	minerals and electrolytes
118	oral nutritional supplements
119	vitamins
120	vitamin and mineral combinations
121	intravenous nutritional products
122	respiratory agents
123	antihistamines
124	antitussives
125	bronchodilators
126	methylxanthines
127	decongestants
128	expectorants
129	miscellaneous respiratory agents
130	respiratory inhalant products
131	antiasthmatic combinations
132	upper respiratory combinations
133	topical agents
134	anorectal preparations
135	antiseptic and germicides
136	dermatological agents
137	topical anti-infectives
138	topical steroids

Therapeutic Class Code	Definition
139	topical anesthetics
140	miscellaneous topical agents
141	topical steroids with anti-infectives
143	topical acne agents
144	topical antipsoriatics
146	mouth and throat products
147	ophthalmic preparations
148	otic preparations
149	spermicides
150	sterile irrigating solutions
151	vaginal preparations
153	plasma expanders
154	loop diuretics
155	potassium-sparing diuretics
156	thiazide diuretics
157	carbonic anhydrase inhibitors
158	miscellaneous diuretics
159	first generation cephalosporins
160	second generation cephalosporins
161	third generation cephalosporins
162	fourth generation cephalosporins
163	ophthalmic anti-infectives
164	ophthalmic glaucoma agents
165	ophthalmic steroids
166	ophthalmic steroids with anti-infectives
167	ophthalmic anti-inflammatory agents
168	ophthalmic lubricants and irrigations
169	miscellaneous ophthalmic agents
170	otic anti-infectives
171	otic steroids with anti-infectives
172	miscellaneous otic agents
173	HMG-CoA reductase inhibitors
174	miscellaneous antihyperlipidemic agents
175	protease inhibitors
176	NRTIs
177	miscellaneous antivirals

Therapeutic Class Code	Definition
178	skeletal muscle relaxants
179	skeletal muscle relaxant combinations
180	adrenergic bronchodilators
181	bronchodilator combinations
182	androgens and anabolic steroids
183	estrogens
184	gonadotropins
185	progestins
186	sex hormone combinations
187	miscellaneous sex hormones
191	narcotic analgesic combinations
192	antirheumatics
193	antimigraine agents
194	antigout agents
195	5HT3 receptor antagonists
196	phenothiazine antiemetics
197	anticholinergic antiemetics
198	miscellaneous antiemetics
199	hydantoin anticonvulsants
200	succinimide anticonvulsants
201	barbiturate anticonvulsants
202	oxazolidinedione anticonvulsants
203	benzodiazepine anticonvulsants
204	miscellaneous anticonvulsants
205	anticholinergic antiparkinson agents
206	miscellaneous antiparkinson agents
208	SSRI antidepressants
209	tricyclic antidepressants
210	phenothiazine antipsychotics
211	platelet aggregation inhibitors
212	glycoprotein platelet inhibitors
213	sulfonylureas
214	biguanides
215	insulin
216	alpha-glucosidase inhibitors
217	bisphosphonates

Therapeutic Class Code	Definition
218	alternative medicines
219	nutraceutical products
220	herbal products
222	penicillinase resistant penicillins
223	antipseudomonal penicillins
224	aminopenicillins
225	beta-lactamase inhibitors
226	natural penicillins
227	NNRTIs
228	adamantane antivirals
229	purine nucleosides
230	aminosalicylates
231	nicotinic acid derivatives
232	rifamycin derivatives
233	streptomyces derivatives
234	miscellaneous antituberculosis agents
235	polyenes
236	azole antifungals
237	miscellaneous antifungals
238	antimalarial quinolines
239	miscellaneous antimalarials
240	lincomycin derivatives
241	fibric acid derivatives
242	psychotherapeutic agents
243	leukotriene modifiers
244	nasal lubricants and irrigations
245	nasal steroids
246	nasal antihistamines and decongestants
247	nasal preparations
248	topical emollients
249	antidepressants
250	monoamine oxidase inhibitors
251	antipsychotics
252	bile acid sequestrants
253	anorexiants
254	immunologic agents

Therapeutic Class Code	Definition
256	interferons
257	immunosuppressive monoclonal antibodies
261	heparins
262	coumarins and indandiones
263	impotence agents
264	urinary antispasmodics
265	urinary pH modifiers
266	miscellaneous genitourinary tract agents
267	ophthalmic antihistamines and decongestants
268	vaginal anti-infectives
269	miscellaneous vaginal agents
270	antipsoriatics
271	thiazolidinediones
272	proton pump inhibitors
273	lung surfactants
274	cardioselective beta blockers
275	non-cardioselective beta blockers
276	dopaminergic antiparkinsonism agents
277	5-aminosalicylates
278	cox-2 inhibitors
279	gonadotropin-releasing hormone and analogs
280	thioxanthenes
281	neuraminidase inhibitors
282	meglitinides
283	thrombin inhibitors
284	viscosupplementation agents
285	factor Xa inhibitors
286	mydriatics
287	ophthalmic anesthetics
288	5-alpha-reductase inhibitors
289	antihyperuricemic agents
290	topical antibiotics
291	topical antivirals
292	topical antifungals
293	glucose elevating agents
295	growth hormones

Therapeutic Class Code	Definition
296	inhaled corticosteroids
297	mucolytics
298	mast cell stabilizers
299	anticholinergic bronchodilators
300	corticotropin
301	glucocorticoids
302	mineralocorticoids
303	agents for pulmonary hypertension
304	macrolides
305	ketolides
306	phenylpiperazine antidepressants
307	tetracyclic antidepressants
308	SSNRI antidepressants
309	miscellaneous antidiabetic agents
310	echinocandins
311	dibenzazepine anticonvulsants
312	cholinergic agonists
313	cholinesterase inhibitors
314	antidiabetic combinations
315	glycylcyclines
316	cholesterol absorption inhibitors
317	antihyperlipidemic combinations
318	insulin-like growth factor
319	vasopressin antagonists
320	smoking cessation agents
321	ophthalmic diagnostic agents
322	ophthalmic surgical agents
323	antineoplastic monoclonal antibodies
324	antineoplastic interferons
325	sclerosing agents
327	antiviral combinations
328	antimalarial combinations
329	antituberculosis combinations
330	antiviral interferons
331	radiologic agents
332	radiologic adjuncts

Therapeutic Class Code	Definition
333	miscellaneous iodinated contrast media
334	lymphatic staining agents
335	magnetic resonance imaging contrast media
336	non-iodinated contrast media
337	ultrasound contrast media
338	diagnostic radiopharmaceuticals
339	therapeutic radiopharmaceuticals
340	aldosterone receptor antagonists
341	atypical antipsychotics
342	renin inhibitors
343	tyrosine kinase inhibitors
344	nasal anti-infectives
345	fatty acid derivative anticonvulsants
346	gamma-aminobutyric acid reuptake inhibitors
347	gamma-aminobutyric acid analogs
348	triazine anticonvulsants
349	carbamate anticonvulsants
350	pyrrolidine anticonvulsants
351	carbonic anhydrase inhibitor anticonvulsants
352	urea anticonvulsants
353	anti-angiogenic ophthalmic agents
354	H. pylori eradication agents
355	functional bowel disorder agents
356	serotoninergic neuroenteric modulators
357	growth hormone receptor blockers
358	metabolic agents
359	peripherally acting antiobesity agents
360	lysosomal enzymes
361	miscellaneous metabolic agents
362	chloride channel activators
363	probiotics
364	antiviral chemokine receptor antagonist
365	medical gas
366	integrase strand transfer inhibitor
368	non-ionic iodinated contrast media
369	ionic iodinated contrast media

Therapeutic Class Code	Definition
370	otic steroids
371	dipeptidyl peptidase 4 inhibitors
372	amylin analogs
373	incretin mimetics
374	cardiac stressing agents
375	peripheral opioid receptor antagonists
376	radiologic conjugating agents
377	prolactin inhibitors
378	drugs used in alcohol dependence
379	next generation cephalosporins
380	topical debriding agents
381	topical depigmenting agents
382	topical antihistamines
383	antineoplastic detoxifying agents
384	platelet-stimulating agents
385	group I antiarrhythmics
386	group II antiarrhythmics
387	group III antiarrhythmics
388	group IV antiarrhythmics
389	group V antiarrhythmics
390	hematopoietic stem cell mobilizer
391	mTOR kinase inhibitors
392	otic anesthetics
393	cerumenolytics
394	topical astringents
395	topical keratolytics
396	prostaglandin D2 antagonists
397	multikinase inhibitors
398	BCR-ABL tyrosine kinase inhibitors
399	CD52 monoclonal antibodies
400	CD33 monoclonal antibodies
401	CD20 monoclonal antibodies
402	VEGF/VEGFR inhibitors
403	mTOR inhibitors
404	EGFR inhibitors
405	HER2 inhibitors

Therapeutic Class Code	Definition
406	glycopeptide antibiotics
407	inhaled anti-infectives
408	histone deacetylase inhibitors
409	bone resorption inhibitors
410	adrenal corticosteroid inhibitors
411	calcitonin
412	uterotonic agents
413	antigonadotropic agents
414	antidiuretic hormones
415	miscellaneous bone resorption inhibitors
416	somatostatin and somatostatin analogs
417	selective estrogen receptor modulators
418	parathyroid hormone and analogs
419	gonadotropin-releasing hormone antagonists
420	antiandrogens
422	antithyroid agents
423	aromatase inhibitors
424	estrogen receptor antagonists
426	synthetic ovulation stimulants
427	tocolytic agents
428	progesterone receptor modulators
429	trifunctional monoclonal antibodies
430	anticholinergic chronotropic agents
431	anti-CTLA-4 monoclonal antibodies
432	vaccine combinations
433	Catecholamines
435	selective phosphodiesterase-4 inhibitors
437	Immunostimulants
438	Interleukins
439	other immunostimulants
440	therapeutic vaccines
441	calcineurin inhibitors
442	TNF alfa inhibitors
443	interleukin inhibitors
444	selective immunosuppressants
445	other immunosuppressants

Therapeutic Class Code	Definition
446	neuronal potassium channel openers
447	CD30 monoclonal antibodies
448	topical non-steroidal anti-inflammatories
449	hedgehog pathway inhibitors
450	topical antineoplastics
451	topical photochemotherapeutics
452	CFTR potentiators
453	topical rubefacient
454	proteasome inhibitors
455	guanylate cyclase-c agonists
456	ampa receptor antagonists
457	hydrazide derivatives
458	sglt-2 inhibitors
459	urea cycle disorder agents
460	phosphate binders
461	topical anti-rosacea agents
462	allergenics
463	protease-activated receptor-1 antagonists
464	miscellaneous diagnostic dyes
465	diarylquinolines
466	bone morphogenetic proteins
467	ace inhibitors with thiazides
468	antiadrenergic agents (central) with thiazides
469	antiadrenergic agents (peripheral) with thiazides
470	miscellaneous antihypertensive combinations
472	beta blockers with thiazides
473	angiotensin II inhibitors with thiazides
474	beta blockers with calcium channel blockers
475	potassium sparing diuretics with thiazides
476	ace inhibitors with calcium channel blocking agents
479	angiotensin II inhibitors with calcium channel blockers
480	antiviral boosters
481	NK1 receptor antagonists
482	angiotensin receptor blockers and neprilysin inhibitors
483	neprilysin inhibitors
484	PCSK9 inhibitors

Therapeutic Class Code	Definition
485	NS5A inhibitors
486	oxazolidinone antibiotics
487	cftr combinations
488	anticoagulant reversal agents
489	CD38 monoclonal antibodies
490	peripheral opioid receptor mixed agonists/antagonists
491	local injectable anesthetics with corticosteroids
493	anti-PD-1 monoclonal antibodies
494	PARP inhibitors
495	Calcimimetics
496	VMAT2 inhibitors
497	cation exchange resins
498	antineoplastic combinations
499	carbapenems/beta-lactamase inhibitors
500	PI3K inhibitors
501	CDK 4/6 inhibitors
502	CGRP inhibitors
503	streptogramins
504	antimanic agents
505	transthyretin stabilizers
506	topical allergy diagnostic agents
507	malignancy photosensitizers
508	NHE3 inhibitors
509	BTK inhibitor
510	miscellaneous erythropoiesis agents
511	renal replacement solutions
512	melanocortin receptor agonists
513	investigational drugs
514	hereditary angiodema agents
515	peripheral opiod receptor agonists
516	noradrenergic uptake inhibitors for ADHD
517	CD19 monoclonal antibodies