Chronic Condition Data Warehouse

Your source for national CMS Medicare and Medicaid research data

Medicare-Medicaid Linked Enrollees Analytic Data Source (MMLEADS V2.0)

User Guide

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Executive Summary

The Chronic Condition Data Warehouse (CCW) was developed in response to one of the goals of Section 723 of the Medicare Modernization Act of 2003. This mandate required the Centers for Medicare & Medicaid Services (CMS) to develop a research database to facilitate research on chronic illness in the Medicare population and ultimately improve the quality of care and reduce program spending. CCW clinical condition indicator variables have been developed from the claims data for 27 chronic conditions that were deemed to be relevant to the study of Medicare-only beneficiaries. Since its inception, the CCW has been in a continual state of improvement including the refinement and expansion of condition flags for Medicare beneficiaries, and the addition of Medicaid Analytic eXtract (MAX) claims, eligibility and enrollment data. The addition of Medicaid data to the CCW has vastly improved the ability of researchers to link Medicare and Medicaid data to study dually eligible Medicare-Medicaid enrollees. However, the ability to quickly and efficiently study this population has still been limited.

Recognizing this handicap, and fueled by the Patient Protection and Affordable Care Act (ACA) mandate to provide the tools necessary for improving the care of Medicare-Medicaid enrollees, the CMS Medicare Medicaid Coordination Office (MMCO) initiated an effort to improve the CCW's capacity for research on the Medicare-Medicaid dually eligible population. *This effort extends the opportunities offered by the CCW to the study of Medicaid-only and Medicare-Medicaid enrollees in the following ways:*

1. The 27 existing CCW condition algorithms that were originally applied to Medicare claims data were expanded to Medicaid-only beneficiaries using Medicaid data, as well as to Medicare-Medicaid enrollee data gleaning from both Medicare and Medicaid claims data for calendar year 2000 forward;

2. Additional condition indicator variables were added to all Medicare, Medicaid, and Medicare-Medicaid enrollees beneficiary data for conditions that are critical to the study of Medicaid-only and Medicare-Medicaid dually enrolled beneficiaries (e.g., mental health and tobacco-use conditions; conditions related to intellectual, developmental and physical disabilities; and other chronic physical and behavioral health conditions);

3. The summary information previously available on the CCW website (https://www.ccwdata.org/web/guest/condition-categories) has been expanded to provide information regarding the new condition indicator variables developed as a part of #1 and #2 above; and

4. The Medicare-Medicaid Linked Enrollee Analytic Data Source (MMLEADS) has been developed. This suite of linked files is considered version 2.0 and is based on previous versions of the Medicare-Medicaid Linked Data Files to allow for the

examination of all Medicare and Medicaid enrollment and claims data for those who were dually enrolled in both programs. The current files are intended for both CMS and external researcher use. They are primarily designed to address questions regarding eligibility, enrollment, cost, use, and select physical and mental health conditions. Building upon points #1 through #3 above, this comprehensive suite of annual, calendar year data files contains:

- Beneficiary/Enrollee File
- Medicaid Service-Level File
- Medicare Service-Level File
- Chronic Conditions Files
  - 27 CCW chronic conditions
  - Nine mental health and tobacco-related conditions
  - 15 conditions related to intellectual, developmental and physical disability
  - Other chronic physical and behavioral health conditions

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF CODE EXAMPLES

Chapter 1. Data Files Overview

The goal of this user guide is to document and describe the contents of the person-level and service-level analytic files that are part of the Medicare-Medicaid Linked Enrollee Analytic Data Source (MMLEADS V2.0) Files. The data files are primarily designed to address questions regarding eligibility, enrollment, cost, use, and select physical and mental health conditions. Details regarding overall file creation as well as creation of derived variables are included. We also demonstrate helpful hints for working with these data files.

A. Background on the Medicare and Medicaid Programs

Medicare is the primary health insurance program for people age 65 or older, people under age 65 with disabilities, and people of all ages with End-Stage Renal Disease (ESRD). In 2012, Medicare provided coverage for 53.6 million people[1]. Nearly all Medicare beneficiaries receive Part A hospital insurance benefits, which help cover inpatient hospital care, skilled nursing facility stays, home health services, and hospice care. Most Medicare Part A beneficiaries also subscribe to Part B medical insurance benefits, which help to cover physician services, outpatient care, durable medical equipment (DME), and some home health care. Additionally, many Medicare beneficiaries elect to purchase Medicare Part D prescription drug coverage (available since 2006). Beneficiaries may elect to receive fee-for-service (FFS) Medicare or, as an alternative, enroll in Medicare Part C (Medicare Advantage [MA]). These are private plans similar to health maintenance organizations (HMOs) which provide Medicare Part A and Part B services. Many plans offer prescription drug coverage options. For more information on the Medicare program, see the CMS website (http://www.cms.gov/Medicare/Medicare-General-Information/MedicareGenInfo/index.html).

In 2012, more than 75 million people in the U.S. were covered by Medicaid or the Children's Health Insurance Program (CHIP).[2] Medicaid is a state-administered benefit with guidance/requirements and shared funding from the federal government and individual state governments (Title XIX of Social Security Act from 1965). Each state must provide the minimum federally mandated services and coverage for federally mandated eligibility groups; however, benefits vary from state to state. Many groups of people are covered by Medicaid, depending on the state's requirements (e.g., age; whether pregnant, disabled, blind, or 65+; income level and resources; U.S. citizenship or lawful immigration status). There are also special rules for those who live in nursing homes and for children with disabilities living at home. For more information on the Medicaid program, see the CMS website (http://www.medicaid.gov/).

In 2012, approximately 10.4 million persons were covered by both Medicare and Medicaid. Most of these "Medicare-Medicaid enrollees" qualified for both programs by being either very low income and age 65+ or very low income and disabled. MMLEADS was developed to integrate the Medicare and Medicaid data described above in order to facilitate the study of health care experiences of Medicare-Medicaid dually enrolled beneficiaries.

[1] https://www.ccwdata.org/web/guest/medicare-tables-reports
[2] https://www.ccwdata.org/web/guest/medicaid-tables-reports

B. Source Data

The primary data source for the MMLEADS is CMS's Chronic Condition Data Warehouse (CCW). The CCW was developed in response to Section 723 of the Medicare Modernization Act of 2003, which required CMS to develop a database that would facilitate research on chronic illness in the Medicare population and ultimately improve the quality of care and reduce program spending.

The CCW contains Medicare enrollment and eligibility information for all beneficiaries (whether they are in the FFS program or a Medicare Advantage [MA; managed care] plan, and whether or not they have a chronic condition), complete data for Part A and Part B claims, and complete data for Part D prescription drug events. The CCW also contains assessment data (e.g., Minimum Data Set [MDS] and Outcome and Assessment Information Set [OASIS]), and Medicaid eligibility and claims data (the Medicaid Analytic eXtract [MAX] files).

One of the CCW's distinguishing features is the unique identifier that it assigns to each Medicare or Medicaid beneficiary. This identifier is often referred to simply as the BENE_ID and can be used to link data for individual beneficiaries from multiple files and across multiple years. The BENE_ID also enables investigators to understand the full range of services paid by Medicare and Medicaid for those with dual enrollment. The BENE_ID is specific to the CCW and is not applicable to any other identification system or data source. MMLEADS uses the BENE_ID as its primary person identifier; the BENE_ID is missing for a small numbers of enrollees in this file – therefore the MSIS_ID in combination with the state code (variable called D_STATE_CD) is used for this group. The BENE_ID and MSIS_ID are encrypted prior to delivering the data files to researchers. It is possible to link the MMLEADS files to other CCW data sources, using the BENE_ID, as allowed by the investigator's data use agreement (DUA).

Another feature of the CCW is pre-defined variables that indicate whether a beneficiary has been treated for one or more of a number of specific chronic conditions. In addition to the original 27 CCW conditions, the CMS Medicare-Medicaid Coordination Office (MMCO) has developed pre-defined variables for other conditions in order to enhance the ability to conduct research on the Medicare-Medicaid population. These additional variables cover mental health and tobacco use, intellectual, developmental and physical disability, and other chronic physical and behavioral health conditions.

1. Medicare Source Data

The CCW obtains the CMS enrollment database (EDB) each month. The EDB contains information on beneficiaries' demographic characteristics and details of their enrollment in Medicare. The CCW uses the monthly EDB files to create an annual enrollment data file known as the Master Beneficiary Summary File (MBSF). There is a record in MMLEADS for each person in the MBSF.

Providers submit Medicare claims to Medicare Administrative Contractors (MACs) for

payment processing. All valid claims are uploaded to the CMS National Claims History (NCH). The NCH files are the original source data for all CMS claims data files and contain all transactional claims data (i.e., each copy of the claim, not just the final version). The CCW downloads files from the NCH and extracts the final action claims data (i.e., the final reconciled version of the claim) to create the SAS analytic files related to Medicare service cost and use for MMLEADS.

The Medicare claims found in the CCW are generally fee-for-service (FFS) Part A and B claims only (i.e., encounter information for services provided by MA plans is not currently available). However, there are a few situations where the claims data do include services for MA enrollees. The two most notable instances are hospice care, which MA plans do not cover, and inpatient and skilled nursing facility services for beneficiaries enrolled in certain MA plans that are reimbursed based on costs and have the option of getting CMS to process those claims. The nuances of when services for managed care enrollees appear in Medicare's claims data are explained in greater detail in a technical publication from the Research Data Assistance Center (ResDAC) (http://www.resdac.org/resconnect/articles/114). For MMLEADS V2.0, we also obtained a data file from CMS that contains Medicare Part C (i.e., Medicare Advantage, HMO) premium information. As stated earlier, we do not have Medicare managed care encounter data and cannot describe the services used by these beneficiaries – however the total capitated payments for the Part C premiums are included in this data file.

The data flow for Medicare Part D claims (known as prescription drug events, or PDEs) differs somewhat from the flow for Part A and B claims. Part D plans or their designated pharmacy benefits manager (PBM) or other third-party administrator process incoming claims from pharmacies. These claims may undergo several rounds of transactions between the parties before the plan finally adjudicates a Part D claim for payment. Then the plan submits these PDE records to the CMS. The CCW downloads the PDEs and creates PDE Research Identifiable Files (RIFs) for use with all CCW PDE data products[3], including MMLEADS.

The Medicare Part D benefit was new in 2006; CCW contains all of the Medicare Part D PDE data since program inception. The PDE data has information for all prescription fills that are covered by a Part D plan, regardless of whether the beneficiary is enrolled in a managed care plan (called the Medicare Advantage Prescription Drug Plan; MA-PD) or the FFS program (called a stand-alone prescription drug plan, or PDP). However, CMS does not collect PDEs for beneficiaries that are enrolled in employer- or union-sponsored plans that receive Part D's retiree drug subsidy.

2. Medicaid Source Data

Each state compiles information regarding enrollment, service utilization, and payment in their Medicaid Management Information System (MMIS). CMS provides the state with a data dictionary to map their MMIS data elements into the Medicaid Statistical Information System (MSIS). Each state provides final, reconciled MSIS data files to CMS in the MSIS

format. CMS and its contractors compile the various state MSIS data files into a uniform data structure for each calendar year and make these annual state segment files available to researchers as the Medicaid Analytic eXtract (MAX) data files.

The MAX data are contained in the CMS Chronic Condition Data Warehouse (CCW); these files are the primary source of Medicaid eligibility and claims data in MMLEADS. CCW has obtained MAX data for all states for 1999 –2010, all states except for Colorado in 2011, and data for 47 states for 2012 (no data for ID, CO, KS or RI). For the more recent years of MAX data fewer states have data, because states began to transition from using the Medical Statistical Information System (MSIS) to the Transformed Medicaid Statistical Information System (TMSIS). As a result, many states are choosing to submit data to CMS using only the TMSIS format.

CCW also obtains a file, known as the Medicare Modernization Act (MMA) file, directly from CMS that contains a monthly Medicaid state of enrollment code associated with each Medicaid enrollee. The MMA File contains state-reported information to identify the dually enrolled Medicare-Medicaid eligible individuals for each month.

The MAX development process combines MSIS initial claims, interim claims, voids, and adjustments for a given service into a final action event. Unlike fiscal-based MSIS quarterly files, MAX data are organized into annual calendar year files based on date of service. Since it is necessary to allow for the delay between service delivery dates and claims adjudication dates, the availability of MAX data for a particular time period lags behind that of the MSIS data. States may finalize their MSIS files at different points in time, which can lead to variation in the timing/production of the MAX files. Additional details regarding the construction of the MAX files are available on the CMS website (see https://www.cms.gov/MedicaidDataSourcesGenInfo/07_MAXGeneralInformation.asp).

The source CCW MAX data files consist of the following five files:

- **Person Summary (PS)** - Person-level information regarding Medicaid-eligible individuals who have enrolled in a state Medicaid program in the year, whether or not they used any services.
- **Inpatient Hospital (IP)** - Contains complete stay records for enrollees who used inpatient services (e.g., acute hospitalizations). Records include diagnoses, procedures, discharge status, length of stay, and payment amounts.
- **Long Term Care (LT)** - Includes service data from four types of long-term care facilities (e.g., nursing facilities, intermediate care facilities) that serve Medicaid enrollees and Medicare-Medicaid enrollees.
- **Prescription Drug (RX)** - Contains final action records of prescription and over-the-counter drugs paid by Medicaid. Records include a National Drug Code (NDC) to indicate what drug product was used, service date and payment information.
- **Other Services (OT)** - Includes outpatient physician and professional services, hospice, home health, lab/X-ray, durable medical equipment (DME), premium

payments etc., and all Medicaid records not reported in any other MAX service files.

Investigators will find useful information about MAX file content by state and year by reviewing the MAX Data Validation Tables and Data Anomalies Reports under the Medicaid Analytic eXtract (MAX) General Information on Data section of the CMS website (https://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/MAX-Validation-Reports.html). The CCW website presents several white papers that document some important research considerations when using MAX data and some particular types of services are highlighted (https://www.ccwdata.org/web/guest/white-papers-presentations).

Another useful resource for researchers is the MAX Chartbook, which provides a data appendix summarizing enrollee demographic, eligibility characteristics, Medicaid service use, and Medicaid expenditures at national and state levels. MAX Chartbooks are available on the CMS website as well. The three versions currently available include data from 2002, 2004, or 2008. Many of these documents, in addition to statistical resources, can also be referenced on the ResDAC web site at (https://www.resdac.org/cms-data/files/max-ps).

C. Introduction to MMLEADS

The Medicare-Medicaid Linked Enrollee Analytic Data Source (MMLEADS) files were produced from manipulated CCW data (ultimate source was generally CMS administrative data) and may be used as stand-alone files for a range of analytic purposes.

The CCW source data files used to generate the MMLEADS files are listed below in Table 1.

Table 1. MMLEADS Source Data

Medicare	Medicaid (MAX)
Master Beneficiary Summary File (A/B/D enrollment and conditions)	Person Summary File (PS)
Part A Institutional Claims: Inpatient (IP) Skilled Nursing Facility (SNF) Home Health (HH) Hospice	Inpatient File (IP) Long-term care File (LT)
Part B Institutional Claims (Hospital Outpatient; HOP)	Other File (OT)
Part B Non-Institutional Claims (Carrier and DME)	Other File (OT)
Part D Events (PDE; prescription fills)	Drug File (RX)

1. What's new in MMLEADS V2.0?

MMLEADS V2.0 contains a number of structural and content-based changes as compared to the original MMLEADS. First, the structure of MMLEADS V2.0 is different in that, instead of two separate linkable but not unduplicated files for Medicare and Medicaid, there is only one beneficiary file. In addition, some of the service utilization counts have been unduplicated where it was clear that the Medicaid payment was merely to cover the Medicare deductible and/or coinsurance amounts for the same service on the same day[4]. Additional variables are also included in the V2.0 files, such as the following:

- Monthly state codes, which allow for assignment of beneficiaries/enrollees to a single state for each month (even if Medicaid enrolled in more than one state during the year)
- Monthly Medicare HMO variables
- Medicare Part D Plan identifiers
- Social Security Administration (SSA) award codes for disability determinations for Medicare beneficiaries
- Monthly variables for Medicare long-term care service use
- Medicare Part D (drug) service categorizations
- Premium payment information for Medicare Advantage (aka Medicare Part C)

[4] The payment scenarios when this might occur, and an example of how to make use of the variables we created to identify these scenarios is explained later in the Key Concepts section of this User Guide.

The MMLEADS V2.0 files include the same Medicare and Medicaid populations as the original MMLEADS files.

2. Strengths and benefits of MMLEADS V2.0

One of the most important strengths of MMLEADS V2.0 is that it gives users the ability to examine information regarding enrollment, service use and payments for both payers – which is tremendously helpful for dually enrolled populations. Researchers have long struggled with how to appropriately combine both Medicare and Medicaid data (see Prela et al., 2009[5], for example).

A key feature of the MMLEADS V2.0 files is that they contain value-added derived data fields, including numerous summary variables and other derived variables to use for aggregating data (e.g., determining full/partial benefit Medicare-Medicaid enrollment, number of months of Medicare-Medicaid dual coverage, summary service use/payment variables). These variables are designed to make it easy to calculate a variety of different statistics – per capita, per user, per member per month, etc.

3. Limitations of MMLEADS

The MMLEADS V2.0 files are extremely large –both in terms of the number of records in a file and in terms of the number of variables. Investigators must be very efficient with regard to data management practices since even simple analyses can be very time consuming and (server) resource intensive.

To help assuage this limitation, we include a variable that identifies a 1% sample of beneficiaries/enrollees (variable called SAMPLE_IND), which is described in greater detail in the Beneficiary/Enrollee File section of this document. We recommend limiting the population, whenever possible, to the 1% (e.g., when developing/testing code).

Furthermore, we highly recommend retaining only the variables necessary for your particular analyses. To assist data users with identifying the types of variables important for study, we have organized the data dictionary and User guide for MMLEADS V2.0 variables into “themes” – or categories (e.g. demographic, enrollment, utilization, spending).

An additional limitation is that this data resource does not contain raw claims data, but rather aggregates the claims into “services”. Some data file users may require the detailed claims-level data from the source Medicare or MAX claims data.

Finally, the entire Medicaid enrolled population in not included in MMLEADS – only the population either dually enrolled in Medicare or those Medicaid enrolled with disability. This sampling was selected to allow for comparisons between populations with some similarities; however, it is not possible to obtain total Medicaid spending and use with MMLEADS – the MAX data files would be required for this objective.

[5] Prela, C.M., Baumgardner, G.A., Reiber, G.E., et al., “Challenges in Merging Medicaid and Medicare Databases to Obtain Healthcare Costs for Dual-Eligible Beneficiaries: Using Diabetes as an Example.” *Pharmacoeconomics*, 2009; 27(2): 167-177.

D. Data File Structure

The MMLEADS V2.0 consists of four linkable beneficiary, service and chronic condition data files. These files are intended to be joined together, as needed, for a variety of analytic purposes, although a multitude of analyses are possible using the Beneficiary/Enrollee File alone. Files are created as annual files from 2006 - 2012. For each year, there are four files with two different levels of data available: two are person-level files and two are summary service-level files:

Table 2. MMLEADS Files

Person-level files	Service-level files
Beneficiary / Enrollee File	Medicare Service-Level File
Chronic Conditions File	Medicaid Service-Level File

The MMLEADS V2.0 service-level data files are partitioned into either Medicare files or Medicaid files. However, it is also easy to join the files together by using the unique person-level identifier called the beneficiary identification number (BENE_ID).

The types of information available in the MMLEADS V2.0 files are indicated in Table 3. Most investigators will want to use at least some information from the Beneficiary/Enrollee File – particularly enrollment and demographic variables, in order to identify a population of interest. Furthermore, the Beneficiary/Enrollee file contains a plethora of summary Medicare and Medicaid service use and payment information, ideal for a variety of analyses. Then, depending on the nature of the study, you may need to join to the Conditions File or the Service Files. The Medicare and Medicaid Service Files are particularly helpful if you are interested in the specific categories of services used – or the associated payments. The Chronic Conditions File is a person-level file designed to be used in conjunction with the Beneficiary/Enrollee File. All of these files are described in greater detail in (Chapter 3).

Table 3. MMLEADS Files Architecture

Person-Level	
Beneficiary/Enrollee File	**Chronic Conditions File**
Demographics (age, gender, race)	CCW chronic conditions (27)
Enrollment/coverage (months of FFS; MME classification, reasons for enrollment, waivers)	
LT care services indicators (and for Medicaid enrollees – long-term care supports and services status)	Mental health and tobacco-related conditions (9) Conditions related to intellectual, developmental and physical disability (15)
Summary payment/spending (monthly and by MME category)	
Summary utilization (monthly by setting and annually by MME category)	Other chronic physical and behavioral health conditions (10)
Service-Level	
Medicare	**Medicaid (MAX)**
2 levels of service types	3 levels of service types
User Counts	User Counts
Monthly Payment Summaries	Monthly Payment Summaries
Annual Payment Summaries	Annual Payment Summaries
Monthly Utilization Summaries	Monthly Utilization Summaries
Annual Utilization Summaries	Annual Utilization Summaries
Annual Payment Summaries by Dual Category	Annual Payment Summaries by Dual Category
Annual Utilization Summaries by Dual Category	Annual Utilization Summaries by Dual Category
(No corresponding information in Medicare	Federal Rates (by month)

As we describe this data product, we will often refer to a variable with regard to its original source (e.g., reference to a MAX variable such as EL_DOB; or a Medicare variable such as BENE_BIRTH_DT). In general, demographic variables in the MMLEADS files should be assumed to have Medicare sources, unless the person was only enrolled in Medicaid. Other variables clearly have Medicare-related sources (e.g., Medicare coverage/enrollment variables and the Medicare Service-Level File) or clearly have MAX sources (e.g., Medicaid enrollment/coverage variables and Medicaid Service-Level File).

Please note that throughout this document, when a specific variable is described, it will be in bold and all capitals (e.g., **D_AGE, S_MEDICARE_PMT**). All other references to specific variables will not be bolded so that is clear to users which particular variable is being described in a given

section, as opposed to when a variable is being used to define an algorithm for a different variable.

E. Population

The 2012 MMLEADS V2.0 files consist of 59,892,538 unique individuals, comprising the following mutually exclusive categories: Medicare-Medicaid dually enrolled (10,453,206), Medicare-only (43,143,977), and Medicaid-only with a disability (6,295,355).

Since the overarching objective of MMLEADS V2.0 is to facilitate examination of services for Medicare-Medicaid dual enrollees, MMLEADS includes all people who were dually enrolled at any time during the calendar year. In addition, to facilitate comparisons, MMLEADS includes the Medicare-only and the Medicaid-only with disability populations. Please note that MMLEADS does not contain information for the Medicaid-only *without* disability population (57,275,852 total individuals largely consisting of women and children) because this group does not particularly resemble the Medicare-Medicaid population, and therefore is not appropriate to serve as a comparison group for Medicare-Medicaid dual enrollees.

To identify the subpopulations contained in the MMLEADS, we developed an algorithm to identify these three broad eligibility groups, as follows:

1. Dually enrolled in Medicare and Medicaid

We used a monthly variable to identify individuals who were dually enrolled in Medicare and Medicaid at any given time over the course of the calendar year: DUAL_STUS_CD_01 through DUAL_STUS_CD_12 where the trailing numbers refer to the months of the year (e.g., DUAL_STUS_CD_01 is the dual status for the month of January) DUAL_STUS_CD_01 through DUAL_STUS_CD_12 is also referred to as DUAL_STUS_CD_*MM* for short, where the *MM* refers to the 2-digit numerical month code as above. The original source of the monthly state-reported dual status codes is from the Medicare data in the CCW MBSF. These state-reported DUAL_STUS_CD_*MM* variables are considered the "gold standard" for identifying people who are dually enrolled in Medicare and Medicaid since information from this variable is used to determine the level of Medicaid benefits or Medicare Part D low-income subsidies. The CCW receives this information from CMS with the Medicare enrollment data. Three general categories of Medicare-Medicaid dual enrollee were assigned:

1) those with "full" Medicaid benefits (values 02, 04, 08),
2) those identified as qualified Medicare beneficiary ("QMB-only"; value 01); and
3) those with other "partial" benefits (values 03, 05, or 06).

2. Medicare-only

If an individual was Medicare enrolled for one or more months of the year and was not classified as Medicare-Medicaid dual eligible based on criteria listed in #1 for any month in the calendar year, the individual was classified as Medicare-only.

3. Medicaid-only with Disability

If an individual was Medicaid enrolled (eligible due to disability) for one or more months of the year and was not classified as Medicare-Medicaid dual eligible based on criteria listed in #1 for any month in the calendar year, the individual was classified as Medicaid-only with Disability.

We used the monthly MAX uniform eligibility code variables (i.e., MAX_ELG_CD_MO_1 - MAX_ELG_CD_MO_12) to identify persons who are eligible for Medicaid due to blindness or disability (values 12, 22, 32, 42, or 52) or enrolled due to Breast and Cervical Cancer Act (value 3A). These algorithms are described in greater detail in Chapter 2 – section called Medicare and Medicaid Eligibility Classifications.

MMLEADS V2.0 contains a single person-level record in the Beneficiary/Enrollee File for each person enrolled in Medicare and/or Medicaid, as described above, during the year. Each person is uniquely identified with a BENE_ID. **All Medicare beneficiaries, and as a result all who are dually enrolled in Medicaid, have a BENE_ID.** The BENE_ID is missing for a small number of Medicaid enrollees in the Beneficiary/Enrollee File (*n*=359,252 in 2012). Records in the Beneficiary/Enrollee file for this Medicaid population subset can be identified using a combination of MSIS_ID and D_STATE_CD; in fact, the only records where an MSIS_ID is populated are those without a BENE_ID.

Note: Some people may have had more than one record in the source MAX PS if they were enrolled in Medicaid in more than one state during the course of a year. These records have been de-duplicated so that only one BENE_ID is associated with each individual. An algorithm was developed to artificially assign each person to only one state for each enrolled month. This algorithm, which uses the monthly variables in the Beneficiary/Enrollee File called D_STATE_CD_01 thru D_STATE_CD_12, is explained in Chapter 2.

A subpopulation that may be examined in MMLEADS consists of a random 1% beneficiary/enrollee sample. The data files are very large, and it may take several minutes for your desired program to run against the data. To make it easier to test analytic code, or to conduct analyses to check the feasibility of a larger study, a sampling variable is included in the Beneficiary/Enrollee File. This sampling variable is described in greater detail in Chapter 2 – Key Concepts.

F. Additional Resources for Medicare and Medicaid Data

Working with Medicare and Medicaid MAX administrative data files can be challenging. There is much to be understood regarding the nuances of the Medicare and Medicaid benefits, as well as details regarding how medical service utilization is represented in the source data files. While details on the source data are beyond the scope of this document, we direct the user to the following helpful resources.

1. Medicare Resources

CCW Technical Guidance: Getting Started with CMS Administrative Research Files (https://www.ccwdata.org/web/guest/technical-guidance-documentation).

Source data file record layouts, which appear on the CCW website under the "Data Dictionaries" tab (https://www.ccwdata.org/web/guest/data-dictionaries). A CMS contractor, the Research Data Assistance Center (ResDAC), also contains helpful information regarding Medicare data, including variable definitions and Knowledgebase articles (http://www.resdac.org/).

CCW condition categories, which appear on the CCW website under the "Condition Categories" tab (http://www.ccwdata.org/web/guest/condition-categories).

2. Medicaid Resources

It is often desirable to be able to determine which particular Medicare beneficiaries are also enrolled in Medicaid. People enrolled in Medicare who have limited income and resources may receive help paying for their out-of-pocket expenses from their state Medicaid program, and some people may be eligible for additional Medicaid benefits (https://www.cms.gov/MLNProducts/downloads/Medicare_Beneficiaries_Dual_Eligibles_At_a_Glance.pdf). Cost-sharing may include assistance with premium payments and may also include assistance with deductible, coinsurance or copayments. Some investigators may find it helpful to understand detailed information regarding the extent of Medicare and Medicaid benefits a person is entitled to receive: full benefits or only partial benefits, or simply a subsidy to offset a Medicare Part B or Part D premium. Determining who these Medicare-Medicaid enrolled beneficiaries (aka: dually eligible beneficiaries) are, can be easily accomplished using these data files.

Guidance for analyses using MAX data is available on the CCW website. CCW Technical Guidance: Getting Started with Medicaid Analytic eXtract (MAX) Data Files (https://www.ccwdata.org/web/guest/technical-guidance-documentation).

Source data file record layouts (i.e., for MAX data files) as well as additional details regarding the construction of the MAX files is available on the CMS website (https://www.cms.gov/MedicaidDataSourcesGenInfo/07_MAXGeneralInformation.asp).

MAX file layouts are available on the CCW website (https://www.ccwdata.org/web/guest/data-_dictionaries) and other helpful information regarding use of MAX files can be referenced on the Research Data Assistance Center (ResDAC) website (https://www.resdac.org/cms-data/file-availability).

Several health and mental/behavioral health conditions which are prevalent in Medicaid and Medicare-Medicaid enrollee populations have been identified by CMS. The algorithms for these mental health and tobacco use, disability related, and other chronic physical and behavioral health conditions go beyond the chronic condition categories which have traditionally been available through CCW and often referred to as the CCW conditions. These additional condition categories are available on the CCW website under the

"Condition Categories" tab (https://www.ccwdata.org/web/guest/condition-categories).

Chapter 2. Key Concepts

A. Medicare and Medicaid Eligibility Classifications

While many options exist for classifying people in terms of their level of dual Medicare-Medicaid enrollment coverage[6], the CMS Medicare-Medicaid Coordination Office (MMCO) prefers to identify Medicare-Medicaid enrollees, whenever possible and appropriate, using information from the Medicare Modernization Act files that states submit to CMS on a monthly basis.

To create variables in the MMLEADS V2.0, we used an algorithm from CMS to assign each person in the files an MME[7] classification for the purposes of calculating population statistics. Two levels of MME variables are available; those which have a monthly status and those which have an annual status. A combination of three variables is used for these determinations:

1. **Identification of dually eligible Medicare-Medicaid enrollees**: The state-reported monthly Medicare-Medicaid Enrollee Eligibility Type variable is submitted to CMS monthly. This variable is available to researchers in the CCW Master Beneficiary Summary File (i.e., CCW MBSF variable name is DUAL_STUS_CD_01 - DUAL_STUS_CD_12; also referred to as DUAL_STUS_CD_*MM*).

2. **Identification of Medicare-only Beneficiaries**: Monthly Medicare buy-in variables (i.e., BENE_MDCR_ENTLMT_BUYIN_IND_01 thru BENE_MDCR_ENTLMT_BUYIN_IND_12; also referred to as BENE_MDCR_ENTLMT_BUYIN_*MM*) available to researchers in the CCW Master Beneficiary Summary File are used to identify Medicare-only beneficiaries.

3. **Identification of Medicaid-only enrollees with Disability**: The monthly MAX uniform eligibility code variables (i.e., MAX_ELG_CD_MO_1 thru MAX_ELG_CD_MO_12; also referred to as MAX_ELG_CD_*MM*) from the MAX PS File are used to identify Medicaid-only individuals with disability.

For the MMLEADS V2.0, a determination is made each month regarding the level of benefits. This monthly variable which captures the type of Medicare and/or Medicaid enrollment (MME) is available in the data files as **E_MME_TYPE_01** thru **E_MME_TYPE_12** and uses the following algorithm, which results in five values for this field (see Table 1). The 01 through 12 at the end of the variable name correspond with the month (e.g., 01 is January and 12 is December).

[6] CCW has made available a Technical Guidance Document called "Options in Determining Dual Eligibles" (https://www.ccwdata.org/web/guest/technical-guidance-documentation) which provides useful background information regarding the potential scope of benefits and types of dual Medicare-Medicaid coverage.

[7] In this document, the acronym MME refers generically to the *classification* of an individual as being enrolled in Medicare and/or Medicaid, and the data element denoting this classification. MME does not refer to the individuals or populations with concomitant or dual enrollment in Medicare and Medicaid, for whom the term "Medicare-Medicaid enrollees" is preferred.

Table 4. Medicare and Medicaid Eligibility (MME) Classifications

MME Classifications	Algorithm
1. Medicaid – with Disability *non-dual*	Medicaid covered and blind or with disability (MAX Uniform Eligibility Code = 12 (blind/disabled, cash), 22 (blind/disabled, medically needy), 32 (blind/disabled, poverty), 42 (other blind/disabled), 3A (breast and cervical cancer prevention act) or 52 (disabled, section 1115 demonstration expansion) with no dual eligibility (i.e., not in categories 3-5)
2. Medicare-only (in Medicare data file) *non-dual*	Medicare-only if Medicare eligible (i.e., any month where the BUYIN variable is not '0' or null) and not dually eligible (i.e., not in categories 3-5)
3. Partial Dual	DUAL_STUS_CD_*MM* = '03','05','06'
4. QMB-only Dual	DUAL_STUS_CD_*MM* = '01'
5. Full Dual	DUAL_STUS_CD_*MM* = '02,'04','08'
Missing	None of the above

The Medicare-Medicaid dually enrolled individuals are identified using the monthly state-reported dual status codes from the Medicare data in the CCW MBSF. This means that, for Medicare-Medicaid enrollees, we are able to make this determination even if we are missing MAX PS for a state. Individuals identified as Medicaid – Disabled, are identified using the MAX PS.

For the monthly E_MME_TYPE_*MM* variables, null values may appear in some months. This occurs for people who did not have Medicare or Medicaid coverage continuously for the entire year (e.g., those who were uninsured for some of the months, who had some other type of insurance coverage, or who were Medicaid eligible but did not meet the MMLEADS V2.0 criteria for inclusion as "Medicaid-only with disability").

From the monthly E_MME_TYPE_*MM* variables, we assign a single annual MME value based on the most recent monthly value. The type of dual classification (full, QMB-only, or partial) for this annual MME data element is assigned according to the most recent dual month of the year. For those *without* any dual coverage in any given month, the latest valid value for E_MME_TYPE_*MM* was used. For example, if an individual had no dual Medicare-Medicaid enrollment during the year and was "Medicaid only with Disability" in the month of December, then this individual would be assigned this annual MME categorization of "Medicaid only with Disability". The annual **E_MME_TYPE** variable has the same five values that appear in Table 1 above. There are no missing values; all beneficiaries/enrollees in the MMLEADS files are assigned a yearly E_MME_TYPE.

All beneficiaries with one or more months of MME_TYPE_*MM*= values 3-5, as above, qualify as Medicare-Medicaid dual enrollees for the year.

Since MME type is based on the monthly state-reported MMA File information that the CCW obtains with the Medicare enrollment data, an individual (BENE_ID) will have one annual eligibility type regardless of potentially multiple Medicaid states of residence. The annual E_MME_TYPE value is not necessarily associated with the annual state code (variable called D_STATE_CD), since the latter uses the state for the last month of enrollment, regardless of dual status. However, the Beneficiary/Enrollee data file includes both the state codes (variables D_STATE_CD_01- D_STATE_CD_12) and the corresponding MME classifications for each month (variables E_MME_TYPE_01- E_MME_TYPE_12), for investigators who need this detail.

Note that if the enrollee has Medicaid enrollment or service information from more than one state, the monthly Medicaid state code that is assigned (i.e., the monthly values for the variables in the Beneficiary/Enrollee File called D_STATE_CD_01- D_STATE_CD_12) is the one associated with the largest amount of Medicaid payments during the month for that individual. The annual state code is the final/most recent state of enrollment during the year (variable called D_STATE_CD). This means that an enrollee could be Medicare-Medicaid dually enrolled in a state that is missing MAX PS data (i.e., the determination for the state comes from the Medicare MBSF, unless there is spending in another state, as evidenced in the MAX service files).

The demographic variables in the file are derived from the CCW Master Beneficiary Summary File for latest month of the year; the exception is for those who are Medicaid-only then we use the Medicaid variables from the MAX PS. This rule holds true for all of the demographic information (age, race, gender) in the file.

In general, beneficiaries with any level of Medicare-Medicaid dual eligibility (i.e., full, QMB-only, or partial) could have service utilization and payment (spending) information in both the Medicare and Medicaid Service-Level files.

The MME_TYPE classification is used throughout the MMLEADS V2.0 Files. For the annual summaries of utilization and payments, for example, grand totals are available and they are also subdivided into strata using the monthly MME_TYPE variables. For each month a beneficiary has the particular type of enrollment, all payments are summed and all utilization is counted. Therefore, there are six categories of MME used to stratify the services in MMLEADS; however only five appear in the Medicare Service-Level File and five appear in the Medicaid Service-Level File (i.e., the Medicare-only category [variables using MRO] would only appear in the Medicare Service-Level File and the Medicaid-only category [variables using MDO] would only appear in the Medicaid Service-Level File; all of the variables in Table 5 below use the naming convention from the Beneficiary/Enrollee File). The strata used for the analytic variables include:

Table 5. Examples of Variables Stratified by MME Type

MME categorizations	Variable example (total Medicare spending by MME strata)*	Variable example (total Medicaid spending by MME strata)*
1. Medicaid –only with disability (**MDO**) *non-dual*		S_MDO_MEDICAID_P MT
2. Medicare only (**MRO**) *non-dual*	**S_MRO_MEDICARE_PMT**	
3. Partial Dual (**PD**)	**S_PD_MEDICARE_PMT**	**S_PD_MEDICAID_PMT**
4. QMB-only Dual (**QMB**)	**S_QMB_MEDICARE_PMT**	**S_QMB_MEDICAID_PMT**
5. Full Dual (**FD**)	**S_FD_MEDICARE_PMT**	**S_FD_MEDICAID_PMT**
Other – None of the above	**S_OTH_MEDICARE_PMT**	**S_OTH_MEDICAID_PMT**

* Variable examples are from the Beneficiary/Enrollee File; slightly different variable names are used in the Service-level files.

Since the level of benefits that beneficiaries are entitled to may change on a monthly basis for some beneficiaries, several variables are available to enable investigators to use a variety of criteria for describing the level of dual benefits received each month. More details regarding variable options are described in Chapter 3.

B. Monthly, Annual, and Sub-Group Variables

The variables in MMLEADS V2.0 can be classified into groups according to the type of information conveyed. The broad types of variables include: demographic, enrollment, utilization and spending. Due to the very large number of variables in MMLEADS V2.0, these groups are further subdivided into "themes" – such as Medicare monthly or annual variables or Medicaid monthly or annual variables. MMLEADS V2.0 is designed to give investigators the flexibility of examining either annual totals or monthly summaries for many variables. Furthermore, this data product is unique in that it facilitates examination of use and spending for MME subgroups.

Caution should be used when interpreting the annual Medicaid utilization and spending variables at the state-level for dually-enrolled populations (i.e., this is a concern only when E_MME_TYPE=3-5). Individuals may be enrolled in more than one state in a year and utilize services in multiple states for a given year. In general you would expect to be missing all payment and use data for the states with missing MAX data (e.g., CO, ID, KS or RI in 2012). However, if an individual is attributed to an annual state (variable called D_STATE_CD) with missing MAX PS data but was also enrolled in Medicaid in one or more other states during the year, then **annual** Medicaid information associated with that individual would be attributed to the state with missing MAX data. We present the following example for illustration:

Table 6. Roll-up from Monthly to Annual State Code - Example

BENE	D_STATE	E_MME	Monthly D_STATE_CD_*MM*

_ID	_CD	_TYPE	01	02	03	04	05	06	07	08	09	10	11	12
Jones	CO	3	NV	NV	NV	NV	NV	CO	CO	CO	CO	CO	CO	CO
Smith	ID	5	FL	FL	FL	FL	FL	FL	ID	ID	ID	ID	ID	ID

Jones was enrolled in Medicaid in both NV and CO during the year, according to the monthly state variables (D_STATE_CD_01- D_STATE_CD_12). Since the last state of the year was CO, all of the summary/annual Medicaid payment and use information for Jones for the year is attributed to CO when using the annual state code (variable D_STATE_CD) – even though we did not obtain MAX data for CO in 2012. Similarly, Smith was enrolled in Medicaid in FL and ID during the year, and the annual state code is ID (i.e., the last state of the year). All annual Medicaid payment and use information for Smith for the year will be attributed to ID for Smith. Two coding examples later in this document illustrate how to summarize the monthly variables (Code Example 4) and how to use the annual summary variables (Code Example 5).

Within the Beneficiary/Enrollee File there are various ways to examine payments (see Table 7). Monthly, annual, and annual subgroups are available.

Table 7. Payment Variable Options

Summary	Monthly Totals	Annual Totals	Annual – by MME Type
Medicare Payments	S_ MEDICARE _PMT_01 through S_ MEDICARE _PMT_12	S_MEDICARE_PMT	S_FD_ MEDICARE _PMT S_QMB_ MEDICARE _PMT S_PD_ MEDICARE _PMT S_MRO_ MEDICARE _PMT S_OTH_ MEDICARE _PMT
Medicaid Payments	S_MEDICAID_PMT_01 through S_MEDICAID_PMT_12	S_MEDICAID_PMT	S_FD_MEDICAID_PMT S_QMB_MEDICAID_PMT S_PD_MEDICAID_PMT S_MDO_MEDICAID_PMT S_OTH_MEDICAID_PMT

There are additional variations on these payment variables – including beneficiary liability amounts vs. payer amounts, Medicaid state share of payments vs. Federal share, and the portion of payments that are fee-for-service (FFS). These particular variables are described in greater detail in the next Chapter, along with the contents of each data file.

C. Service Categories

Analysts may need to examine use or payments for a particular type of service or a particular type of provider/setting of care. In creating MMLEADS V2.0, we have used the various Medicare claim types, revenue centers, and HCPCS codes to create type of service categories. For Medicaid, we used the MAX type of service (**MAX_TOS**) and MSIS type of program (**MSIS_TOP**) variables to develop service categories for describing and classifying the care to create a set of pre-defined service categories.

The service categories are hierarchical. The broadest groupings of services are called level 1 service categories (variables called SRVC_1), which are each then divided into one or more level 2 service categories (SRVC_2) that provide a more granular breakdown of services. For Medicaid services, there are level 3 service categories (SRVC_3) that provide further detail.

These service categories provide the basis for many of the use and payment summary variables that are in MMLEADS V2.0.

1. Medicare Service Categories

The source Medicare data include the following types of claims which are mapped to the service 1 (SRVC_1) and service 2 (SRVC_2) classifications. For Medicare managed care enrollees who receive services through Medicare Advantage plans, the service categories contain information regarding the monthly premium payments for Medicare Part A and/or Medicare Part B (reminder that claims/encounter data are not available for managed care enrollees therefore we have no information regarding services used; the exception is for Part D prescription drugs – where all PDEs are present regardless of whether the beneficiary is enrolled in managed care or fee-for-service). For Medicare, there are five **SRVC_1** categories describing the claim type, and, for Medicare Parts A & B there are 24 **SRVC_2** categories describing the care setting. These categories are defined in Table 8.

The five Medicare level 1 service type categories (**SRVC_1**) are:

- Medicare Part A (MDCR_PTA)
- Medicare Hospital Outpatient (MDCR_HOP)
- Medicare Part B non-Institutional (MDCR_PTB)
- Medicare managed care premium (MDCR_MC)
- Medicare Part D (MDCR_PTD)

A separate table identifies the SRVC_2 categories for Part D Prescription Drug Events (PDEs); there are 31 drug classifications, which we derive from the US Department of Veteran's Affairs National Formulary File.[8] This publicly-available database is used to map to the national drug codes (NDC) from the Medicare Part D Event and the MAX RX source data to VA formulary classifications (see Table 9).

[8] http://www.pbm.va.gov/nationalformulary.asp

Table 8. Medicare (Part A and B) Service Types

Level 1 Categories		Level 2 Categories	
Values	**Medicare Claim Type**	**Service Type 2 Description**	**SRVC_2 Values**
MDCR_PTA (Medicare Part A)	60,61	Inpatient Acute Care Hospital (includes CAH)	MDCR_IP
		Other Inpatient (Psych, other hospital)	MDCR_IP_OTH
		Other post-acute care (Inpatient Rehab, long-term hospital)	MDCR_PAC_OTH
	20,30	Skilled Nursing Facility (SNF)	MDCR_SNF
	50	Hospice	MDCR_HOSPICE
	10	Home Health (HH)	MDCR_HH
MDCR_HOP (Medicare –	40	Outpatient Department services (paid using Prospective Payment system)	MDCR_OPD

hospital outpatient)		End Stage Renal Disease (ESRD) Facility	MDCR_ESRD
		Other Skilled Nursing Facility	MDCR_OSNF
		Federally Qualified Health Center (Clinic)	MDCR_FQHC
		Rural Health Center (Clinic)	MDCR_RHC
		Outpatient Therapy (outpatient rehab and community outpatient rehab)	MDCR_THRPY
		Community Mental Health Center (CMHC)	MDCR_CMHC
		Other – HOP	MDCR_OTH40
MDCR_PTB (Medicare Part B – Carrier/DME)	71, 72, 81, 82	Ambulatory Surgical Center (ASC)	MDCR_ASC
		Part B Drugs	MDCR_PTB_DRUG
		Physician Evaluation and Management (EM)	MDCR_EM
		Procedures	MDCR_PROC
		Imaging	MDCR_IMG
		Laboratory and Testing	MDCR_LABTST
		Other Part B	MDCR_OTH
	Medicare Part B	Durable Medical Equipment (DME)	MDCR_DME
MDCR_MC (Medicare Managed Care Premiums)	n/a	Part A managed care premium	MDCR_PTA
		Part B managed care premium	MDCR_PTB

The drugs obtained in a community-based setting (i.e., those not covered as part of the all-inclusive care at institutional facilities) appear as a separate service type called Medicare Part D (value for SRVC_1 is MDCR_PTD). These categories are listed in Table 9. Note that some drugs are also included in the Medicare Part B benefit (i.e., SRVC_2 = MDCR_PTB_DRUG, meaning Part B Drugs). These consist largely of injectables such as immunizations and physician-supervised infusions such as chemotherapy.

Table 9. Medicare Part D Drug Service Types

Level 1	Level 2	
Value	**Description**	**V**
MDCR_PTD	Medicare Part D – ANTIDOTES, DETERRENTS AND POISON CONTROL	MDCR_ANTIDOTE
	Medicare Part D – ANTIHISTAMINES	MDCR_ANTIHIST
	Medicare Part D – ANTIMICROBIALS	MDCR_ANTIMICR
	Medicare Part D – ANTINEOPLASTICS	MDCR_ANTINEO
	Medicare Part D – ANTIPARASITICS	MDCR_ANTIPARA
	Medicare Part D – ANTISEPTICS/DISINFECTANTS	MDCR_ANTISEPT
	Medicare Part D – AUTONOMIC MEDICATIONS	MDCR_AUTONOM
	Medicare Part D – BLOOD PRODUCTS/MODIFIERS/VOLUME EXPANDERS	MDCR_BLOOD
	Medicare Part D – CARDIOVASCULAR MEDICATIONS	MDCR_CARDIO
	Medicare Part D – CENTRAL NERVOUS SYSTEM MEDICATIONS	MDCR_CNS
	Medicare Part D – DENTAL AND ORAL AGENTS, TOPICAL	MDCR_DENTAL
	Medicare Part D – DERMATOLOGICAL AGENTS	MDCR_DERMA
	Medicare Part D – DIAGNOSTIC AGENTS	MDCR_DIAG
	Medicare Part D – IRRIGATION/DIALYSIS SOLUTIONS	MDCR_DIALYSIS
	Medicare Part D – GASTROINTESTINAL MEDICATIONS	MDCR_GASTRO
	Medicare Part D – GENITOURINARY MEDICATIONS	MDCR_GENITO
	Medicare Part D – HERBS/ALTERNATIVE THERAPIES	MDCR_HERBS
	Medicare Part D – HORMONES/SYNTHETICS/MODIFIERS	MDCR_HORMONE
	Medicare Part D – IMMUNOLOGICAL AGENTS	MDCR_IMMUNO
	Medicare Part D – MISCELLANEOUS AGENTS	MDCR_MISC
	Medicare Part D – MUSCULOSKELETAL MEDICATIONS	MDCR_MUSCULO
	Medicare Part D – NASAL AND THROAT AGENTS, TOPICAL	MDCR_NASAL
	Medicare Part D – OPHTHALMIC AGENTS	MDCR_OPTH
	Medicare Part D – OTIC AGENTS	MDCR_OTIC
	Medicare Part D – PROSTHETICS/SUPPLIES/DEVICES	MDCR_PROST
	Medicare Part D – PHARMACEUTICAL AIDS/REAGENTS	MDCR_REAGENT
	Medicare Part D – RECTAL,LOCAL	MDCR_RECTAL
	Medicare Part D – RESPIRATORY TRACT MEDICATIONS	MDCR_RESP
	Medicare Part D – THERAPEUTIC NUTRIENTS/MINERALS/ELECTROLYTES	MDCR_THERAPU
	Medicare Part D – UNCLASSIFIED	MDCR_UNCLASS
	Medicare Part D – VITAMINS	MDCR_VITA

2. Medicaid Service Categories

Medicaid has three service levels. The first level, service 1 (**SRVC_1**) has three categories:

- Medicaid non-waiver (MDCD_NONWAIVER)
- Medicaid waiver (MDCD_WAIVER)
- Medicaid managed care (MDCD_MC)

The service 2 variable (**SRVC_2**) for Medicaid describes the acuity or circumstances of care using five broad categories:

- Acute hospitalization, outpatient hospital, physician or other practitioner treatment, laboratory tests or imaging (MDCD_FFS_ACUTE)
- Long term care – institutional or facility-based (MDCD_FFS_LTI)
- Long-term care – non-institution-based, including personal care services and durable medical equipment (MDCD_FFS_LTN)
- Drugs, which are not included in the per diem payments for facility care (MDCD_FFS_DRUG)
- Managed care (MDCD_MC)

The level 1 service type is always "MDCD_NONWAIVER" when the services are acute or when they are long-term institutional facility-based services (i.e., MDCD_FFS_ACUTE or MDCD_FFS_LTI). The only level 2 service type where you could see different level 1 classifications is for long-term non-institutional care (i.e., where SRVC_2=MDCD_FFS_LTN) – these services could either have a level 1 classification of waiver or non-waiver (SRVC_1=MDCD_NONWAIVER or MDCD_WAIVER). The relationship between level 1 and level 2 service classifications appears in Table 10 below. A third SRVC_1 is MDCD_MC. Data in these files for managed care enrollees may be limited to premium information; however, details regarding particular types of services used are generally not available since most states include only claims (and not managed care encounters) in the source MSIS data.

The service 3 (**SRVC_3**) variable describes the type of service using a combination of the Medicaid type of service variable (MAX variable MAX_TOS) and the type of program variable (MAX variable MSIS_TOP); this means that there are level 3 service types that you may either keep as a single MAX_TOS category, or combine it with the level 1 service category to split it into two different level 3 service categories. For example, when MAX_TOS=33 (Rehabilitative services) you have the flexibility to consider this a single level 3 service type, or two service types – one that is delivered as a non-waiver service and once as a waiver service. The waiver servicers are identified with the *_W at the end of the value name, and non-waiver are identified by *_NW. The setting primarily comes from the MAX_TOS variable; however the determination regarding whether the service is provided through a waiver or not is derived from the MSIS_TOP variable. Service 3 categories for Medicaid are displayed in Table 10 and Table 11 (for drugs) below.

Unlike the Medicare service classifications, the Medicaid classifications are not hierarchical. A

particular type of level 3 service may not have only one level 1 service type; this is because the level 1classification indicates how the benefit is structured (waiver, non-waiver, or managed care). However, the level 3 groupings are a more granular breakdown of the level 2 categories.

Table 10. Medicaid Service Types

Category	SRVC_1 values	SRVC_2 values	SRVC_3 values	SRVC_3 Description (MAX Type of Service)
Inpatient	MDCD_NON WAIVER	MDCD_FFS _ACUTE	MDCD_FFS_ACUTE_IP	01 - Inpatient hospital
Hospital Outpatient			MDCD_FFS_ACUTE_HOP	11 - Outpatient hospital
Physician			MDCD_FFS_ACUTE_PHYS	08 - Physician
Other Medicaid Services			MDCD_FFS_ACUTE_OTH_OTHPRC	10 - Other practitioners
Other Medicaid Services			MDCD_FFS_ACUTE_OTH_CLINIC	12 - Clinic
Laboratory and X-Ray			MDCD_FFS_ACUTE_OTH_LABX	15 - Lab Xray
Other Medicaid Services			MDCD_FFS_ACUTE_OTH_MISC	19 - Other services
Other Medicaid Services			MDCD_FFS_ACUTE_OTH_STERL	24 - Sterilizations
Other Medicaid Services			MDCD_FFS_ACUTE_OTH_ABORT	25 - Abortions
Other Medicaid Services			MDCD_FFS_ACUTE_OTH_THERAPY	34 - PT, OT, Speech, Hearing services
Other Medicaid Services			MDCD_FFS_ACUTE_OTH_NMW	36 - Nurse midwife services
Other Medicaid Services			MDCD_FFS_ACUTE_OTH_NP	37 - Nurse practitioner services
Other Medicaid Services			MDCD_FFS_ACUTE_OTH_RELIG	39 – Religious non-medical health care institutions
Other Medicaid Services			MDCD_FFS_ACUTE_OTH_PSYC	53 - Psychiatric services
Other Medicaid Services			MDCD_FFS_ACUTE_OTH_DENTAL	09 - Dental
Other Medicaid Services			MDCD_FFS_ACUTE_OTH_UNKW	99 - Unknown
Inpatient hospital and nursing facility services for individuals 65 years of age and older in an IMD	MDCD_NON WAIVER	MDCD_FFS _LTI	MDCD_FFS_LTI_IMD	02 - Mental hospital services for the aged
Inpatient hospital services for individuals under			MDCD_FFS_LTI_IPF	04 - Inpatient psychiatric facility for individuals under the age of 21

Category	SRVC_1 values	SRVC_2 values	SRVC_3 values	SRVC_3 Description (MAX Type of Service)
Intermediate Care facility for individuals for intellectual			MDCD_FFS_LTI_ICF	05 - Intermediate care facility (ICF) for individuals with intellectual disabilities
Nursing Facility			MDCD_FFS_LTI_NFS	07 - Nursing facility services (NFS) - all other
Rehabilitative services	MDCD_WAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_REHAB_W	33 - Rehabilitative services, waiver
	MDCD_NONWAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_REHAB_NW	33 - Rehabilitative services, nonwaiver
Home Health	MDCD_WAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_HH_W	13 - Home health, waiver
	MDCD_NONWAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_HH_NW	13 - Home health, nonwaiver
Hospice	MDCD_WAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_HOS_W	35 - Hospice benefits, waiver
	MDCD_NONWAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_HOS_NW	35 - Hospice benefits, nonwaiver
Durable Medical Equipment	MDCD_WAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_DME_W	51 - Durable medical equipment (DME) and supplies (including emergency response systems and home modifications,
	MDCD_NONWAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_DME_NW	51 - Durable medical equipment (DME) and supplies (including emergency response systems and home modifications, nonwaiver

Category	SRVC_1 values	SRVC_2 values	SRVC_3 values	SRVC_3 Description (MAX Type of Service)
Personal Care Services	MDCD_WAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_PCS_W	30 - Personal care services, waiver
	MDCD_NONWAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_PCS_NW	30 - Personal care services, nonwaiver
Residential Care	MDCD_WAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_RC_W	52 - Residential care, waiver
	MDCD_NONWAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_RC_NW	52 - Residential care, nonwaiver
Adult Day Care	MDCD_WAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_ADC_W	54 - Adult day care, waiver
	MDCD_NONWAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_ADC_NW	54 - Adult day care, nonwaiver
Transportation Services	MDCD_WAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_TS_W	26 - Transportation services, waiver
	MDCD_NONWAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_TS_NW	26 - Transportation services, nonwaiver
Targeted Case Management	MDCD_WAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_TCM_W	31 - Targeted case management, waiver
	MDCD_NONWAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_TCM_NW	31 - Targeted case management, nonwaiver

Category	SRVC_1 values	SRVC_2 values	SRVC_3 values	SRVC_3 Description (MAX Type of Service)
Private Duty Nursing	MDCD_WAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_PDN_W	38 - Private duty nursing, waiver
	MDCD_NONWAIVER	MDCD_FFS_LTN	MDCD_FFS_LTN_PDN_NW	38 - Private duty nursing, nonwaiver
Medicaid Managed Care	MDCD_MC	MDCD_MC	MDCD_MC_HMO	20 - Capitated payments to HMO or HIO plan
	MDCD_MC	MDCD_MC	MDCD_MC_PHP	21 - Capitated payments to prepaid health plans (PHPs)
	MDCD_MC	MDCD_MC	MDCD_MC_PCCM	22 - Capitated payments for primary care case management (PCCM)

For Medicaid drugs, the level 3 service classifications are derived by linking to the VA Formulary.[9] The national drug codes (NDC) or HCPCS codes are mapped from the MAX RX source data to the same 31 drug classifications that are used to describe the Medicare Part D drugs above.

[9] http://www.pbm.va.gov/nationalformulary.asp

Table 11. Medicaid Drug Service Types

Level 1	Level 2	Level 3	
Value	**Value**	**Description (all are MAX_TOS=16)**	**Value**
MDCD_NONWAIVER	MDCD_FFS_DRUG	Medicaid Drug - ANTIDOTES,DETERRENTS AND POISON CONTROL	MDCD_FFS_ANTIDOTE
		Medicaid Drug - ANTIHISTAMINES	MDCD_FFS_ANTIHIST
		Medicaid Drug - ANTIMICROBIALS	MDCD_FFS_ANTIMICRO
		Medicaid Drug - ANTINEOPLASTICS	MDCD_FFS_ANTINEO
		Medicaid Drug - ANTIPARASITICS	MDCD_FFS_ANTIPARA
		Medicaid Drug - ANTISEPTICS/ DISINFECTANTS	MDCD_FFS_ANTIS EPT
		Medicaid Drug - AUTONOMIC MEDICATIONS	MDCD_FFS_AUTONOM
		Medicaid Drug - BLOOD PRODUCTS/MODIFIERS/V OLUME EXPANDERS	MDCD_FFS_BLOOD
		Medicaid Drug - CARDIOVASCULAR MEDICATIONS	MDCD_FFS_CARDIO
		Medicaid Drug - CENTRAL NERVOUS SYSTEM MEDICATIONS	MDCD_FFS_CNS
		Medicaid Drug - DENTAL AND ORAL AGENTS,TOPICAL	MDCD_FFS_DENTAL
		Medicaid Drug - DERMATOLOGICAL AGENTS	MDCD_FFS_DERMA
		Medicaid Drug - DIAGNOSTIC AGENTS	MDCD_FFS_DIAG
		Medicaid Drug - IRRIGATION/DIALYSIS SOLUTIONS	MDCD_FFS_DIALYSIS

Level 1	Level 2	Level 3	
Value	**Value**	**Description (all are MAX_TOS=16)**	**Value**
MDCD_NONWAIVER	MDCD_FFS_DRUG	Medicaid Drug - GASTROINTESTINAL MEDICATIONS	MDCD_FFS_GASTRO
		Medicaid Drug - GENITOURINARY MEDICATIONS	MDCD_FFS_GENITO
		Medicaid Drug - HERBS/ALTERNATIVE THERAPIES	MDCD_FFS_HERBS
		Medicaid Drug - HORMONES/SYNTHETICS /MODIFIERS	MDCD_FFS_HORMONE
		Medicaid Drug - IMMUNOLOGICAL AGENTS	MDCD_FFS_IMMUNO
		Medicaid Drug - MISCELLANEOUS AGENTS	MDCD_FFS_MISC
		Medicaid Drug - MUSCULOSKELETAL MEDICATIONS	MDCD_FFS_MUSCULO
		Medicaid Drug - NASAL AND THROAT AGENTS,TOPICAL	MDCD_FFS_NASAL
		Medicaid Drug - OPHTHALMIC AGENTS	MDCD_FFS_OPTH
		Medicaid Drug - OTIC AGENTS	MDCD_FFS_OTIC
		Medicaid Drug - PROSTHETICS/SUPPLIES/ DEVICES	MDCD_FFS_PROST
		Medicaid Drug - PHARMACEUTICAL AIDS/REAGENTS	MDCD_FFS_REAGENT
		Medicaid Drug - RECTAL,LOCAL	MDCD_FFS_RECTAL

Level 1	Level 2	Level 3	
Value	Value	Description (all are MAX_TOS=16)	Value
		Medicaid Drug - RESPIRATORY TRACT MEDICATIONS	MDCD_FFS_RESP
		Medicaid Drug - THERAPEUTIC NUTRIENTS/MINERALS/ ELECTROLYTES	MDCD_FFS_THERAPU
		Medicaid Drug - UNCLASSIFIED	MDCD_FFS_UNCLASS
		Medicaid Drug - VITAMINS	MDCD_FFS_VITA

3. Mapping Service Categories to Utilization Summaries

Key information from the Medicare and Medicaid Service Files is rolled up into utilization summaries for the Beneficiary/Enrollee file. The relationship between the utilization summaries in the Beneficiary/Enrollee file and the Medicare service categories is illustrated in Table 12; Medicaid utilization summaries and service categories are illustrated in Table 13. We present the categories in descending order in terms of acuity level (e.g., inpatient hospital is most intensive, followed by other types of post-acute care, then ambulatory services).

Table 12. Medicare Utilization Summary Variables

Beneficiary/Enrollee File	Medicare Service File
Monthly Utilization Summary Variables	Service Type
U_ ACUTE_COV_DAY_CNT_01-12	SRVC_2=’ MDCR_IP’
U_SNF_DAY_CNT_01-12	SRVC_2=’ MDCR_SNF’
U_PAC_OTH_DAY_CNT_01-12	SRVC_2=’ MDCR_PAC_OTH’
U_MEDICARE_HH_VST_CNT_01-12	SRVC_2=’ MDCR_HH’
U_HOSPICE_DAY_CNT_01-12	SRVC_2=’ MDCR_HOSPICE’
U_HOP_VST_01-12	SRVC_1=’ MDCR_HOP’
U_DME_VST_01-12	SRVC_2=’ MDCR_DME’
U_PHYS_VST_01-12	SRVC_2=’ MDCR_EM’
U_DRUG_PTD_01-12	SRVC_1=’ MDCR_PTD’

Table 13. Medicaid Utilization Summary Variables

Beneficiary/Enrollee File	Medicaid Service File
Monthly Utilization Summary Variables	**Service Type**
U_MEDICAID_IP_DAYS_FFS_01-12	SRVC_3=' MDCD_FFS_ACUTE_IP'
U_MEDICAID_NURS_FAC_FFS_01-12	SRVC_3=' MDCD_FFS_LTI_NFS'
U_MEDICAID_HH_VST_FFS_01-12	SRVC_3=' MDCD_FFS_LTN_HH_W' and 'MDCD_FFS_LTN_HH_NW'
U_MEDICAID_PCS_VST_01-12	SRVC_3='MDCD_FFS_LTN_PCS_W' and 'MDCD_FFS_LTN_PCS_NW'
U_MEDICAID_DRUG_RX_FFS_01-12	SRVC_2='MDCD_FFS_DRUG'

We also have utilization summaries for community or residential mental health services – that rely on service information from both the Medicare and Medicaid Service Files. These are the number of days in a residential mental health facility (variable called U_RES_MH_CNT) and number of days receiving community-based mental health services (variable called U_COMM_MH_CNT) – both of which are explained in greater detail where the Beneficiary File is described.

D. Counting Beneficiaries/Enrollees and Service Users

MMLEADS V2.0 includes two service files that summarize each beneficiary's Medicare and/or Medicaid spending and utilization within each of the service categories described above. Those files also contain several counter variables that make it relatively easy for analysts to calculate the total number of beneficiaries/enrollees that used a particular type of service and to calculate per-capita and per-user spending figures.

1. Counting Beneficiaries

The service files have at least one record for each person enrolled during the year; The Medicare Service File has at least one record for each Medicare beneficiary, including those who did not use any services during the year. Similarly, the Medicaid Service File has at least one record for each enrollee sampled for MMLEADS V2.0, including those who did not use any Medicaid services during the year.

The **BENE_CNT** variable can be used to obtain an unduplicated count of beneficiaries/enrollees in the file. The value for BENE_CNT for a particular person equals 1 divided by the number of records that the person has in the file. For example, if a person has 4 records in the Medicare Service File, the BENE_CNT variable will equal 1/4 = 0.25 in each record. By definition, the sum of the BENE_CNT variable for each beneficiary always equals 1.0, and since the Medicare Service file includes all Medicare beneficiaries, the sum of BENE_CNT for all records in the service file equals the total Medicare population for the year. Similarly, the sum of BENE_CNT for all records in the Medicaid Service file equals the total of the Medicaid population in the MMLEADS V2.0 for the year.

As you select a study population, as long as you retain all rows of data for your cohort, the sum of BENE_CNT will equal your sample size.

2. Counting Service Users

The service files have separate records for each:

- Level 2 service category for Medicare services
- Level 3 service category for Medicaid services

You can calculate the number of beneficiaries/enrollees who used each type of service by using a series of inter-related counter variables.

At the highest level, the sum of the **USER1_CNT** variable equals the number of beneficiaries that used any type of service included in a particular service file (i.e., any Medicare service or any Medicaid service). Similarly, the sum of the **USER2_CNT** (or **USER3_CNT** in the Medicaid Service File) variable equals the number of beneficiaries/enrollees that used that particular category of service. The values of these counter variables for a given beneficiary equal 1 divided by the number of records for that category of service that the beneficiary has in the file.

Analysts should rely on the USER*X*_CNT variables to calculate statistics at an overall user level – for example, to count the number of beneficiaries who used a particular type of service or calculate per-user spending figures – and use the BENE_CNT variable to calculate per-capita statistics, since those must include non-users in the denominator. For the subset of beneficiaries/enrollees who used at least one of the services identified in the file, the sum of the BENE_CNT variable will equal the sum of the USER1_CNT variable. Remember that if you need to limit your population (e.g., to keep only those with a particular MME category or only those who were not managed care), you should apply the same restrictions to both your numerator and denominator.

An example of how data appear in the Service files is below (Table 14); the variables that are used for this example are from the Medicare Service File. There may be multiple service1 types (i.e., SRVC_1) across rows of data since each row is a person*service2 (BENE_ID by SRVC_2) combination. Several "count", variables, each of which is a proportion, are helpful when counting the number of beneficiaries/enrollees who used each service type 1 or 2. For example, if there are three rows of data for a person in the Medicare Service file, it means there are three different service 2 classifications used by the person during the year; similarly, three rows of data in the Medicaid Service file means that there are three different service 3 classifications. In order to summarize the service 1 types used during the year, this USER1_CNT variable is used. To calculate statistics at a user-level (e.g., per capita), the BENE_CNT is used.

Table 14. Service Use Counters - Example

Beneficiary	BENE_CNT	SRVC_1	USER1_CNT	SRVC_2	USER2_CNT
Anderson	1.00	.	0.00	.	0.00
Smith	1.00	MDCR_PTA	1.00	MDCR_SNF	1.00
Jones	0.33	MDCR_HOP	0.50	MDCR_OPPS	1.00
Jones	0.33	MDCR_HOP	0.50	MDCR_THRPY	1.00
Jones	0.33	MDCR_PTD	1.00	MDCR_CARDIO	1.00
Evans	1.00	MDCR_HOP	1.00	MDCR_THRPY	1.00
Martin	0.25	MDCR_MC	0.50	MDCR_PTA	1.00
Martin	0.25	MDCR_MC	0.50	MDCR_PTB	1.00
Martin	0.25	MDCR_PTD	0.50	MDCR_ANTIMICRO	1.00
Martin	0.25	MDCR_PTD	0.50	MDCR_GASTRO	1.00

In this example, Anderson was enrolled in Medicare during the year but did not use any services. Smith used one type care – skilled nursing facility (MDCR_SNF) services. Jones used two different types of Medicare services (MDCR_HOP – hospital outpatient and MDCR_PTD – Part D prescription drug); the HOP care consisted of two different services – a clinic visit (MDCR_OPPS) and therapy (MDCR_THRPY). Evans received only outpatient therapy (MDCR_THRPY). Martin was enrolled in Medicare Advantage (SRVC_1=MDCR_MC) – therefore the only Part A and Part B services that are present are the premium payments (SRVC_2=MDCR_PTA and MDCR_PTB), however Martin also had two different types of Part D drugs.

If you wanted to know how many beneficiaries used a Medicare HOP service, you would take the sum of USER_1 for all records where SRVC_1 was ”MDCR_HOP”, while if you wanted to know how many beneficiaries received outpatient therapy, you would take the sum of USER_2 for all records where SRVC_2 was “MDCR_THRPY”. For this simplified five- person example, the answer in both cases would be two.

An example illustrating use of these variables for calculating population statistics, along with sample SAS® analytic code, is presented later in this document (see Chapter 4, Code Example 5).

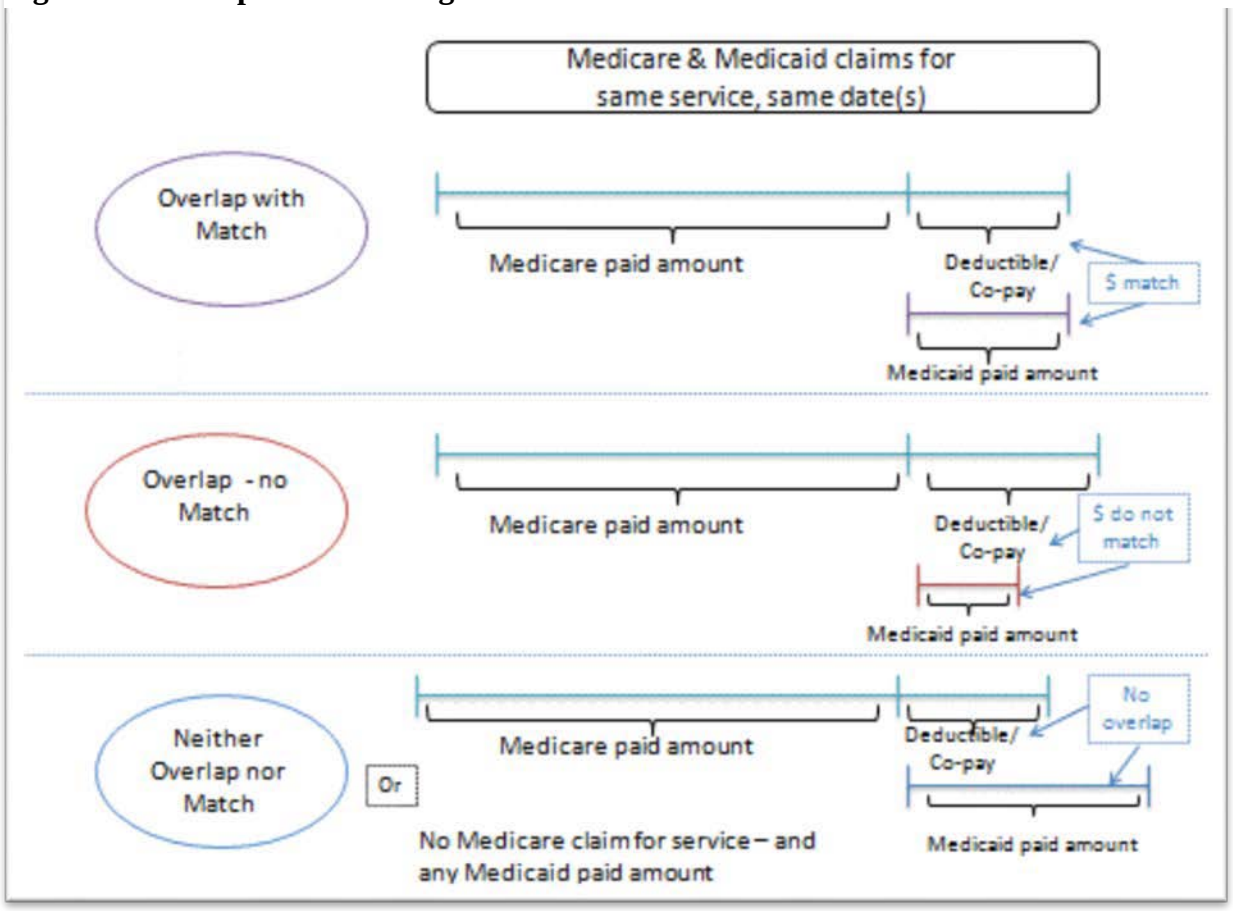
E. Avoidance of Double-Counting Utilization for Medicare-Medicaid Enrollees

Historically, users of combined Medicare and Medicaid data have been wary of the risk of counting services twice if they appear in both payers’ claims files, even if simply as cost-sharing on the Medicaid file for a service primarily paid for by Medicare. For example, if a fully dually enrolled beneficiary was hospitalized in an acute care setting, then Medicare is the primary payer; Medicaid would typically pay the deductible/coinsurance amounts. If we simply combined the Medicare and Medicaid claims and counted the number of inpatient admissions, we might erroneously count two hospitalizations rather than one.

One of the key features of MMLEADS V2.0 is that we compared services that appeared to be the same in the two payers' claims files and de-duplicated utilization counts for the variables we create for the Beneficiary/Enrollee file and the Medicaid Service File (refer to utilization summary variables that are affected - Table 13). As a result, for those claims that had the same service classification for the same patient on the same dates, this service was counted only once, although the original Medicare and Medicaid payment information was kept intact. We retained all details about this use, as well as all payment information in the Service Files, to allow for flexibility to keep or omit the duplicate utilization information – depending on users' study objectives.

There are three potential payment scenarios when there is the same type of Medicare and Medicaid service on the same date, as illustrated in Figure 1.

Figure 1. Overlap and Matching Claims



1. **Medicaid overlap.** This occurs when the Medicaid payment is for less than or equal to the Medicare beneficiary deductible and coinsurance amount – meaning that Medicaid picked up at least a portion of the beneficiary share of the payment [same service; overlap in payments]. Monthly variables within the Medicare Service File indicate when

this occurred (variables called **MEDICAID_OVRLP_CNT_01** thru **MEDICAID_OVRLP_CNT_12 =1)**. Use is counted only in the Medicare Service File – although payments remain in both Medicare and Medicaid Service Files. Note that some overlapping claims will exactly match for the payments MEDICAID_MATCH_CNT_*MM* = 1; whereas for others, the amount of Medicaid payments is less than the beneficiary share of Medicare payment – in which case there is an overlap in services but not a match MEDICAID_MATCH_CNT_*MM* = 0.

2. **Medicaid match.** This occurs when there is an overlapping claim (i.e., the condition in #1 is present) and the Medicaid payment is for exactly the amount of the Medicare beneficiary deductible and coinsurance amount for the same service. Monthly variables within the Medicare Service File indicate when this occurred (variables called **MEDICAID_MATCH_CNT_01** thru **MEDICAID_MATCH_CNT_12**. Use is counted only in the Medicare Service File – although payments remain in both Medicare and Medicaid Service Files; this unduplication of service use is noted in the "overlap" variable called **MEDICAID_OVRLP_CNT_*MM*.** Note that in order for there to be a match, there is always overlap (i.e., when MEDICAID_MATCH_CNT_*MM* = 1, MEDICAID_OVRLP_CNT_*MM* will always = 1).

3. **No impact or change to Medicaid.** This occurs when the Medicaid payment is for an amount greater than the Medicare beneficiary share of the payment – indicating that Medicaid paid for something beyond the service indicated by the Medicare claim [services don't match]. No de-duplication is performed and the full service records with all use and payment information appear in both the Medicare and Medicaid Service Files. Both the match and overlap variables will be null/missing.

   For the instances where there is overlap (i.e., where MEDICAID_OVRLP_CNT_*MM* >=1), the utilization information is always attributed to Medicare utilization, for consistency; payments are attributed to the appropriate payer (either Medicare payments or Medicaid payments). The only utilization variables that are affected by this de-duplication are counts of claims, days, visits, and drugs (see Table 13). The USER_*X* variables are not affected.

   An example is presented to demonstrate how this deduplication was performed and the meaning of the MEDICAID_MATCH_CNT_01 - MEDICAID_MATCH_CNT_12 and MEDICAID_OVERLP_CNT_01 - MEDICAID_OVERLP_CNT_12 variables (see Table 15 and Table 16). Suppose we had a Medicare inpatient hospitalization claim and also a Medicaid inpatient hospital care claim for Mrs. Smith that were for the same dates of service, and the beneficiary share of the Medicare payment was entirely paid by Medicaid - we would count this as one inpatient hospitalization – and the use would be identified as a Medicare service (e.g., as a Medicare admission, and as inpatient acute hospital stay). This type of attribution for service use did not affect payments; the Medicare and Medicaid payment amounts from all claims are attributed to the appropriate payer. In this example shown in Table 15, Mrs. Smith is hospitalized – Medicaid pays the entire share of Medicare- determined beneficiary payments; not only do the services overlap, but the Medicaid payments match the Medicare-reported

beneficiary payment amounts (i.e., the service is both an overlap and a match).

As another example shown in Table 15, Mr. Jones had 2 hospitalizations in February. For the first hospitalization, Medicaid did not pay all of the Medicare coinsurance (i.e., the service was an overlap but not a match). For his second hospitalization, Medicaid paid the beneficiary share of the Medicare payment (i.e., the service was both an overlap and a match).

Table 15. Matching and Overlapping Claims Example

Beneficiary	**Medicare claim**	**Medicaid claim**	**from date** (is same for Medicare and Medicaid claims)	**through date** (is same for Medicare and Medicaid claims)	**(a) Medicare Beneficiary Deductible**	**(b) Medicare Beneficiary Coinsurance**	**(c) Medicaid payment amount**	Difference between Medicare beneficiary payment & Medicaid pmt **([a+b]-c)**	**Result**
Mrs. Smith	Medicare IP	Medicaid IP (TOS=1)	2/25/2009	2/28/2009	$0.00	$129.74	$130.00	$0.00	Overlap and Match
Mr. Jones	Medicare IP	Medicaid IP (TOS=1)	02/02/2009	2/4/2009	$0.00	$97.08	$80.00	$17.00	Overlap
Mr. Jones	Medicare IP	Medicaid IP (TOS=1)	02/07/2009	2/14/2009	$0.00	$200.00	$200.00	$0.00	Overlap and Match
Mrs. Anderson	Part D drug - respiratory	Medicaid Drug (TOS=16) - respiratory	02/14/2009	.	$25.00	$56.56	$82.00	$0.00	Overlap and Match
Mr. Evans	Home Health	Medicaid Home Health (TOS=13)	02/17/2009	.	$0.00	$0.00	$100.00	-$100.00	Neither Overlap nor Match

As a third example shown in Table 15, Mrs. Anderson filled a prescription for a respiratory tract drug; Medicaid paid the entire beneficiary share of drug (i.e., the service was both overlap and match). For Mr. Evans, there was no beneficiary-required payment for his home health care; however Medicaid paid for this care. These services do not overlap, since Medicaid is paying for something in addition to what Medicare is covering. No de-duplication of any kind occurs for this scenario.

We make the determination regarding service overlap or matching at the claim-level. However, the Medicare and Medicaid Service files are summaries of claims that are rolled up into service-level 2 classifications (for Medicare; service-level 3 classifications for Medicaid). Table 16 illustrates how the claim-level de-duplication is reflected in the MMLEADS V2.0.

In Table 15 it can be seen that Mrs. Smith had one inpatient service in February, and this service appeared in both Medicare and Medicaid source data (it was an overlap that also matched). In the Medicare Service file, these variables for the month of February have the following values: MECICAID_OVERLP_CNT_02=1 and MEDICAID_MATCH_CNT_02=1. Then, to de-duplicate the utilization, in the Medicaid Service file we subtract one claim from the claim counter for Medicaid (i.e., the MEDICAID_CLM_CNT_02 is reduced by an increment of 1), and also subtract the days for this inpatient stay from the MEDICAID_DAY_CNT_02 variable. For this example we would remove the 4 days associated with the matching claim. No edits to any other data fields occurred; there are also no edits to the Beneficiary file.

Use of these variables is further illustrated in Code Example 5.

Table 16. Matching and Overlapping Service Summaries Example

	Medicare service record				Medicaid service record	
Beneficiary	**SRVC_2**	**MEDICAID_OVERLP_CNT_02**	**MEDICAID_MATCH_CNT_02**	**Medicare Use Variable**	**Medicaid service record**	**Adjusted fields**
Mrs. Smith	MDCR_IP	1	1	MEDICARE_DAY_CNT_2=4	SRVC_3=MDCD_FFS_ACUTE_IP	MEDICAID_DAY_CNT=0
Mr. Jones	MDCR_IP	2	1	MEDICARE_DAY_CNT_2=11	SRVC_3=MDCD_FFS_ACUTE_IP	MEDICAID_DAY_CNT=0
Mrs. Anderson	MDCR_RESP	1	1	MEDICARE_CLM_CNT_2=1	SRVC_3=MDCD_FFS_RESP	MEDICAID_CLM_CNT_2=0
Mr. Evans	MDCR_HH	.	.	MEDICARE_CLM_CNT_2=1	SRVC_3=MDCD_FFS_LTN_HH_W	MEDICAID_CLM_CNT_2=1

F. Population Sampling Variable

The MMLEADS files are very large, and it may take several minutes for your desired program to run against the data. To make it easier to test analytic code, or to conduct analyses to check the feasibility of a larger study, a sampling variable is included in the Beneficiary/Enrollee File. The sample indicator variable (where **SAMPLE_IND**=1) identifies a cross-sectional 1% MMLEADS sample. We selected this sample to be representative of the underlying population both in terms of MME type (MME_TYPE) and state. For example, if 10% of the total MMLEADS population were in California, then 10% of the 1% sample would be from California; the distribution of MME_TYPE among Californians within the 1% sample would be the same as the distribution of MME_TYPE in the full MMLEADS file (e.g., if 8% of the Californians within the MMLEADS file were classified as having the MME_TYPE "full dual", then 8% of Californians within the 1% would be full dual). A different sample is selected each year, therefore longitudinal analyses with this variable are not possible. We recommend using the 1% sample for exploratory analyses or testing analytic code; then, if desired, the analytic code can be modified to run against the full data files.

In Chapter 4, there is an example demonstrating how to efficiently and accurately obtain population counts (see Code Example 1).

Chapter 3. Contents of Data Files

MMLEADS V2.0 files are annual files. We assign Medicare claims to a year based on their end dates; Medicaid claims are assigned based on the year of the MAX data file. Each file is pre-sorted and indexed for ease of use. The primary sort variable for the person-level files is the CCW beneficiary identifier (BENE_ID), then MSIS_ID and D_STATE_CD. The BENE_ID and MSIS_ID are encrypted prior to delivering the data files to researchers in accordance with the Privacy Act[10]. The secondary sort variable is the sample indicator (SAMPLE_IND). For the service files, in addition to the preceding sort variables we include the SRVC_1 and SRVC_2 categories. Having these files indexed allows users to quickly extract data for the sample group (i.e., where SAMPLE_IND=1) or to run data using a finder-file of beneficiaries (using the BENE_ID variable).

Throughout this Chapter, when a specific variable is introduced and described, the variable name will be in bold and in all capital letters (e.g., **SRVC_1**). Other uses of variable names, such as a subsequent reference to a variable name to help describe a new derived variable or to suggest uses of variables, are not in bold.

A. Person-level files

There are two types of person-level files in the MMLEADS V2.0: the Beneficiary File and the Conditions File. Each file is described in detail in this section.

1. Beneficiary/Enrollee File

Dataset Name= BENEFICIARY_*YYYY*.sas7bdat
Record Count = 59,892,538 (for 2012)

The Beneficiary/Enrollee File is a person-level file which contains demographic, Medicare and Medicaid coverage information, and summary spending and utilization information for the year.

This file contains a single person-level record for each beneficiary enrolled in Medicare and/or Medicaid during the year. The population includes those who were dually enrolled in Medicaid. Variables capture both the Medicare and Medicaid enrollment information and whether the person was enrolled in Medicaid in more than one state. For Medicaid enrollees who were not also enrolled in Medicare, there is a record for each person for each state - identified using a combination of MSIS_ID and D_STATE_CD.

[10] The CCW Medicare administrative claims files are provided to academic researchers and certain government agencies, which have been approved under a Data Use Agreement (DUA) to obtain Medicare administrative data for research purposes. The CCW Medicare data contain identifiable information, and are subject to the Privacy Act and other Federal government rules and regulations (see ResDAC web site for information on requesting Medicare data http://www.resdac.org/).

The Beneficiary/Enrollee file includes a variable to indicate the reference year for the file (**REFERENCE_YEAR**), which is the year of the enrollment and corresponding use and spending, if any.

Each beneficiary or enrollee will have an annual MME_TYPE classification (variable called **E_MME_TYPE**) consisting of one of the following (listed in descending order based on MME type hierarchy): 5) full dual [FD], 4) qualified Medicare beneficiary [QMB-only], 3) partial dual [PD], 2) Medicare only [MRO], and 1) Medicaid only [MDO]. The MME categories are explained in more detail in Chapter 2 (also refer to Table 4).

There are 751 variables in the Beneficiary/Enrollee File. It is a very large file, designed to give investigators the flexibility of examining either annual totals or monthly summaries for many variables. In fact, 47 different monthly detailed variables for enrollment, use and spending account for roughly 75% of the variables; you can find a listing of all variables in the MMLEADS V2.0 data dictionary).

The variables in the data file are classified into groups according to the type of information conveyed. A single letter is used as a prefix for the variables within the group.

D=demographic, such as age, date of birth, race according to Medicare enrollment data or race in the Medicaid data (e.g., D_AGE, D_DOB, D_MEDICARE_RACE, D_MEDICAID_RACE)

E=enrollment, such as Medicaid basis of eligibility, monthly dual enrollment status, and annual full dual enrollment months (e.g., E_BOE, E_DUAL_01-E_DUAL_12, E_FD_MOS)

L=long term care services, such as the particular months a beneficiary was in a community or institutional long-term care setting (e.g., L_MEDICAID_LTSS_DTL_01 - L_MEDICAID_LTSS_DTL_12, L_MEDICARE_LT_DTL_01 - L_MEDICARE_LT_DTL_12)

U=use, such as use of Medicare or Medicaid service by month or annual totals, or use that took place while having a particular dual status. Examples include monthly counts of the Medicare-covered inpatient hospital days (U ACUTE_COV_DAY_CNT_01 - U ACUTE_COV_DAY_CNT_12), the annual count of Medicare covered hospital days while having full dual coverage (U_FD_IP_ACUTE_DAY), and the annual count of Medicare inpatient days while having dull dual coverage (U_FD_MEDICAID_IP_DAYS)

S=spending, such as payments for Medicare or Medicaid services or payments that were accrued while having a particular dual status (full or partial dual), etc. Examples include monthly Medicare payments for all services, and annual payments (S_MEDICARE_PMT_01
– S_MEDICARE_PMT_12, S_MEDICARE_PMT).

Due to the very large number of variables in MMLEADS, these groups are further subdivided

into "themes" – such as Medicare monthly or annual variables or Medicaid monthly or annual variables, within the data dictionary and within this User Guide.

The variables in each category are described in more detail below.

a. Person Identifiers and Geography

There are several variables that may be used alone or in combination to identify study populations. The file contains the unique person identifier called the Beneficiary ID (**BENE_ID**). A very small number of Medicaid enrollees in the MMLEADS files may not have a BENE_ID (n=359,252 for 2012). This might occur if CCW was unable to uniquely identify an individual based on the completeness of the demographic information provided in MAX (e.g., the Social Security number [SSN], date of birth [DOB], Medicare Health Insurance Claim number [HIC], sex). Individuals with a missing BENE_ID are limited to the Medicaid-only (E_MME_TYPE=1 [MDO]) population. When there is no BENE_ID, investigators should use the Medicaid enrollment number called the Medical Statistical Information System identification number (**MSIS_ID**) and D_STATE_CD variables as a unique key to identify a person during a single calendar year.

Note: A person may be enrolled in Medicaid at different times during the year, and a new MSIS_ID might be assigned. However, the BENE_ID will uniquely define a person, corresponding with a row of data in this Beneficiary/Enrollee file.

The Beneficiary/Enrollee File includes geographic information regarding the person. In general we use information from the MBSF for the latest month of the year for the Medicare only and dual populations. If the county code or zip code is missing from the MBSF file, we use EL_RSDNC_CNTY_CD_LTST and EL_RSDNC_ZIP_CD_LTST from the MAX PS file. Furthermore, for those who are Medicaid-only (MDO), then we obtain geographic information from the MAX PS.

The file also includes a variable which may be used for partitioning and identifying a 1% sample of enrollees, called the **SAMPLE_IND**. This variable is described in greater detail in Chapter 2.

b. Demographic Characteristics

There are many variables within the file which are useful for describing the demographic characteristics of the beneficiary/enrollee. Many of these variables appear exactly as they did in the CMS source data. For people with any Medicare coverage, these variables are populated with Medicare source data (i.e., the CCW Master Beneficiary Summary File – with original CMS source the Medicare enrollment database [EDB]). For people who were Medicaid only, these variables are from the MAX PS. All variables in this category (demographics) have a "D_" prefix for the variable name. Such variables include:

D_DOD – date of death. Populated using the Medicare CCW variable called "BENE_DEATH_DT", except for people who were only in Medicaid, and then we used the MAX PS variable for the MSIS date of death variable called "EL_DOD".

D_ALIVE_MOS – for the subset of people with a date of death (D_DOD), the total number of months alive during the calendar year (up to/including the date of death). If the

person was alive through the end of the year, then the value will be null.

D_DIED – dichotomous indicator that beneficiary died during the year. The presence of a date of death (D_DOD) is used to determine this value.

D_DOB – date of birth. Populated using the Medicare CCW variable called "BENE_BIRTH_DT", except for people who were only in Medicaid, and then we used the MAX PS variable for the MSIS date of birth variable called "EL_DOB".

D_AGE – age (in years) at the end of the calendar year

D_SEX – sex of enrollee. Populated using Medicare CCW "BENE_SEX_IDENT_CD" or using the MAX variable "EL_SEX_CD"

F Female
M Male
U Unknown

D_MEDICARE_RACE – Research Triangle Institute (RTI) race code, which uses the race code Medicare receives from the Social Security Administration (SSA), and applies an algorithm using surnames to capture additional Hispanics and Asians.

1 Non-Hispanic white
2 Black (or African American)
3 Other
4 Asian/Pacific Islander
5 Hispanic
6 American Indian/Alaska Native
0 Unknown
Null/missing - No Medicare enrollment

D_MEDICAID_RACE – the race/ethnicity code from MSIS (MAX variable EL_RACE_ETHNCY_CD). This will be populated for enrollees with some Medicaid coverage during the year.

1 White
2 Black (or African American)
3 American Indian/Alaska Native
4 Asian
5 Hispanic
6 Native Hawaiian/Pacific Islander
7 Hispanic and one or more races
8 more than one race
9 unknown
0 unknown
Null/missing - No Medicaid enrollment

D_STATE_CD_*01* – D_STATE_CD_*12* – monthly 2-letter state postal abbreviations from the Medicare MBSF; for Medicaid-only enrolled, this information is from the MAX PS. This variable can be helpful in identifying people who were enrolled in Medicaid in more than one state during the year; these are the enrollee records from MAX PS that were repeated in more than one state - which we have collapsed into a single person-level record.

D_STATE_CD – annual state code value. If the person resided in more than one state during the year, the most recent state code was used (i.e. latest D_STATE_CD_*MM* monthly value).

D_MEDICARE_COV_START – date of first Medicare coverage from the CMS EDB (historical information; dates may precede the 1999 CCW data files). This variable is null/missing for those without any Medicare coverage during the year.

D_MEDICAID_COV_START – first occurrence of Medicaid eligibility, as far back as 1999 (a derived date value from the MAX uniform eligibility code). This variable is null/missing for those without any Medicaid coverage during the year. If the enrollee had Medicaid coverage in more than one state, the earliest date of Medicaid coverage was used.

- Disability Codes

Some Medicare beneficiaries may be entitled to services due to a disability that was acknowledged by the Social Security Administration (SSA). CMS obtains these disability determination codes as part of the Medicare Enrollment Database (EDB). The following variables are available for Medicare beneficiaries who ever had a disability determination from SSA; the information is historical, and not limited to those currently entitled to Medicare due to disability. The value is null/missing for all other people in the file.

D_DISABILITY_CD – disability insurance benefit code.

1 Beneficiary is entitled to Medicare coverage due to prior periods of SSA disability entitlement
A Beneficiary is entitled to Medicare based upon SSA disability and the 24 month waiting period has been waived
H Beneficiary is entitled to Medicare due to health hazard Null/missing – no record of SSA disability determination

D_DISABILITY_PRIMARY_CD – This field contains the SSA disability insurance benefit diagnosis, primary impairment code, which is a numeric value assigned by SSA. The values for the impairment codes can be found in Attachment C of this document, and also on the SSA website (which should be your primary resource, since these code values may change cover time) at https://secure.ssa.gov/poms.nsf/lnx/0426510015. Values are 3 or 4-digit numeric codes, such as: 4960 Chronic Pulmonary Insufficiency, 5850 Chronic Renal Failure, 7240 Disorders of Back (discogenic and degenerative)

D_DISABILITY_SECONDARY_CD - SSA disability insurance benefit diagnosis, secondary impairment code, using the same numeric codes as for the primary code (see also, Attachment C).

D_DISABILITY_AWARD_CD - SSA disability insurance benefit diagnosis award code.

A Health Insurance/Supplemental Medical Insurance (HI/SMI) Entitlement Based Upon Disability on another Claim Number
C Retirement Insurance Benefit/Disability Insurance Benefit (RIB/DIB) Entitlement
F Favorable Decision for DIB Re-entitlement
K Invalid Code Entered
L 1972 Blind Provision
N Blind, 1967 Definition
P Blind Prior to Age 31, 1967 Definition
R Insured Under Special Insured Status Provision for Young Disabled
S Blind - Original Definition
T Blind, Prior to Age 31, Original Definition
U Short-Term Disability
X No Waiting Period
* Delete the First Disabled Adult Child (DAC) Field Only, Together With Proper Date of Disability Onset Month Year (DDOMY) and Date of Disability Onset Day (DDOD)
^ Delete the First Disabled Adult Child (DAC) Field Only Null/missing – no record of SSA disability determination

c. Long Term Care Services

Variables are present to identify individuals who used services in a long-term care institutional or non-institutional setting at any time during the year. These types of variables have the "L" prefix to indicate receipt of long-term care services.

L_MEDICAID_LTSS_DTL_*01* - L_MEDICAID_LTSS_DTL_*12* – detailed variable regarding monthly use of long-term care nursing facility (NF) services. This series of variables was developed to describe Medicaid long term care supports and services (LTSS). To create this variable, a combination of two MAX variables was used: the MAX type of service (MAX_TOS) and the MSIS type of program (MSIS_TOP). All four MAX claims files (i.e., IP, LT, OT, and RX) are queried to identify all claims of interest with the claim payment amount greater than zero. There are six possible values for each month for the LTSS variables, and if more than one category is found for the month, a hierarchy is used – going from the highest intensity of services to the lowest, as represented by the ordering of the values below (I1 is most intensive). The values are:

I1 Institutional Nursing Facility (NF) Services (where MAX_TOS = 07 [Nursing Facility Services])

I2 Other Institutional NF Services (where MAX_TOS = 02 [mental hospital services for the aged], 04 [inpatient psychiatric facility for individuals under age 21], or 05 [Indian health services])

C1 Waiver for Community-based LTSS (where MSIS_TOP = 6 [home and community based waiver under section 1915-d] or 7 [home and community based waiver under section 1915-c])

C2 HH or Personal Care Service (PCS) Community-based LTSS (where MAX_TOS=13 [home health] or 30 [personal care services])

A Non-LTSS. Person has Medicaid coverage but is not in any of the previous categories

Null/Missing – Not Medicaid covered for a given month

L_MEDICARE_LT_DTL_*01* - L_MEDICARE_LT_DTL_*12* – detailed variable regarding monthly use of long-term care nursing facility (NF) services as indicated by the presence of an MDS Assessment or by a Medicare claim for SNF or LTC hospital. This series of variables was developed to provide additional evidence of LT service use when Medicaid is not necessarily the payer (e.g., all people with MDS assessments or Medicare claims). If more than one category was found for the month, we used a hierarchy – going from the highest intensity of services to the lowest, as represented by the ordering of the values below (NF is most intensive). The values are:

NF Institutional Nursing Facility (NF) Services (i.e., an MDS assessment was available for the BENE_ID for at least one day of the month)
SNF Medicare claim for Skilled Nursing Facility (SNF) Services for at least one day of the month
LTC Medicare claim for a Long-term care hospital (LTC) stay for at least one day of the month
Null/Missing – No evidence of use of these LT services or not Medicare covered for a given month

L_LTINST_IND_*01* - I_LTINST_IND_*12* – dichotomous monthly variable that indicates whether the person received LT services according to either of the two monthly LT variables above (L_MEDICARE_LT_DTL_*MM* or L_MEDICAID_LTSS_DTL_*MM*).

L_LTINST_MOS – count of months during the year when the person received LT services (i.e., annual count of L_LTINST_IND_*MM*).

d. Eligibility

A series of variables are available to describe Medicare and Medicaid eligibility. All variables within this category (eligibility) have an "E_" prefix for the variable name. Such variables include:

E_DUAL_*01* - E_DUAL_*12* – monthly variables for the state-reported Medicare-Medicaid Enrollee Eligibility Type indicator from the state MMA files (i.e., monthly; CCW variable name is DUAL_STUS_CD_01 - DUAL_STUS_CD_12). Values include:

0 Not Medicare
1 QMB only
2 QMB + Medicaid + Prescription coverage
3 SLMB only

4 SLMB + Medicaid + Prescription coverage
6 Qualified Individuals - QI
8 Other Dual + Medicaid + Prescription coverage
9 Other - Not Medicaid
99 Unknown NA Not Medicaid
XX Enrolled in Medicare A and/or B, but no dual eligibility data available

E_MME_TYPE_*01* - E_MME_TYPE_*12* – monthly variable derived from monthly Medicare-Medicaid enrollee and MAX Uniform eligibility codes. The algorithm is based on a person's most recent monthly MME status (described in Chapter 2), is used to create one of seven values MME for each month. Values are:

0 Other – not any of the above categories for the month (e.g., Medicaid enrolled, but does not meet MMLEADS inclusion criteria)
1 MDO - Medicaid only
2 MRO – Medicare only
3 PD – Partial dual
4 QMB - qualified Medicare beneficiary
5 FD – Full dual
Null/missing – no enrollment record for either Medicare or Medicaid for the month

E_MME_TYPE – annual variable which assigns each person to a single MME status, based on the 12 monthly E_MME_TYPE_*MM* variables. The algorithm described earlier, in Chapter 2, is used to create one of five MME values for the year.

1 MDO - Medicaid only
2 MRO – Medicare only
3 PD – Partial dual
4 QMB - qualified Medicare beneficiary
5 FD – Full dual

E_MAX_DUAL_*01* - E_MAX_DUAL_*12* – monthly variables are available in the MAX files to describe in detail the level of benefits for which the enrollee is eligible. The MAX variable traditionally known as the Medicare Crossover code (e.g., monthly variables EL_MDCR_XOVR_MO_*MM*), is currently available in the MAX source data

as the monthly Medicare dual code (i.e., variables EL_MDCR_DUAL_MO_1 - EL_MDCR_DUAL_MO_12). Values are:

0 in MSIS, eligible is not a Medicare beneficiary
1 in MSIS, eligible is entitled to Medicare-QMB only
2 in MSIS, eligible is entitled to Medicare-QMB and full Medicaid coverage
3 in MSIS, eligible is entitled to Medicare-SLBM only
4 in MSIS, eligible is entitled to Medicare-SLBM and full Medicaid coverage
5 in MSIS, eligible is entitled to Medicare-QDWI
6 in MSIS, eligible is entitled to Medicare-qualifying individuals (1)
7 in MSIS, eligible is entitled to Medicare-qualifying individuals (2)
8 in MSIS, eligible is entitled to Medicare-other DEs
9 in MSIS, eligible is entitled to Medicare-dual eligibility category unknown
50 a record was found in the Medicare EDB for the eligible and codes 01-09 do not apply
51 a record was found in the Medicare EDB for the eligible and code 01 applies
52 a record was found in the Medicare EDB for the eligible and code 02 applies
53 a record was found in the Medicare EDB for the eligible and code 03 applies
54 a record was found in the Medicare EDB for the eligible and code 04 applies
55 a record was found in the Medicare EDB for the eligible and code 05 applies
56 a record was found in the Medicare EDB for the eligible and code 06 applies
57 a record was found in the Medicare EDB for the eligible and code 07 applies
58 a record was found in the Medicare EDB for the eligible and code 08 applies
59 a record was found in the Medicare EDB for the eligible and code 09 applies
98 a record was found in the Medicare EDB for the eligible and code 99 applies
99 in MSIS, eligible's Medicare status is unknown

Note: Please note that while this variable is being made available in the MMLEADS files, the recommended method for identifying duals is E_MME_TYPE. If users do elect to use this MAX variable, then codes 02, 04, 08, 52, 54, or 58 denote full benefit. A restricted or partial benefit eligibility (including partial benefit QMB- only) indicated for values 01, 03, 05, 06, 51, 53, 55, and 56. Additional details regarding how an analyst might wish to employ this information are located in the CCW Technical Guidance Paper called "Options in Determining Dual Eligibles" located on the CCW website (https://www.ccwdata.org/web/guest/technical- guidance-documentation). This document also provides a comparison of the use of the MAX dual indicator compared to the dual status indicator code from Medicare.

Annual summaries of enrollment are stratified by the six valid MME classifications. For each person, the sum across all of these variables is equal to the number of month covered by Medicare and/or Medicaid:

E_FD_MOS – number of months during the year with FD eligibility
E_QMB_MOS – number of months during the year with QMB dual eligibility
E_PD_MOS – number of months during the year with PD eligibility
E_MEDICAREONLY_MOS – number of months during the year with MRO, and no dual eligibility

E_MEDICAIDONLY_MOS – number of months during the year with MDO, and no dual eligibility
E_OTHER_MOS – number of months during the year for those who were either uninsured for some of the months, or who had some other coverage, or who were Medicaid eligible but not under the Medicaid classifications that are included in the Linked Files; sum of the months with missing values from the MME type monthly variable.

This sort of stratification will be helpful if you are also interested in total spending per member months enrolled in a particular type of coverage (e.g., total member months for people considered full duals – compared with total spending for months with full dual coverage – S_FD_MEDICARE_PMT/E_FD_MOS. Table 17 illustrates the relationship between the annual variables that are stratified by MME type. A code example illustrates how you might use these variables (see Code Example 3).

Table 17. Annual Enrollment and Payments by MME Type

# Months during year	Medicare spending by MME type	Medicaid spending by MME type*
E_FD_MOS	S_FD_MEDICARE_PMT	S_FD_MEDICAID_PMT
E_QMB_MOS	S_QMB_MEDICARE_PMT	S_QMB_MEDICAID_PMT
E_PD_MOS	S_PD_MEDICARE_PMT	S_PD_MEDICAID_PMT
E_MEDICAREONLY_MOS	S_MRO_MEDICARE_PMT	
E_MEDICAIDONLY_MOS		S_MDO_MEDICAID_PMT
E_OTHER_MOS	S_OTH_MEDICARE_PMT	S_OTH_MEDICAID_PMT

* Each of the Medicaid payments is further subdivided into a state share and Federal share. There are also variables that subset this total payment into FFS (e.g., S_FD_MEDICAID_FFS_PMT) and the enrollee responsibility for deductibles or coinsurance (e.g., S_FD_MEDICAID_BENE_PMT and the subset of the beneficiary payment that was FFS – called S_FD_MEDICAID_BENE_FFS_PMT).

Additional eligibility variables capture information regarding participation in managed care (e.g., Medicare Advantage [MA], or a Medicaid managed care or "prepaid health" plan [PHP]) or FFS coverage. If a beneficiary is Medicare-Medicaid enrolled and had more than one state where s/he was Medicaid enrolled, the Medicaid records were collapsed across states and summarized for each BENE_ID. These variables are:

E_MEDICAIDFFS_*01* - E_MEDICAIDFFS_12 – monthly variables used to show whether the person was enrolled in FFS Medicaid or whether some aspect of coverage was provided through managed care plans. The FFS claims will be in the source data files and included in the MMLEADS service files. In addition, some of the managed care encounter data may be included for some states. These monthly variables allow for identification of specific types of coverage: long-term care, comprehensive managed care, PCCM, PACE, dental, behavioral, or prenatal care

coverage. The monthly MAX prepaid plan identifier variables are used. In the MAX files there are up to four types of plans (i.e., prepaid health plans [PHPs]) allowed for each month (e.g., EL_PHP_ID_1_*MM* for the first plan type). Since there can be more than one PHP value per month (i.e., four such variables), a hierarchy of values is used. The algorithm and resulting values for this variable are:

1 FFS: if all of the four monthly MAX PHP indicators are not 01 – 07; that is, if none of the categories below apply for the month.
2 Long term care: if any of the four concurrent MAX PHP variables has a monthly value of 05 (LTC).
3 Comprehensive: if any of the four MAX PHP variables has a monthly value of 01 (comprehensive managed care); also if the value is 08 (enrolled in another managed care plan) and the state is AL, CA, FL or WI.
4 Primary care case management (PCCM): if any of the four MAX PHP variables has a monthly value of 07.
5 PACE: Program of all-inclusive care for the elderly (PACE); if any of the four PHP variables has a monthly value of 06.
6 Dental: if any of the four PHP variables has a monthly value of 02.
7 Behavioral: if any of the four PHP variables has a monthly value of 03.
8 Prenatal: if any of the four PHP variables has a monthly value of 04. Null/Missing – Other (e.g., Medicaid coverage for the month or coverage is unknown)

Note: Multiple plans are possible for each month, and these monthly hierarchical summary variables are designed to be used to determine the highest level or most comprehensive type of plan for the person each month. This variable should not be used to infer the number of people with a behavioral health managed care plan during the month, for example – since any other more intensive plan during the month will cause this information to be masked for the purposes of this variable.

The following seven counter variables may be used to ascertain the number of months of enrollment in the various types of PHP plans:

E_LTC_COV_MOS – number of months during the year with a Medicaid LTC PHP
E_CMC_COV_MOS – number of months during the year with a Medicaid CMC PHP
E_PCCM_COV_MOS – number of months during the year with a Medicaid PCCM PHP
E_PACE_COV_MOS – number of months during the year with a Medicaid PACE PHP
E_DENTAL_COV_MOS– number of months during the year with a Medicaid Dental PHP
E_BEHAVIORAL_COV_MOS – number of months during the year with a Medicaid Behavioral PHP
E_PRENATAL_COV_MOS – number of months during the year with a Medicaid Prenatal care PHP

We also provide two summary variables based on the monthly E_MEDICAIDFFS classifications:

E_MEDICAIDFFS – yearly summary of Medicaid FFS coverage. This variable is created from

the monthly E_MEDICAIDFFS_01- E_MEDICAIDFFS_12 values for the person, based on all values across all states (if the person was enrolled in Medicaid in more than one state during the year). The annual determination is made by finding the lowest value that occurs in the monthly variables. Values are assigned in a hierarchical fashion; these are:

1 Had Medicaid FFS coverage all months alive during the year
0 Had Medicaid managed care coverage during one or more months of the year
Null/Missing – No months of Medicaid managed care coverage, but some Medicaid FFS (e.g., enrollee had 0 months of Medicaid managed care coverage but 4 months of Medicaid FFS then this variable is null) ; or no Medicaid coverage

E_MEDICAIDPHP – yearly summary of the type of Medicaid managed care coverage. If the E_MEDICAIDFFS yearly indicator is one (1), then E_MEDICAIDPHP is zero. Otherwise, if there person was enrolled in Medicaid in more than one state during the year, we take the maximum E_MEDICAIDPHP value across the states. The values are presented in hierarchical order.

4 For some eligible months, the person had LT Medicaid managed care coverage.
3 No LT managed care coverage, but some eligible months of Medicaid comprehensive managed care
2 No LT or comprehensive Medicaid managed care, but some eligible months of PCCM
1 No LT, Comprehensive, or PCCM managed care, but some eligible months of Limited Managed Care (LMC)
0 FFS Medicaid. No LT, Comprehensive, PCCM or Limited managed care. Null/Missing – coverage status unknown or not Medicaid enrolled

E_MEDICAREFFS_01 - E_MEDICAREFFS_12 – monthly variables used to show whether the beneficiary was enrolled in FFS Medicare or managed care (i.e., Medicare Advantage [MA]). This information is helpful for understanding whether claims data would be observable for the person for each month of enrollment (i.e., Medicare claims files do not contain any information regarding services provided through MA plans). The monthly Medicare buy-in variables and the monthly HMO variables (i.e., managed care variables; MA) from the source data are used (e.g., BENE_MDCR_ENTLMT_BUYIN_IND_*MM* and BENE_HMO_IND_*MM*). The algorithm and resulting values for this variable are:

1 FFS: if the BUYIN indicator = 3 (Medicare Part A and B) or C (Medicare Parts A and B with state buy-in) and the HMO indicator = 0 (not a member of HMO) or 4 (FFS participant in care management demonstration);
2 MA cost-based: if the HMO indicator = 1 (non lock-in, CMS to process claims) or 2 (non lock-in, GHO to process claims);
3 MA risk-based: if the HMO indicator = A (lock-in, CMS to process claims), B (lock-in, GHO to process in-plan claims), or C (lock-in, GHO to process claims)
Null/Missing – Other (e.g., no Medicare coverage for the month, Part A only, or Part B only)

We also provide the 2 source variables we use to create the monthly E_MEDICARE_FFS

variables; these are the BENE_HMO_IND_*MM* (which we call E_MEDICAREMA_*MM*) and the BENE_MDCR_ENTLMT_BUYIN_IND_*MM* (which we call E_BUYIN_*MM*).

E_MEDICAREMA_01 thru **E_MEDICAREMA_12** - Medicare monthly HMO indicator. This variable comes directly from the CCW files (original source is the CMS EDB). This variable indicates whether the beneficiary was enrolled in a Medicare Advantage (MA) plan during a given month.

0 Not a member of HMO
1 Non lock-in; CMS to process FFS claims
2 Non lock-in; Group health plan to process in-plan Part A and B claims
4 FFS participant in case or disease management demonstration project
A Lock-in; CMS to process provider claims
B Lock-in; Group health plan to process in-plan Part A and B claims
C Lock in; Group health plan to process all claims
Null/missing for those without Medicare coverage for the month

E_BUYIN_01 - E_BUYIN_12 – Medicare monthly entitlement or buy-in code. This variable comes directly from the CCW files (CCW variable name BENE_MDCR_ENTLMT_BUYIN_IND_01 - BENE_MDCR_ENTLMT_BUYIN_IND_12). This variable indicates whether the beneficiary was entitled to Part A, Part B, or both for a given month. It also indicates whether the beneficiary's state of residence paid his/her monthly premium for Part B coverage (and Part A if necessary). State Medicaid programs can pay those premiums for certain dual eligibles; this action is called "buying in".

0 Not entitled to Medicare
1 Medicare Part A only
2 Medicare Part B only
3 Both Medicare Part A and Part B
A Medicare Part A state buy-in
B Medicare Part B state buy-in
C Both Medicare Part A and Part B state buy-in
Null/missing – No Medicare coverage for the month.

The availability of monthly variables to indicate enrollment can be helpful if you are interested in specific months of the year – and associated spending. For example, you could identify all people enrolled in July of the year – and total spending for July. Table 18 illustrates the relationship between the monthly variables. A code example illustrates how you might use these variables (see Code Example 4).

Table 18. Monthly FFS Enrollment and Payments

Enrollment – each month of the year	Program spending each month	Beneficiary spending each month

E_MEDICAREFFS_01-12	S_MEDICARE_PMT_01-12	S_MEDICARE_BENE_PMT_01-12
E_MEDICAIDFFS_01-12	S_MEDICAID_PMT_01-12*	S_MEDICAID_BENE_PMT_01-12

* Each of the monthly Medicaid payments is further subdivided into a state share and Federal share (variables called S_FED_PMT_01-12 and S_ST_PMT_01-12).

E_PTDFFS_01 - E_PTDFFS_12 – monthly variables used to show whether the beneficiary was enrolled in Medicare Part D for the month, and whether such coverage was for a stand-alone Prescription Drug Plan (PDP), for an employer-sponsored drug plan, or for managed care coverage with a wrap-around prescription drug plan (which is referred to as Medicare Advantage Prescription drug plan [MA-PD]). The beneficiary's monthly Part D plan benefit package and contract identifiers (e.g., CCW PTD_PBP_ID_*MM* and PTD_CNTRCT_ID_*MM*) were linked to the CCW Plan File variable called organization type (ORG_TYPE) to derive the type of Part D plan for each month. The algorithm and resulting values for this variable are:

1 PDP: if the plan and contract are for the ORG_TYPE = 10 (PDP)
2 Employer Direct: if the plan and contract are for ORG_TYPE = 13 (Employer or Union only-PDP) or 14 (Employer or Union only-PFFS)
3 MA-PD: if the plan and contract are for ORG_TYPE = 01 (local CCP), 04 (PFFS), or 11 (regional CCP)
4 Other: if the plan and contract are for the ORG_TYPE = 05, 06, 08 or 15 Null/Missing – No Medicare Part D coverage for the month

E_PTD_CONTRACT_ID_01 - E_PTD_CONTRACT_ID_12 –unique identifier CMS assigns to each Medicare Part D contract. Variable is intended to be used in conjunction with the plan benefit package identifier **E_PTD_PBP_ID_01 - E_PTD_PBP_ID_12** to identify a particular benefit package obtained for the beneficiary (i.e., these 2 variables must be used for linkage with other data sources). If you wish to include variables regarding the nuances of the Part D benefit selected by the beneficiary (e.g., type of plan, cost-sharing provisions, formulary, utilization management requirements), then you must obtain the Part D Plan Characteristics data files. Additional information regarding use of these variables can be found in the CCW Part D Data User Guide on the CCW website (https://www.ccwdata.org/web/guest/user-documentation).

E_PTD_SNP_01-E_PTD_SNP_12 – monthly variable indicating the type of Medicare Part D Special Needs Plan (SNP) the beneficiary belongs to. SNPs are a type of Medicare Advantage plan that can limit its enrollment to certain kinds of beneficiaries. There are three kinds of SNPs, focusing on Medicare-Medicaid dual eligibles, individuals living in institutions (usually nursing homes), and individuals with certain chronic conditions.

0 Part D plan is not a SNP
C Chronic or disabling condition SNP

D Dual eligible SNP
I Institutional SNP
Null/Missing – No Medicare Part D coverage for the month

E_MEDICAREFFS – yearly summary of Medicare FFS coverage. From the monthly E_MEDICAREFFS_01- E_MEDICAREFFS_12 variables, we assign a yearly Medicare FFS value. Values are assigned in a hierarchical fashion; these are:

1 Had Medicare FFS coverage all months alive during the year
0 Had Medicare managed care (MA) coverage one or more month during the year
Null/Missing – No months of Medicare managed care coverage, but may have some Medicare FFS (e.g., beneficiary has 0 months of MA coverage but 2 months of Medicare FFS, this variable is null); or not Medicare enrolled during the year

E_MEDICAREMA – yearly summary of Medicare MA coverage. From the monthly E_MEDICAREFFS_01- E_MEDICAREFFS_12 variables, we assign a yearly Medicare MA value. Values are assigned in a hierarchical fashion; these are:

1 Had Medicare MA one or more month during the year
0 No MA during the year; had FFS Medicare coverage for the entire year (or all months alive)
Null/Missing – No months of Medicare managed care coverage, at least one month Medicare FFS – but less than all months of the year; or not Medicare enrolled during the year

A set of eligibility variables describe the reason for Medicare enrollment, and also supply the monthly Medicare buy-in codes.

E_CREC – Medicare current reason for entitlement, obtained from the CMS EDB. Values include:

0 Old age and Survivor's insurance
1 Disability insurance benefits
2 ESRD
3 Disability insurance and ESRD
Null/Missing – No Medicare coverage during the year

E_OREC – Medicare original reason for entitlement, obtained from the CMS EDB. This code comes from the time the person was initially entitled to benefits and may be different than the current reason for entitlement (i.e., if a person who was entitled to Medicare benefits due to a disability becomes eligible due to aging into Medicare, the current reason for entitlement would become "aged" or 0; whereas the original reason would remain "disability insurance benefits" or 1). Values include:

0 Old age and Survivor's insurance
1 Disability insurance benefits
2 ESRD
3 Disability insurance and ESRD
Null/Missing – No Medicare coverage during the year

E_MS_CD – Medicare status code, as it appears in the CCW source data (CCW variable BENE_MDCR_STATUS_CD); used to identify status the last month of enrollment during the year. This variable is a bit more granular than the E_CREC and E_OREC variables since it uses E_CREC in combination with age. Values for the E_MS_CD are:

10 Aged without ESRD
11 Aged with ESRD
20 Disability without ESRD
21 Disability with ESRD
31 ESRD only
Null/Missing – No Medicare coverage during the year

E_PRIMARY_PAYER_CD – Even though Medicare is typically the primary payer for medical claims, there are times when a different Federal program or private plan is considered the primary payer. When there is a different (non-Medicare) primary payer, this field identifies the program or insurance source for that payment. The source is the Medicare EDB. Values are:

A Working aged beneficiary with an employer group health plan (EGHP)
B ESRD beneficiary in 30th month; coordination with EGHP
C Conditional payment by Medicare; future reimbursement expected
D Automobile insurance and no fault
E Worker's compensation
F Public Health Service or other Fed. Agency (other than Department of Veterans Affairs)
G Working disabled
H Black Lung
I Department of Veterans Affairs L Liability Insurance
1 Potential Worker's Compensation
2 Potential Black Lung
3 Potential Department of Veterans Affairs

MMLEADS contains monthly Medicaid enrollment/coverage variables.

E_MAS_01 - E_MAS_12 – monthly value for the Medicaid Maintenance Assistance Status (MAS), derived from the first digit of the monthly MAX uniform eligibility code variables (i.e., MAX_ELG_CD_MO_1 – MAX_ELG_CD_MO_12). Values include:

0 Not eligible for Medicaid

1 Cash
2 Medically Needy
3 Poverty
4 Other
5 Section 1115 waiver
9 Unknown
Null/Missing – No Medicaid coverage during the month

E_BOE_01 - E_BOE_12 – monthly value for the Medicaid Basis of Eligibility (BOE), derived from the 2nd digit of the monthly MAX uniform eligibility code variables. Values include:

0 Not eligible for Medicaid
1 Aged
2 Blind/disabled
4 Child
5 Adult
6 Child of unemployed adult
7 Unemployed Adult
8 Foster care child
9 A Covered under Breast and Cervical Cancer Prevention Act
10 Unknown
11 Null/Missing – No Medicaid coverage during the month

E_MAS – most recent monthly value for the Medicaid Maintenance Assistance Status (MAS; from E_MAS_01 - E_MAS_12).

E_BOE – most recent monthly value for the Medicaid Basis of Eligibility (BOE); from E_BOE_01 - E_BOE_12).

A final set of Medicaid eligibility variables describe how the Medicaid benefit is offered. For example, states can apply for waivers from CMS to operate managed care plans or other demonstration projects within the Medicaid program. The various waivers are designed to meet particular objectives: section 1915(b) waivers allow for use of managed care delivery programs for a particular Medicaid subpopulation, 1915(c) waivers are for home and community-based services for long-term care recipients, and Section 1115 waivers allow for states to conduct demonstrations or pilot test innovative delivery systems (see CMS Medicaid website at: http://www.medicaid.gov/Medicaid-CHIP- Program-Information/By-Topics/Waivers/Waivers.html). There can be more than one waiver in force in a state which affects the enrollee any particular month. In the linked file a researcher is able to identify up to 3 waiver programs for a given month.

E_WAIVER1_01 - E_WAIVER1_12 – monthly Medicaid waiver status, using the first of 3 allowed waiver type variables in the source MAX data files (i.e., from monthly MAX variables

MAX_WAIVER_TYPE_1_MO_1 thru MAX_WAIVER_TYPE_1_MO_12). Values are:

0 individual was not eligible for Medicaid this month
1 enrolled in Section 1115 waiver this month
2 enrolled in section 1915(B) waiver this month
4 enrolled in combined section 1915(B) and (C) waiver this month
5 enrolled in section 1115 Health Insurance and Flexibility and Accountability (HIFA) waiver this month
6 section 1115 pharmacy waiver coverage this month
7 enrolled in other type of waiver this month
8 not applicable (not enrolled in a waiver)
9 enrolled in unknown type of waiver this month
A enrolled in section 1115 disaster-related waiver
F enrolled in section 1115 family planning-only waiver
G Enrolled in section 1915(C) waiver for aged and disabled
H Enrolled in section 1915(C) waiver for aged this month
I enrolled in section 1915(C) waiver for physically disabled this month
J enrolled in section 1915(C) waiver for people with brain injuries this month
K enrolled in section 1915(C) waiver for people with human immunodeficiency virus / acquired immunodeficiency syndrome (HIV/AIDS)
L enrolled in section 1915(C) waiver for mentally retarded/developmentally disabled
M enrolled in section 1915(C) waiver for people with mental illness/ serious emotional disturbance
N enrolled in section 1915(C) waiver for technology dependent / medically fragile
O enrolled in section 1915(C) waiver for unspecified or unknown populations
P enrolled in section 1915(C) waiver for autism/autism spectrum disorder
Null/Missing – No Medicaid coverage during the month

E_WAIVER2_01 - E_WAIVER2_12 – monthly Medicaid waiver status, using the second of three allowed waiver type variables in the source MAX data files (i.e., from monthly MAX variables MAX_WAIVER_TYPE_2_MO_1 thru MAX_WAIVER_TYPE_2_MO_12).

E_WAIVER3_01 - E_WAIVER3_12 – monthly Medicaid waiver status, using the third of three allowed waiver type variables in the source MAX data files (i.e., from monthly MAX variables MAX_WAIVER_TYPE_3_MO_1 thru MAX_WAIVER_TYPE_3_MO_12).

E_MEDICAID_RESTRICTED_01 - E_MEDICAID_RESTRICTED_12 – scope of benefits to which a Medicaid enrolled beneficiary is entitled. Monthly variable which uses the MAX source variables EL_RSTRTCT_BNFT_FLG_1 - EL_RSTRTCT_BNFT_FLG_12. Values are:

0 Not Medicaid eligible
1 Full Medicaid
2 Restricted Medicaid – alien status
3 Restricted Dual (QMB/SLMB only)

4 Restricted – pregnancy-related only
5 Restricted – other
6 Medicaid – Family Planning only
7 Medicaid – Alternative Benchmark Equivalent Coverage
8 Medicaid – Money Follows the Person – Community-Based LTC
9 Medicaid – unknown restrictions
A Medicaid – Psychiatric Residential Treatment Facilities Demonstration
B Medicaid – Health Opportunity Account
W Medicaid – HMO plan purchase, Massachusetts Commonwealth
X Medicaid– Prescription (RX) drug only
Y Dual – RX only (QMB/SLMB only)
Z Dual – RX only
Null/Missing – No Medicaid coverage during the month

e. Spending

Total Medicare FFS and Medicaid spending, as well as detailed information regarding aggregate payments is summarized using many variables, at the person-level. All variables within this category (spending) have an "S_" prefix for the variable name. We describe the Medicare payment variables, followed by the Medicaid payment variables.

- Medicare payment summaries are available (source is Medicare FFS claims data).

MMLEADS provides two perspectives on Medicare spending – the Medicare portion of the payment and the beneficiary portion of the payment. To obtain the total payments, variables for these two perspectives must be added together. Monthly variables summarize the total payments for each beneficiary and also the total FFS payments. These may be useful in calculating per member per month (PMPM) statistics. **S_MEDICARE_PMT_01 - S_MEDICARE_PMT_12 -** the total Medicare payments for the month including the Medicare-paid amount for all Part A and B services, all managed care premiums for Medicare Part A and B, and the Part D plan-covered amounts (CVRD_D_PLAN_PD_AMT) for Part D drugs.

*Note***:** For beneficiaries with MA rather than FFS Medicare, monthly managed care premiums are the only Medicare A/B payment information available, in addition to the payments for Part D drugs (i.e., for Part D all PDEs are present whether the person is enrolled in a stand-alone prescription drug plan or a MA-PD plan).

S_MEDICARE_BENE_PMT_01 - S_MEDICARE_BENE_PMT_12 – includes the beneficiary responsibility for all services received in the month, including the deductible and coinsurance amounts. Totals for all Medicare Part A, B and Part D are included. For Medicare Part D patient amounts, four fields from the source data are considered: the PTNT_AMT + OTHR_TROOP_AMT + LICS_AMT + PLRO_AMT. Additional details regarding these source payment variables is available in the CCW Part D Data User Guide on the CCW website (https://www.ccwdata.org/web/guest/user-documentation).

- Annual summaries of FFS Medicare spending were created.

  S_MEDICARE_PMT – Annual total of the monthly S_MEDICARE_PMT_01-12 variables. It represents the total actual Medicare-paid amount. This variable is null/Missing for enrollees with no Medicare coverage during the year.

  S_MEDICARE_BENE_PMT – Annual total of the monthly S_MEDICARE_BENE_PMT_01 -12 variables. This variable is null/Missing for enrollees with no Medicare coverage during the year.

  Monthly spending for each person was compared to their monthly MME classification. Then, the payments for each of the MME classifications were summed for the year. For example, if a person had three months as a partial dual and nine months as a full dual, the corresponding payments for the PD months would appear in the PD annual summary variables (e.g., S_PD_MEDICARE_PMT), and the payments for FD months would appear in the FD annual summary variables (e.g., S_FD_MEDICARE_PMT). Variables for the two payment perspectives must be added to obtain the total payments (i.e., the Medicare share and the beneficiary share).

  S_FD_MEDICARE_PMT – total Medicare payments during the year for months when beneficiaries had FD eligibility

  S_FD_MEDICARE_BENE_PMT – total beneficiary payments during the year, including the deductible and coinsurance amounts, for months when beneficiaries had FD eligibility

  S_QMB_MEDICARE_PMT – total Medicare payments during the year for months when beneficiaries had QMB eligibility

  S_QMB_MEDICARE_BENE_PMT – total beneficiary payments during the year, including the deductible and coinsurance amounts, for months when beneficiaries had QMB eligibility

  S_PD_MEDICARE_PMT – total Medicare payments during the year for months when beneficiaries had PD eligibility

  S_PD_MEDICARE_BENE_PMT – total beneficiary payments during the year, including the deductible and coinsurance amounts, for months when beneficiaries had PD eligibility

  S_MRO_MEDICARE_PMT – total Medicare payments during the year for months beneficiaries had MRO; not dual eligibility

  S_MRO_MEDICARE_BENE_PMT – total beneficiary payments during the year, including the deductible and coinsurance amounts, for months when beneficiaries had MRO eligibility

  S_OTH_MEDICARE_PMT – total Medicare payments during the year for months beneficiaries had “Other” only (not MRO; not dual) (OTH) eligibility

S_OTH_MEDICARE_BENE_PMT – total beneficiary payments during the year, including the deductible & coinsurance amounts, for months beneficiaries had "Other" (not MRO; not dual) (OTH) eligibility

- Monthly Medicaid spending variables were created.

  Several perspectives on payment are available. First, we divide the Medicaid payments into two portions: the Federal share of payments and the state Medicaid portion. The source data for these variables are the MAX claims files (i.e., IP, LT, OT and RX). The Medicaid program is jointly funded by the federal government and states. The federal government pays states for a specified percentage of program expenditures, called the Federal Medical Assistance Percentage (FMAP). This percentage varies by state, and is 57% of expenditures on average – but ranges from 50 – 75%. The federal percentage is adjusted every three years. More information regarding Medicaid financing can be found on the Medicaid.gov website (http://www.medicaid.gov/Medicaid-CHIP-Program- Information/By-Topics/Financing-and-Reimbursement/Financing-and- Reimbursement.html).

  S_FED_PMT_01 - S_FED_PMT_12 – the Federal share of total Medicaid payments for the month. This field is calculated by examining the Medicaid payment amounts on each claim (i.e., the MAX variable MDCD_PYMT_AMT) and multiplying by the FMAP for the state. All claims are included in these calculations, including premiums). The values are null/Missing if there is no Medicaid coverage during the month.

  S_ST_PMT_01 - S_ST_PMT_12 – the state share of total Medicaid payments for the month. This field is calculated by examining the Medicaid payment amounts on each claim (i.e., the MAX variable MDCD_PYMT_AMT) and subtracting the federal share of the payment from each payment (i.e., removing the S_FED_PMT_01-12 amounts from the previous variable). The values are null/Missing if there is no Medicaid coverage during the month.

  S_MEDICAID_PMT_01 - S_MEDICAID_PMT_12 – the total Medicaid payments for the month. This field sums the Medicaid payment amounts on each claim (i.e., the MAX variable MDCD_PYMT_AMT) for the month. The source data field includes the Medicaid portion of payments for all services, including premiums to third parties for capitated care. The payment amounts are divided into monthly variables, using the ending date of services on the claim (e.g., the SRVC_END_DT from the MAX IP file). The values are null/Missing if there is no Medicaid coverage during the month.

  Note: For people dually enrolled in full, partial, or QMB in more than one state during the year, use caution interpreting this variable. Only one state code per month is retained in the D_STATE_CD_*MM* field. It is possible that payments may be present for states where there is no MAX data – since the state code (D_STATE_CD_MM) for dually enrolled populations comes from Medicare data (and all payments for the individual, regardless of state are summed).

Note: A breakdown of these payments for the year by service type appears in the Medicaid Service File.

S_MEDICAID_FFS_PMT_01 - S_MEDICAID_FFS_PMT_12 – the total Medicaid FFS payments for the month. This field is calculated by subsetting the service types so that payments for all types except managed care are included (i.e., SRVC_1 where the value is not MDCD_MC). Refer to Table 10 for more information regarding the algorithms for the service type variables. The values are null/Missing if there is no Medicaid coverage during the month.

S_MEDICAID_BENE_PMT_01 - S_MEDICAID_BENE_PMT_12 – the non-Medicaid liability for payments for the month. This field is calculated using the Medicare deductible and coinsurance amounts for each claim (i.e., the MDCR_DED_PYMT_AMT and MDCR_COINSUR_PYMT_AMT). The values are null/Missing if there is no Medicaid coverage during the month.

Note: A breakdown of these payments for the year by service type appears in the Medicaid Service File.

S_MEDICAID_BENE_FFS_PMT_01 - S_MEDICAID_BENE_FFS_PMT_12 – the non-Medicaid liability for FFS payments for the month. This field is calculated using the Medicare deductible and coinsurance amounts for each claim (i.e., the MDCR_DED_PYMT_AMT and MDCR_COINSUR_PYMT_AMT) where the person is not covered by Medicaid managed care (i.e., where the SRVC_1 value is not MDCD_MC). The values are null/Missing if there is no Medicaid coverage during the month.

- Annual summaries of Medicaid spending were created by summing all of the monthly variables above.

  Data files users are reminded to use caution if attributing annual spending and use for Medicare-Medicaid enrollees to a particular state, since the annual state is the last state of the year, and may not correspond to the state where services were received.

  S_MEDICAID_PMT – total annual Medicaid payment amounts for all services; calculated as the sum of all the monthly S_MEDICAID_PMT_01 -12 variables. The values are null/Missing if there is no Medicaid coverage during the year.

  S_MEDICAID_FFS_PMT – total annual Medicaid FFS payment amounts for all services; calculated as the sum of all the monthly S_MEDICAID_FFS_PMT_01 -12 variables. The values are null/Missing if there is no Medicaid coverage during the year.

  S_MEDICAID_BENE_PMT - total annual non-Medicaid liability for payments for all services; calculated as the sum of all the monthly S_MEDICAID_BENE_PMT_01 - 12 variables. The values are null/Missing if there is no Medicaid coverage during the month.

A series of variable breaks down the total payments into five strata based on whether the person was full, QMB, partial, Medicaid-only, or other. Six variables appear for each of these strata, including the Federal and State responsibility for payment, the total Medicaid payment, the FFS Medicaid payment, and the beneficiary portion of the payment. Each of these 30 variables is an annual summary (see Table 19).

Table 19. Medicaid Payment Variables – Stratified by MME Type

Full Dual (FD)	QMB	Partial Dual (PD)	Medicaid-only (MDO)	Other (OTH)
S_FD_MEDICAID_PMT_FED	S_QMB_MEDICAID_PMT_FED	S_PD_MEDICAID_PMT_FED	S_MDO_MEDICAID_PMT_FED	S_OTH_MEDICAID_PMT_FED
S_FD_MEDICAID_PMT_ST	S_QMB_MEDICAID_PMT_ST	S_PD_MEDICAID_PMT_ST	S_MDO_MEDICAID_PMT_ST	S_OTH_MEDICAID_PMT_ST
S_FD_MEDICAID_PMT	S_QMB_MEDICAID_PMT	S_PD_MEDICAID_PMT	S_MDO_MEDICAID_PMT	S_OTH_MEDICAID_PMT
S_FD_MEDICAID_FFS_PMT	S_QMB_MEDICAID_FFS_PMT	S_PD_MEDICAID_FFS_PMT	S_MDO_MEDICAID_FFS_PMT	S_OTH_MEDICAID_FFS_PMT
S_FD_MEDICAID_BENE_PMT	S_QMB_MEDICAID_BENE_PMT	S_PD_MEDICAID_BENE_PMT	S_MDO_MEDICAID_BENE_PMT	S_OTH_MEDICAID_BENE_PMT
S_FD_MEDICAID_BENE_FFS_PMT	S_QMB_MEDICAID_BENE_FFS_PMT	S_PD_MEDICAID_BENE_FFS_PMT	S_MDO_MEDICAID_BENE_FFS_PMT	S_OTH_MEDICAID_BENE_FFS_PMT

f. Utilization

Total Medicare utilization, as well as detailed information regarding the settings of care which were used, is summarized using many person-level variables. All variables within this category (utilization) have a "U_" prefix for the variable name. There are Medicare utilization summary variable, Medicaid utilization summary variables, and two variables (community and residential mental health) that consider both Medicare and Medicaid service use.

- Medicare utilization summaries (source is Medicare FFS claims data). The value for each of these variables is null/missing if there is no Medicare coverage during the year.

  Note: Since we include payment information regarding Medicare managed care premiums, these Medicare Advantage enrollees are includes in the following utilization summaries, however we do not obtain encounter data to identify specific service use and the values will be 0 (exception is for Part D – where utilization data is reflected for all Medicare Part D enrollees).

  U_MEDICARE_ADMITS – a count of all acute hospital stays during the year for the beneficiary. Only inpatient prospective payment hospitals (IPPS) and critical access hospitals (CAH) are considered acute care hospitals for this purpose. This count includes acute hospital stays for all purposes, including readmissions. An acute hospitalization may consist of more than one inpatient claim. Furthermore, the stay may consist of treatment at more than one acute facility. All claims for the acute hospitalization are included as a single stay, and stays are counted to determine total number of hospital admissions. Consecutive acute hospitalization claims are considered part of the same stay if: 1) the first IP claim did not result in a discharge (i.e., the discharge status code did not show patient was discharged); or, 2) two IP claims have overlapping service dates. All stays where the last CCW Medicare CLM_THRU_DT for the last claim for the stay was within the calendar year of the file are included. The value is null/missing if there is no Medicare coverage during the year.

  U_MEDICARE_READMITS – count of all acute hospital readmissions during the year for the beneficiary which occurred within 30 days of hospital discharge. For this variable, we look for the onset of an acute hospitalization (i.e., the CCW CLM_FROM_DT for the acute hospital stay), and look a full 30 days after the discharge date for all hospitalizations which are counted in the U_MEDICARE_ADMITS variable. This count does not include cases where the patient was transferred directly from one acute care hospital to another (i.e., if there was no gap in acute hospitalization days where the person was in a different level of care or in the community; those are considered transfers and not readmissions). The value is 0 if there was an admission without a 30- day readmission; >=1 if there was a readmission.

  Medicare utilization is stratified using 11 types of service categorizations, each with monthly variables to allow for calculation of per-member-per-month (PMPM) statistics.

The first four types of utilization variables below count "days" at a particular level of care. To calculate days, we use the ending date for the final claim for the stay to decide which of the monthly files will hold the data for the stay (e.g., if a beneficiary has a SNF stay that begins in January and ends in February, all of these days will be counted and appear only in the February SNF_DAYS variable [i.e., U_SNF_DAY_CNT_02 variable]). Because days apply to the stay, and are not parceled out based on when the particular days occurred, the count of days may be greater than the number of calendar days in the month; in fact, it is common to have SNF day counts that are greater than 31 days.

U_ ACUTE_COV_DAY_CNT_01 - U_ACUTE_COV_DAY_CNT_12 – monthly variables to indicate the number of Medicare covered days in acute hospitals (both critical access [CAH] and inpatient prospective payment [IPPS] reimbursed hospitals).

U_SNF_DAY_CNT_01 - U_SNF_DAY_CNT_12 – monthly variables to indicate the number of Medicare covered skilled nursing facility (SNF) days

U_PAC_OTH_DAY_CNT_01 - U_PAC_OTH_DAY_CNT_12 – monthly variables to indicate the number of Medicare covered post-acute care (PAC) days

U_HOSPICE_DAY_CNT_01 - U_ HOSPICE _DAY_CNT_12 – monthly variables to indicate the number of Medicare covered hospice days

U_MEDICARE_HH_VST_CNT_01 - U_MEDICARE_HH_VST_CNT_12 – monthly variables to indicate home health (HH) visits using the claim HH total visit count**.**

U_MEDICARE_IER_CNT_01 - U_MEDICARE_IER_CNT_12 – monthly variables to indicate the number of Medicare covered institutional facility emergency room (IER) visits. Inpatient revenue center codes related to the claims used to identify Emergency Room care include 0450, 0451, 0452, 0456, 0459.

U_MEDICARE_OER_CNT_01 - U_MEDICARE_OER_CNT_12 – monthly variables to indicate the number of Medicare covered outpatient facility emergency room (OER) visits. Hospital Outpatient revenue center codes related to the claims used to identify Emergency Room care include 0450, 0451, 0452, 0456, 0459.

U_HOP_VST_01 - U_HOP_VST_12 – for the HOP setting, different billable services appear on distinct revenue center lines of the claim. The revenue centers may occur on different days, indicating the person received services at more than one time. This variable identifies all revenue center dates for the person, and counts these for each month (i.e., number of days within the month with an HOP visit).

U_PHYS_VST_01 - U_PHYS_VST_12 – count of unique claims for the Physician evaluation and management (E&M) service category. Please refer to Table 8 for more description regarding the definition of Medicare physician E&M services.

U_DME_VST_01 - U_DME_VST_12 - count of unique claims for the DME service category. Please refer to Table 8 for more description regarding the definition of DME services.

U_DRUG_PTD_01 - U_DRUG_PTD_12 – unique count of the number of prescription drug fills for each month, regardless of whether they were Medicare covered drugs or not. Users are reminded that we have this information for all Medicare Part D enrollees – even those in Medicare Advantage plans.

A series of variables break down the total annual Medicare utilization into strata based on whether the person was full, QMB, partial, Medicare only, or other for each month (i.e., only months with FD coverage are allowed to accumulate for the FD utilization variables). These five variables for each of the 11 care settings result in a total of 55 additional ways to look at use (see Table 20). Each of these 55 variables is an annual summary of use (e.g., day or visit counts).

Table 20. Medicare Utilization Summaries by MME Type

Full Benefit Dual (FD)	QMB-only Dual	Partial Benefit Dual (PD)	Medicare Only (MRO)	Other (OTH)
U_FD_IP_ACUTE_DAY	U_QMB_IP_ACUTE_DAY	U_PD_IP_ACUTE_DAY	U_MRO_IP_ACUTE_DAY	U_OTH_IP_ACUTE_DAY
U_FD_SNF_DAY	U_QMB_SNF_DAY	U_PD_SNF_DAY	U_MRO_SNF_DAY	U_OTH_SNF_DAY
U_FD_PAC_OTH_DAY	U_QMB_PAC_OTH_DAY	U_PD_PAC_OTH_DAY	U_MRO_PAC_OTH_DAY	U_OTH_PAC_OTH_DAY
U_FD_HOSPICE_DAY	U_QMB_HOSPICE_DAY	U_PD_HOSPICE_DAY	U_MRO_HOSPICE_DAY	U_OTH_HOSPICE_DAY
U_FD_HH_VST_CNT	U_QMB_HH_VST_CNT	U_PD_HH_VST_CNT	U_MRO_HH_VST_CNT	U_OTH_HH_VST_CNT
U_FD_IER_CNT	U_QMB_IER_CNT	U_PD_IER_CNT	U_MRO_IER_CNT	U_OTH_IER_CNT
U_FD_OER_CNT	U_QMB_OER_CNT	U_PD_OER_CNT	U_MRO_OER_CNT	U_OTH_OER_CNT
U_FD_HOP_VST	U_QMB_HOP_VST	U_PD_HOP_VST	U_MRO_HOP_VST	U_OTH_HOP_VST
U_FD_PHYS_VST	U_QMB_PHYS_VST	U_PD_PHYS_VST	U_MRO_PHYS_VST	U_OTH_PHYS_VST
U_FD_DME_VST	U_QMB_DME_VST	U_PD_DME_VST	U_MRO_DME_VST	U_OTH_DME_VST
U_FD_DRUG_PTD	U_QMB_DRUG_PTD	U_PD_DRUG_PTD	U_MRO_DRUG_PTD	U_OTH_DRUG_PTD

- Two variables consider both Medicare and Medicaid mental health service use:

U_RES_MH_CNT – number of days in a residential mental health facility. This variable counts all days where there was a Medicare level 2 service for inpatient psychiatric facility (SRVC_2=”IPF”) or a Medicaid claim with a place of service code=51(inpatient psychiatric facility), 55(residential substance abuse treatment facility) or 56 (psychiatric residential treatment facility).

U_COMM_MH_CNT - number of days receiving community-based mental health treatment.

This variable counts all days where there was a Medicare level 2 service for a community mental health center (SRVC_2="CMHC"), a Medicare psychiatry physician visit (a subset of physician evaluation and management claims), or a Medicaid claim with a place of service code=52 (psychiatric facility, partial hospitalization), 53 (community mental health center) or 57 (non-residential substance abuse treatment facility).

- Medicaid utilization summaries were created to parallel the Medicare summaries (source is MAX IP, LT, RX and OT data files).

  Data files users are reminded to use caution if attributing annual use and spending for Medicare-Medicaid enrollees to a particular state, since the annual state is the last state of the year, and may not correspond to the state where services were received.

  U_MEDICAID_ADMITS – a count of all acute hospital stays during the year for the enrollee. All claims with TOS=01 are considered acute care hospitals for this purpose. This count includes acute hospital stays for all purposes, including readmissions. An acute hospitalization may consist of more than one inpatient claim. Furthermore, the stay may consist of treatment at more than one acute facility. All claims for the acute hospitalization are included as a single stay, and stays are counted to determine total number of hospital admissions. Consecutive acute hospitalization claims are considered part of the same stay if: 1) the first IP claim did not result in a discharge (i.e., the discharge status code did not show patient was discharged); or, 2) two IP claims have overlapping service dates. All stays where the last date of service for the last claim for the stay was within the calendar year of the file are included. This variable is null/missing if there is no Medicaid coverage during the year,

  U_MEDICAID_READMITS – count of all acute hospital readmissions during the year for the enrollee which occurred within 30 days of hospital discharge. For this variable, we look for the onset of an acute hospitalization and look a full 30 days after the discharge date for all hospitalizations which are counted in the U_MEDICAID_ADMITS variable. This count does not include cases where the patient was transferred directly from one acute care hospital to another (i.e., if there was no gap in acute hospitalization days where the person was in a different level of care or in the community; those are considered transfers and not readmissions). The value is 0 if there was an admission without a 30-day readmission; >= 1 if there was a readmission.

  Note: many states did not submit MAX data for 2013 (i.e., only 20 states reported data) before the MMLEADS files were generated. This results in under-identification of readmissions for hospitalizations that occurred in December 2012. For states with missing data, it is not possible to know whether a readmission occurred 30-days after the admission since January 2013 data are not available.

  Medicaid utilization is stratified primarily using seven types of service categorizations; refer to Table 10 for more information regarding the Medicaid service type variables. Each of the utilization variables below has monthly variables to allow for calculation of setting-specific per-member-per-month (PMPM) statistics (corresponding enrollment variables are

indicated in Table 21):

U_MEDICAID_IP_DAYS_FFS_01 - U_MEDICAID_IP_DAYS_FFS_12 – monthly variables to indicate the number of Medicaid covered days in an acute inpatient hospital setting during the month (i.e., using the MAX IP variable MDCD_CVRD_IP_DAYS). To calculate days, we use the ending date for the final claim for the stay to decide which of the monthly files will hold the data for the stay (e.g., if a beneficiary has a hospital stay that begins in March and ends in April, all of these days will be counted and appear only in the April variable [i.e., U_MEDICAID_IP_DAYS_FFS_04 variable]). Because days apply to the stay, and are not parceled out based on when the particular days occurred, the count of days may be greater than the number of calendar days in the month.

U_MEDICAID_NURS_FAC_FFS_01 - U_MEDICAID_NURS_FAC_FFS_12 – monthly variables to indicate the number of claims for institutional nursing facility services (i.e., where SRVC_3 = "MDCD_FFS_LTI_NFS") during the month.

U_MEDICAID_HH_VST_FFS_01 - U_MEDICAID_HH_VST_FFS_12 – monthly variables to indicate the number of lines of data (e.g., generally but not always a claim) for home health services (i.e., where SRVC_3 = "MDCD_FFS_LTI_HH_W" or "MDCD_FFS_LTI_HH_NW") during the month.

Note: There may be many visits per claim; it is not possible to accurately count the number of visits for all Medicaid HH claims; therefore this variable is at the MAX OT file line-level (i.e., does not represent visits).

U_MEDICAID_PCS_VST_FFS_01 - U_MEDICAID_PCS_VST_FFS_12 – monthly variables to indicate the number of lines of data (e.g., generally but not always a claim) for personal care services (PCS) (i.e., where SRVC_3 = "MDCD_FFS_LTI_PCS_W" or "MDCD_FFS_LTI_PCS_NW") during the month.

Note: There may be many visits per claim; it is not possible to accurately count the number of visits for all Medicaid PCS claims; therefore this variable is at the MAX OT file line-level (i.e., does not represent visits).

U_MEDICAID_IER_VST_01 - U_MEDICAID_IER_VST_12 – monthly variables to indicate the number of visits to an institutional emergency room (i.e., where SRVC_3 = "MDCD_FFS_ACUTE_IP") during the month. Inpatient revenue center codes related to the claims used to identify Emergency Room care include 0450, 0451, 0452, 0456, 0459.

Note: Some states (e.g., NY) do not use revenue center codes on their Medicaid claims. This variable will not capture ER visits for those states.

U_MEDICAID_OER_VST_01 - U_MEDICAID_OER_VST_12 – monthly variables to indicate the number of visits to the hospital outpatient emergency department (i.e., SRVC_3

= “MDCD_FFS_ACUTE_HOP”) during the month. Outpatient revenue center codes related to the claims used to identify Emergency Room care include 0450, 0451, 0452, 0456, 0459.

Note: Some states (e.g., NY) do not use revenue center codes on their Medicaid claims. This variable will not capture ER visits for those states.

U_MEDICAID_DRUG_RX_FFS_01 - U_MEDICAID_DRUG_RX_FFS_12 – monthly variables to indicate the number of filled prescriptions during the month (i.e., where SRVC_2 = “MDCD_FFS_DRUG”).

A series of variables breaks down the total Medicaid utilization into strata based on whether the person was full, QMB, partial, Medicaid-only, or other. These five variables for each of the seven care settings result in a total of 35 additional ways to look at use (see Table 21). Each of these 35 variables is an annual summary of use (e.g., day or visit counts).

Table 21. Medicaid Utilization Summaries by MME Type

Full Dual (FD)	QMB	Partial Dual (PD)	Medicaid-only (MDO)	Other (OTH)
U_FD_MEDICAID_IP_DAYS	U_QMB_MEDICAID_IP_DAYS	U_PD_MEDICAID_IP_DAYS	U_MDO_MEDICAID_IP_DAYS	U_OTH_MEDICAID_IP_DAYS
U_FD_MEDICAID_NURS_FAC	U_QMB_MEDICAID_NURS_FAC	U_PD_MEDICAID_NURS_FAC	U_MDO_MEDICAID_NURS_FAC	U_OTH_MEDICAID_NURS_FAC
U_FD_MEDICAID_HH_VST_CNT	U_QMB_MEDICAID_HH_VST_CNT	U_PD_MEDICAID_HH_VST_CNT	U_MDO_MEDICAID_HH_VST_CNT	U_OTH_MEDICAID_HH_VST_CNT
U_FD_MEDICAID_PCS_VST	U_QMB_MEDICAID_PCS_VST	U_PD_MEDICAID_PCS_VST	U_MDO_MEDICAID_PCS_VST	U_OTH_MEDICAID_PCS_VST
U_FD_MEDICAID_IER_VST	U_QMB_MEDICAID_IER_VST	U_PD_MEDICAID_IER_VST	U_MDO_MEDICAID_IER_VST	U_OTH_MEDICAID_IER_VST
U_FD_MEDICAID_OER_VST	U_QMB_MEDICAID_OER_VST	U_PD_MEDICAID_OER_VST	U_MDO_MEDICAID_OER_VST	U_OTH_MEDICAID_OER_VST
U_FD_MEDICAID_DRUG_RX	U_QMB_MEDICAID_DRUG_RX	U_PD_MEDICAID_DRUG_RX	U_MDO_MEDICAID_DRUG_RX	U_OTH_MEDICAID_DRUG_RX

2. Chronic Conditions File

Dataset Name= CONDITION_*YYYY*.sas7bdat Record Count = 59,892,538 (for 2012)

The MMLEADS Chronic Conditions File is a person-level file which contains variables used to indicate the presence of treatment for common or chronic conditions using claims-based algorithms (as a proxy for evidence of the presence of a condition). This information is present for all people in MMLEADS V2.0, regardless of whether the person has any of the conditions.

This data file contains the unique person identifier called the beneficiary ID (**BENE_ID**). For people without a BENE_ID, the **MSIS_ID** and state code (**D_STATE_CD**) (i.e., the MAX data variable STATE_CD for the last month of the year) are available to identify a unique person. Each record in the Beneficiary/Enrollee file has a single record in the Conditions File. Individuals are identified as having a condition using overall coverage and service information - regardless of the state of residence during the year. A Medicaid- enrolled individual may have an outpatient claim indicating diabetes while living in California the first 3 months of the year and a second outpatient claim for diabetes while living in Arizona. The individual would be identified as having diabetes regardless of the state of residence since the claims criteria for the condition was met.

We include the 1% sample indicator (**SAMPLE_IND**), which makes it easy to identify a population subset for testing your code or for feasibility studies.

The MMLEADS V2.0 Chronic Condition File includes the 27 CCW Medicare common and chronic conditions (see Table 22) which were developed by CMS using a multi-stage process. Initially, ResDAC used CMS and other national data sources to identify candidate conditions which could be coded using claims-based algorithms. Next, extensive literature reviews were conducted to gather code sets for each candidate condition. Finally, CMS engaged other Federal agencies in a series of conversations to vet the proposed category definitions. The algorithms examine patterns of services, which serve as a proxy indicating that a beneficiary is likely receiving treatment for the condition. You can find more information about these algorithms, including the literature references and exact codes and claim types used to identify each condition, on the CCW website (https://www.ccwdata.org/web/guest/condition-categories).

The MMLEADS V2.0 Chronic Condition File also contains nine mental health and tobacco use conditions, 15 developmental disorder and disability-related conditions, and other chronic physical and behavioral health conditions which were developed specifically to enhance research of the Medicare-Medicaid population (listed in Table 23 below). The chronic condition variables consider three elements:

1) Clinical criteria that consider ICD-9, Current Procedural Terminology (CPT) 4, or

Healthcare Common Procedure Coding System (HCPCS) codes, Claim type(s) and count(s);

2) Coverage criteria that consider whether the beneficiary was enrolled in both Medicare Part A and Part B and had no HMO coverage, enrolled in Medicaid, etc.; and
3) Reference period that indicates the span of time during which the clinical and coverage criteria are considered.

The coverage criteria consider variations of Medicare Parts A, B, and HMO coverage; similarly, they consider variations in Medicaid FFS and managed care coverage. The specified time periods, or *reference time periods*, consider the length of time during which the clinical and coverage criteria are considered. The condition algorithms use calendar years as the basis for the reference years (e.g., 2008 data files with a variable for a condition algorithm with one-year reference period includes services between 01/01/08-12/31/08). To be classified as meeting the coverage criteria, the person had to be covered for all 12 months of the reference year – or if the person died during this time frame, the person needed to have coverage all months alive (i.e., if the condition had a reference time period of 2 years, then the person had to have 24 months of FFS coverage), and have FFS coverage which would allow for observation of the claims of interest. For example, for the Medicare variables for a condition using a one-year reference time period, the value "coverage met" means that the person had Medicare FFS for all 12 months of the year (or all months alive during the year). If the value indicates coverage is not met, then the person had 11 or fewer months of FFS coverage, or no FFS coverage at all during the year.

There are two types of variables for each Condition: an *end-of-year indicator* and the date that the beneficiary first met the clinical criteria, often known as the "*ever date*". Both types of variables are in the Conditions File. For example, the two different types of variables for bipolar disorders using the Medicaid payer perspective are **BIPL_MEDICAID** and **BIPL_MEDICAID_EVER**.

a. End-of-year indicator

The first type of Condition variable indicates whether the beneficiary met the criteria for the given condition as of the end of the reference year (for example, the AMI_MEDICARE variable in the 2010 Conditions File indicates whether the beneficiary met the acute myocardial infarction [AMI] criteria using Medicare coverage and claims as of December 31, 2010). There are four possible values for the variable, which indicate whether the beneficiary had enough claims to indicate treatment and had FFS enrollment for the full reference period, which varies by condition and ranges from one to three years. The following are valid values for each of the condition variables:

0 Neither claims nor coverage met
1 Claims met, coverage not met
2 Claims not met, coverage met
3 Claims and coverage met

The values for each of the variables indicate whether the person received services during the time frame to designate treatment for the condition (i.e., based on the FFS administrative claims pattern, the person likely is being treated for the condition – or not). The reference time

period is the look-back period during which the other criteria must be met. It is possible for a person to meet the claims criteria for a given year and not the next year. The values 0 and 2 indicate that the person did not have a pattern of claims to indicate treatment for the condition of interest; values 1 and 3 indicate the person had claims which indicated treatment for the condition.

Each of the Conditions has three variables to represent different payer perspectives; however one of the perspectives should only be considered for use if the person is dually enrolled in Medicare and Medicaid. The three perspectives for the conditions variables:

- Medicaid enrollment and claims only. These variables use the *_MEDICAID naming convention (e.g., for atrial fibrillation, the condition is called AFIB_MEDICAID)
- Medicare coverage and claims only. These variables use the *_MEDICARE naming convention (e.g., AFIB_MEDICARE)
- A combination of Medicare and Medicaid enrollment and claims. These variables use the *_COMBINED naming convention (e.g., AFIB_COMBINED)

The denominator for each variable in this file is the same. If a person is not eligible for Medicare, then all values for the MEDICARE versions of the conditions will =0; similarly, for people not enrolled in Medicaid, all values for the MEDICAID versions of the conditions will =0. An easy way to determine whether your particular study population includes people who were Medicare, Medicaid, or dually enrolled in Medicare & Medicaid is by using the E_MME_TYPE variable, described in detail in the Beneficiary File section of the User Guide.

Investigators are cautioned that the COMBINED version of the Conditions variables only has meaning for people who are dually enrolled. These COMBINED variables consider both Medicare and Medicaid coverage, which means that “coverage met” requires 12 months (or all months alive) of BOTH Medicare and Medicaid FFS.

There are three variables for each of the conditions created using: 1) Medicare claims, 2) Medicaid claims, 3) or both type of claims (combined). These three payer perspectives for identifying the condition account for the large number of variables in the file. Refer to Table 22 and Table 23 for a listing of condition variables in MMLEADS V2.0.

Table 22. The Original 27 CCW Condition Variables

Condition	Combined claims	Medicaid-only claims	Medicare-only claims
Acquired Hypothyroidism	HYPTHY_COMBINED	HYPTHY_MEDICAID	HYPTHY_MEDICARE
Acute Myocardial Infarction	AMI_COMBINED	AMI_MEDICAID	AMI_MEDICARE
Alzheimer's Disease	ALZ_COMBINED	ALZ_MEDICAID	ALZ_MEDICARE
Alzheimer's or Related Dementia	ALZRDSD_COMBINED	ALZRDSD_MEDICAID	ALZRDSD_MEDICARE
Anemia	ANEMIA_COMBINED	ANEMIA_MEDICAID	ANEMIA_MEDICARE
Asthma	ASTHMA_COMBINED	ASTHMA_MEDICAID	ASTHMA_MEDICARE
Atrial Fibrillation	AFIB_COMBINED	AFIB_MEDICAID	AFIB_MEDICARE
Benign Prostatic Hyperplasia	HYPPLA_COMBINED	HYPPLA_MEDICAID	HYPPLA_MEDICARE
Cataract	CAT_COMBINED	CAT_MEDICAID	CAT_MEDICARE
Chronic Kidney Disease (CKD)	CKD_COMBINED	CKD_MEDICAID	CKD_MEDICARE
Chronic Obstructive Pulmonary Disease (COPD)	COPD_COMBINED	COPD_MEDICAID	COPD_MEDICARE
Heart Failure	CHF_COMBINED	CHF_MEDICAID	CHF_MEDICARE
Depression*	DEPR_COMBINED	DEPR_MEDICAID	DEPR_MEDICARE
Diabetes	DIAB_COMBINED	DIAB_MEDICAID	DIAB_MEDICARE
Glaucoma	GLCM_COMBINED	GLCM_MEDICAID	GLCM_MEDICARE
Hip/Pelvic Fracture	HFRAC_COMBINED	HFRAC_MEDICAID	HIRAC_MEDICAR E
Hyperlipidemia	HYPLIP_COMBINED	HYPLIP_MEDICAI D	HYPLIP_MEDICARE
Hypertension	HYPTEN_COMBINED	HYPTEN_MEDICAID	HYPTEN_MEDICARE
Ischemic Heart Disease	IHD_COMBINED	IHD_MEDICAID	IHD_MEDICARE
Osteoporosis	OST_COMBINED	OST_MEDICAID	OST_MEDICARE
Rheumatoid/Osteoarthritis	RAOA_COMBINED	RAOA_MEDICAID	RAOA_MEDICARE
Stroke	STRK_COMBINED	STRK_MEDICAID	STRK_MEDICARE

Condition	Combined claims	Medicaid-only claims	Medicare-only claims
Breast Cancer	BRC_COMBINED	BRC_MEDICAID	BRC_MEDICARE
Colorectal Cancer	CRC_COMBINED	CRC_MEDICAID	CRC_MEDICARE
Lung Cancer	LNGC_COMBINED	LNGC_MEDICAID	LNGC_MEDICARE
Prostate Cancer	PRC_COMBINED	PRC_MEDICAID	PRC_MEDICARE
Endometrial Cancer	ENDC_COMBINED	ENDC_MEDICAID	ENDC_MEDICARE

* Includes depression, any instance, including bipolar episodes.

Table 23. Additional Condition Variables

Mental Health, Tobacco, Conditions			
	Combined claims	Medicaid-only claims	Medicare-only claims
Conduct Disorders and Hyperkinetic Syndrome	ACP_COMBINED	ACP_MEDICAID	ACP_MEDICARE
Anxiety Disorders	ANXI_COMBINED	ANXI_MEDICAID	ANXI_MEDICARE
Bipolar Disorder	BIPL_COMBINED	BIPL_MEDICAID	BIPL_MEDICARE
Major Depression	DEPSN_COMBINED	DEPSN_MEDICAID	DEPSN_MEDICARE
Personality Disorders	PSDS_COMBINED	PSDS_MEDICAID	PSDS_MEDICARE
Post-traumatic Stress Disorder (PTSD)	PTRA_COMBINED	PTRA_MEDICAID	PTRA_MEDICARE
Schizophrenia	SCHI_COMBINED	SCHI_MEDICAID	SCHI_MEDICARE
Schizophrenia and Other Psychotic Disorders	SCHIOT_COMBINED	SCHIOT_MEDICAID	SCHIOT_MEDICARE
Tobacco Use Disorders	TOBA_COMBINED	TOBA_MEDICAID	TOBA_MEDICARE
Conditions Related to Intellectual, Developmental, and Physical Disability			
	Combined claims	Medicaid-only claims	Medicare-only claims
Autism Spectrum Disorder	AUTISM_COMBINED	AUTISM_MEDICAID	AUTISM_MEDICARE
Cerebral Palsy	CERPAL_COMBINED	CERPAL_MEDICAID	CERPAL_MEDICARE
Cystic Fibrosis and Other Metabolic Developmental Disorders	CYSFIB_COMBINED	CYSFIB_MEDICAID	CYSFIB_MEDICARE
Epilepsy	EPILEP_COMBINED	EPILEP_MEDICAID	EPILEP_MEDICARE
Intellectual Disabilities and Related Conditions	INTDIS_COMBINED	INTDIS_MEDICAID	INTDIS_MEDICARE
Learning Disabilities and Other Developmental Delays	LEADIS_COMBINED	LEADIS_MEDICAID	LEADIS_MEDICARE
Mobility Impairments	MOBIMP_COMBINED	MOBIMP_MEDICAID	MOBIMP_MEDICARE

	Combined claims	Medicaid-only claims	Medicare-only claims
Multiple Sclerosis and Transverse Myelitis	MULSCL_COMBINED	MULSCL_MEDICAID	MULSCL_MEDICARE
Muscular Dystrophy	MUSDYS_COMBINED	MUSDYS_MEDICAID	MUSDYS_MEDICARE
Sensory-Deafness and Hearing Impairment	HEARIMP_COMBINED	HEARIMP_MEDICAID	HEARIMP_MEDICARE
Sensory – Blindness and Visual Impairment	VISUAL_COMBINED	VISUAL_MEDICAID	VISUAL_MEDICARE
Spina Bifida and Other Congenital Anomalies of the Nervous System	SPIBIF_COMBINED	SPIBIF_MEDICAID	SPIBIF_MEDICARE
Spinal Cord Injury	SPIINJ_COMBINED	SPIINJ_MEDICAID	SPIINJ_MEDICARE
Traumatic Brain Injury and Nonpsychotic Mental Disorders due to Brain Damage	BRAINJ_COMBINED	BRAINJ_MEDICAID	BRAINJ_MEDICARE
Other Developmental Delays	OTHDEL_COMBINED	OTHDEL_MEDICAID	OTHDEL_MEDICARE
Other Chronic Physical and Behavioral Health Conditions			
	Combined claims	Medicaid-only claims	Medicare-only claims
Fibromyalgia, Chronic Pain and Chronic Fatigue	FIBRO_COMBINED	FIBRO_MEDICAID	FIBRO_ MEDICARE
HIV/AIDS*	HIVAIDS_COMBINED	HIVAIDS_ MEDICAID	HIVAIDS_ MEDICARE
Leukemia and Lymphoma	LEUKLYMPH_COMBINED	LEUKLYMPH_ MEDICAID	LEUKLYMPH_ MEDICARE
Liver Disease, Cirrhosis, and Other Liver Conditions (excluding Hepatitis)	LIVER_COMBINED	LIVER_ MEDICAID	LIVER_ MEDICARE

	Combined claims	Medicaid-only claims	Medicare-only claims
Hepatitis (Any Viral)	HEPVIRAL_COMBINED	HEPVIRAL_MEDICAID	HEPVIRAL_MEDICARE
• Hepatitis A	HEPA_COMBINED	HEPA_MEDICAID	HEPA_MEDICARE
• Hepatitis B - acute	HEPB_ACT_COMBINED	HEPB_ACT_MEDICAID	HEPB_ACT_MEDICARE
• Hepatitis B - chronic	HEPB_CHR_COMBINED	HEPB_CHR_MEDICAID	HEPB_CHR_MEDICARE
• Hepatitis C - acute	HEPC_ACT_COMBINED	HEPC_ACT_MEDICAID	HEPC_ACT_MEDICARE
• Hepatitis C - chronic	HEPC_CHR_COMBINED	HEPC_CHR_MEDICAID	HEPC_CHR_MEDICARE
• Hepatitis C - unspecified	HEPC_UNS_COMBINED	HEPC_UNS_MEDICAID	HEPC_UNS_MEDICARE
• Hepatitis D	HEPD_COMBINED	HEPD_MEDICAID	HEPD_MEDICARE
• Hepatitis E	HEPE_COMBINED	HEPE_MEDICAID	HEPE_MEDICARE
Migraine and Other Chronic Headache	MIGRAINE_COMBINED	MIGRAINE_ MEDICAID	MIGRAINE_ MEDICARE
Obesity	OBESITY_COMBINED	OBESITY_ MEDICAID	OBESITY_ MEDICARE
Pressure Ulcers and Chronic Ulcer	ULCERS_COMBINED	ULCERS_ MEDICAID	ULCERS_ MEDICARE
Peripheral Vascular Disease	PVD_COMBINED	PVD_MEDICAID	PVD_MEDICARE

* For HIV/AIDS the MMLEADS V2.0 also includes several "monitoring" variables – see below.

Note: Data file users should consider carefully which payer perspective variables to use for analyses, particularly if examining conditions for people who may have some Medicare-Medicaid enrollment (i.e., where MME_TYPE = 5, 4, or 3). For example, if a beneficiary meets the criteria for a Medicare condition as a "3 = Claims and coverage met" using the "*_MEDICARE" variables, but the person does not have Medicaid coverage during the reference time period, this same person will be classified as a "1 = Claims met, coverage not met" for the same condition using the "*_COMBINED" variables. This difference in values is due to the person's coverage criteria in the COMBINED files indicating that the person did not have BOTH Medicare and Medicaid coverage for all months alive and enrolled during the reference period. Chapter 4 of this document demonstrates two examples for how to use the Chronic/Conditions File to achieve different study objectives (see Code Example 2 and Code Example 5).

The HIV/AIDS condition that is included in Table 23 is similar to the other chronic conditions in we calculate both the current and "ever" dates for meeting these criteria. In addition to the condition categories, we include some variables that may be helpful in monitoring HIV/AIDS. Three of the variables are a variation on the HIV/AIDS condition – rather than a 2 year period for observing claims there is only a one year period, and there are some slight variations in how the condition is defined, with the 1 year condition being less restrictive (more broad) – requiring only one claim of any claim type with the specified diagnosis codes (HCC codes do not apply for this one year algorithm). Variables are called **HIVAIDS_1YR_MEDICARE**, **HIVAIDS_1YR_MEDICAID**, and **HIVAIDS_1YR_COMBINED**.

The following variables are HIV/AIDS-related "events" (rather than conditions) that beneficiaries/enrollees may have experienced:

- SSA Disability-Qualifying Primary or Secondary Diagnosis – Indication of HIV/AIDS diagnosis on SSA disability determination records. All people with such a designation during the year of the data file are included. Variables called **HIVSSAPRIM and HIVSSASCNDRY**, respectively.

  0 None
  1 Asymptomatic HIV Infection (0440)
  2 Symptomatic HIV Infection (0430)
  3 HIV Wasting Syndrome (2630)
  4 HIV Encephalopathy (3480)
  Null/missing for Medicaid only enrollees (since the source data are SSA data obtained through Medicare).

- HIV/AIDS Program Participation – participation in a Medicaid demonstration, waiver program, health home or other initiative directly focusing on the HIV/AIDS population (variable called **HIVPGM**)

  0 No
  1 Yes
  Null/missing for Medicare only enrollees (since the source data are from Medicaid).

- Antiretroviral Medication Use – number of unique days in which a beneficiary filled one or more antiretroviral (ARV) medication that was covered in part or in full by Medicare and/or Medicaid over one calendar year. Three variables (3 variables count the # of days where such a prescription was filled in Medicare data (**HIVARV_MEDICARE**), Medicaid data (**HIVARV_MEDICAID**), or Medicare and Medicaid data combined (**HIVARV_COMBINED)**. Values are:

  0 - 8,
  9 = 9 or more ARV medications Null/missing for people without a BENE_ID

- Medicare Medicaid Testing for HIV – the number of unique HIV screening tests, paid for in part or in full by Medicare or Medicaid (both sources are counted), that a beneficiary received over one calendar year. There are four different testing variables: HIV-1, HIV-2, combined HIV-1/HIV-2 test, and HIV-1 and/or HIV-2. The CPT-4 and HCPCS codes for the four categories are:

    a) **HIVTSTNG_CAT1** - HIV-1: 86701, 86701-xx, 87390, 87534, 87535, S3645
    b) **HIVTSTNG_CAT2** - HIV-2: 86702, 86702-xx, 87391
    c) **HIVTSTNG_CAT3** - HIV-1 and HIV-2: 87389, 86703, 86703-xx
    d) **HIVTSTNG_CAT4** - HIV-1 and/or HIV-2: 86689, G0432, G0432-xx, G0433, G0433-xx, G0435, G0435-xx

Values for these 4 testing variables are:

0 No tests
1 1 test
2 2 tests
3 3 or more tests Null/missing

b. Ever date

The second type of Condition variable indicates whether the beneficiary has ever had the condition, by giving the date when he or she first met the clinical criteria. Values are null (missing) if the person never had a pattern of claims that indicate treatment for the condition. The earliest possible ever date for anyone in the CCW is January 1, 1999, although some beneficiaries became eligible for Medicare and/or Medicaid before then. For beneficiaries who joined Medicare after that date, their ever dates will not precede the start of their Medicare coverage (i.e., the D_MEDICARE_COV_START variable in the Beneficiary/Enrollee File).

As with the end of the year condition variables, there are three payer perspectives for the ever dates. These indicate 1) whether a pattern of claims was ever apparent in the Medicare claims (e.g., BIPL_MEDICARE_EVER), 2) whether it was evident in Medicaid claims (BIPL_MEDICAID_EVER), and 3) whether it was evident after combining Medicare and Medicaid claims (BIPL_COMBINED_EVER).

c. Data Considerations

The MAX data for CO is missing in 2011, the MAX data for CO, ID, KS and RI is missing for 2012. For these state, the *_COMBINED conditions will be undercounts of the conditions for dually enrolled individuals, since Medicaid data were not available.

Data file users are cautioned that claims data are generally not available if the person is enrolled in managed care; this is always true for Medicare, and often true for Medicaid, with some state-by-state variation. Since the conditions use diagnoses on claims-based algorithms, there is not an opportunity to determine whether the managed care enrollees have been treated for the condition(s) of interest. The condition variables are designed to examine patterns of services – which serve as a proxy for indicating the person likely is receiving treatment for the condition.

Investigators are encouraged to determine whether restrictions to the study population may be appropriate (e.g., limiting the analysis of conditions to beneficiaries with FFS coverage), which can be accomplished by using the enrollment criteria variables within the Beneficiary/Enrollee File within MMLEADS V2.0. A CCW Technical Guidance paper which describes some important considerations when using the CCW conditions for calculating Medicare population statistics is available on the CCW website, under the "Analytic Guidance" tab (https://www.ccwdata.org/web/guest/technical-guidance- documentation).

B. Service-level files

The claims data, which are summarized into service-level files, indicate treatment for Medicare or Medicaid patients. Although the Beneficiary/Enrollee File includes a variety of utilization and spending summaries, the Service Files contain a more granular breakdown of the particular types of services and payments that were observed. Note that the information in the Service Files is not claim-level detail; investigators who require this level of detail must purchase the Medicare or Medicaid claims data files.

In the Service files, we summarize annual utilization and payment along several dimensions to facilitate various types of analyses. First, we classify each service use as having occurred when the person was a particular type of Medicare-Medicaid enrollment; that is, payments and utilization are summarized by MME_TYPE. We include monthly and annual payment summaries that partition the payments according to the party responsible – Medicare, Medicaid, the beneficiary/enrollee.

Beneficiaries/Enrollees who used more than one kind of service during a year will have multiple records in the Service File. In addition, the Service Files for a given year have a record for each beneficiary/enrollee that appears in the Beneficiary/Enrollee File, even if the person did not use any services. Therefore, there is at least one record in the Medicare Service File for each person enrolled in Medicare during the year. Similarly, there is a record in the Medicaid Service File for all people in the Beneficiary/Enrollee File who have Medicaid coverage for any month of the year (note: if the person was never enrolled in Medicare during the year – there is NOT a record in the Medicare Service File for this person). You should consider whether you may wish to restrict these files to populations with a particular type or duration of enrollment (e.g., some Medicaid enrollees may have coverage for only a single month; some enrollees have managed care coverage; you must decide whether to include these populations in your study).

The structure and general contents of the Medicare and Medicaid Service files are the same; however the exact variables differ due to payment differences and to variable naming conventions. The Service files are described in detail in the following section.

The scope of benefits potentially available through Medicaid is much broader than what is offered in Medicare; therefore data users should be cautious when comparing volume and costs of services between the two payers since the scope of services is not comparable.

1. Medicare Service-Level File

Dataset Name= MEDICARE_SERVICE_*YYYY*.sas7bdat
Record Count = 331,132,554 (in 2012)

A claim may consist of multiple services, which we have indicated using the service type variables described in Table 8 and Table 9 above. The Medicare Service-Level File categorizes claims into distinct types of services (i.e., using the most granular service type – SRVC_2), then aggregates these in various ways. There is one record per person per type of service 2 used during the year. Data for each row are aggregated across services so that each row of data could be describing multiple medical encounters. The source data are all Medicare A, B, and D claims for the year as well as Medicare Part C (managed care; Medicare Advantage) premiums.

There are many variables within the file which are useful for describing Medicare cost and use by setting or service type, as well as summarizing total per person (per capita) or per member per month (PMPM) spending and utilization for particular service classifications.

a. Person Identifiers

The file contains the unique person identifier called the beneficiary ID (**BENE_ID**). There will be at least one row of data for each person enrolled in Medicare in the MMLEADS V2.0 Files, even if there was no utilization during the year (i.e., this file allows for calculation of both per capita statistics and per user statistics). The **D_STATE_CD**, which is the state for the last month of enrollment for the year, allows for state-specific analyses.

We include the 1% sample indicator (**SAMPLE_IND**), which makes it easy to identify a population subset for testing your code or for feasibility studies.

b. Service Categories

The hierarchical service type groupings for Medicare are included in the Medicare Service File. Medicare service files have two levels of service type (refer to Table 8 and Table 9). Level 1 service type (variable called **SRVC_1**) is a fairly broad grouping of services, and level 2 service type (**SRVC_2**) is a more granular breakdown of services. These variables are described in greater detail earlier in the Key Concepts section of this User Guide. Each row of data in this file contains a distinct level 2 type of service for all beneficiaries who used any Medicare services.

c. Counter variables

Counter variables in the Medicare Service file enables analysts to construct numerators and denominators for either population-level or per user statistics that are specific to a type of service. Investigators are reminded that all people in the Beneficiary/Enrollee File who have Medicare coverage have at least one record in the Medicare Service File, even if the person did not have any service utilization. The beneficiary count variable (**BENE_CNT**) is to use for obtaining a beneficiary/enrollee count to calculate per capita statistics. The user 1 count variable (**USER1_CNT**) is to use for obtaining a count of all the different SRVC_1 settings used by the beneficiary during the year. The user 2 count variable (**USER2_CNT**) is to use for obtaining a count of all the different SRVC_2 settings used by the beneficiary during the year. USER2_CNT

is also used to distinguish between those who used any Medicare service during the year and those who did not. An example of how to use these counter variables appears earlier in the Key Concepts of this document (see also, Table 14). We also provide a SAS® coding example in Chapter 4 (see Code Example 6).

d. Medicare Payments

The payment variables that appear in the Beneficiary File contain summary payment information derived from the payment variables in the Service Files; many of the variables in this file are parallel to the payment variables found in the Beneficiary File. However, within this file we can stratify monthly variables by service type to look at detailed payment and use information (e.g., monthly payments for hospitalizations or particular classes of Part D drugs). Payment variables for Medicare payments provide two perspectives on payment: 1) Medicare paid amounts, and 2) beneficiary paid amounts (includes coinsurance and deductibles). The file also has a combination of monthly payment summaries and annual summaries – all of which are specific to the type of services summarized on the row of data (i.e., they are all stratified by SRVC_2).

Monthly variables allow for calculation of PMPM payments for each type of service. There are three components of payments – each of which appears in a separate variable.

MEDICARE_PMT_01 - MEDICARE_PMT_12 -- the total Medicare payments for the service type for the month, including whichever of the following apply: the Medicare- paid amount for all Part A and B services, the premiums for Medicare Advantage plans, and/or Part D plan-covered amounts (CVRD_D_PLAN_PD_AMT) for Part D drugs. The sum of these monthly variables across all rows of data for the person in the Medicare Service file is equal to the S_MEDICARE_PMT_01 - S_MEDICARE_PMT_12 variables in the Beneficiary File.

*Note***:** For beneficiaries with MA rather than FFS Medicare, the payments for Part D drugs may be the only services able to be observed in this file (i.e., for Part D all PDEs are present whether the person is enrolled in a stand-alone prescription drug plan or a MA-PD plan), although the monthly managed care premiums are captured

MEDICARE_BENE_PMT_01 - MEDICARE_BENE_PMT_12 – includes the beneficiary responsibility for all services received in the month (specific to the type of service), including the deductible and coinsurance amounts. Totals for all Medicare Part A, B and Part D are included, as appropriate. These variables are calculated as the sum of the coinsurance and deductible variables in this file (e.g., the MEDICARE_BENE_PMT_01 = MEDICARE_COIN_PMT_01 + MEDICARE_DED_PMT_01). For Medicare Part D patient amounts, four fields are considered: the PTNT_AMT + OTHR_TROOP_AMT + LICS_AMT + PLRO_AMT.

Note: The sum of these monthly variables across all rows of data for the person in the Medicare Service file is equal to the S_MEDICARE_BENE_PMT_01 - S_MEDICARE_BENE_PMT_12 in the Beneficiary file.

MEDICARE_COIN_PMT_01 - MEDICARE_COIN_PMT_12 – the beneficiary coinsurance for the all claims for the particular service type during the month. Coinsurance totals for all Medicare Part A, B and Part D are included, as appropriate. For Medicare Part D patient amounts, four fields are combined: the PTNT_AMT + OTHR_TROOP_AMT + LICS_AMT + PLRO_AMT.

MEDICARE_DED_PMT_01 - MEDICARE_DED_PMT_12 – the beneficiary deductible for all claims for the particular service type during the month. Deductible totals for all Medicare Part A, B and Part D are included, as appropriate.

Annual Medicare payment summaries include aggregate spending for each type of service, as well as spending for each type of service that occurred while enrolled in different levels of benefits. Annual spending for each of the level 2 service classifications is summarized in three variables:

MEDICARE_PMT – sum of all monthly Medicare payment amounts for the service for the year (the MEDICARE_PMT_01-MEDICARE_PMT_12 variables).

Note: The sum of this variable across all rows of data for the person in the Medicare Service file is equal to the annual total (variable called S_MEDICARE_PMT) in the Beneficiary file.

MEDICARE_BENE_PMT – sum of all monthly beneficiary payment amounts for the service for the year (the MEDICARE_BENE_PMT_01 - MEDICARE_BENE_PMT_12 variables).

Note: The sum of this variable across all rows of data for the person in the Medicare Service file is equal to the annual total (variable called S_MEDICARE_BENE_PMT) in the Beneficiary file.

MEDICAID_BENE_PMT – sum of the Medicare coinsurance and deductible amounts that are covered by Medicaid for the year.

Note: The sum of this variable across all rows of data for the person in the Medicare Service file is equal to the annual total (variable called S_MEDICAID_BENE_PMT) in the Beneficiary file.

Monthly Medicare spending for each person was compared to their monthly MME classification. Then, the payments for each of the MME classifications were summed for the year. For example, if a person had 3 months as a partial dual and 9 months as a full dual, the corresponding payments for the PD months would appear in the PD annual summary variables (e.g., S_PD_MEDICARE_PMT), and the payments for FD months would appear in the FD annual summary variables (e.g., S_FD_MEDICARE_PMT).

Two perspectives on spending are present – the Medicare portion of the payment and the beneficiary portion of the payment. The five MME types are used to break down the total Medicare payments into strata. These five variables for the two types of payments results in 10 additional ways to examine payments (see Table 24).

Table 24. Medicare and Beneficiary Payment Summary Variables by MME Type

MME Categorization	Medicare payments	Beneficiary payments
Full Benefit Dual (FD)	**FD_MEDICARE_PMT**	**FD_MEDICARE_BENE_PMT**
QMB-only Dual (QMB)	**QMB_MEDICARE_PMT**	**QMB_MEDICARE_BENE_PMT**
Partial Benefit Dual (PD)	**PD_MEDICARE_PMT**	**PD_MEDICARE_BENE_PMT**
Medicare-only (MRO)	**MRO_MEDICARE_PMT**	**MRO_MEDICARE_BENE_PMT**
Other (OTH)	**OTH_MEDICARE_PMT**	**OTH_MEDICARE_BENE_PMT**

Chapter 4 of this document demonstrates the payment variables which have been stratified by MME categorization (see Code Example 3).

e. Medicare Utilization

Total Medicare service utilization for each specific service category can be summarized using monthly variables to allow for PMPM utilization statistics. Three types of variables are available; two of these are monthly variables that count "days" of coverage for the type of service. To calculate days, we use the ending date for the final claim for the stay to decide which of the monthly files will hold the data for the stay (e.g., if a beneficiary has a hospital stay that begins in June and ends in July, all of these days will be counted and appear only in the July days count variable [i.e., MEDICARE_DAY_CNT_07 variable]). Because days apply to the stay, and are not parceled out based on when the particular days occurred, the count of days may be greater than the number of calendar days in the month. There is no information regarding Medicare Advantage service use; therefore none of the claim, day, or visit counts include managed care (i.e., a premium payment is not a Medicare claim).

Variables include:

MEDICARE_CLM_CNT_01 - MEDICARE_CLM_CNT_12 – count of all FFS claims for the service for the month. Only the particular types of claims that are related to the SRVC_2 for the row of data are included: either Medicare A, B, or D.

MEDICARE_DAY_CNT_01 - MEDICARE_DAY_CNT_12 – count of Medicare covered and non-covered inpatient hospital days (i.e., where SRVC_2="MDCR_IP"). This field is null/missing for all rows of data with different SRVC_2 values.

MEDICARE_COV_DAY_CNT_01 - MEDICARE_COV_DAY_CNT_12 – Medicare covered inpatient hospital days (i.e., a subset of days using the SRVC_2="MDCR_IP"). This field is null/missing for all rows of data with different SRVC_2 values.

Medicare utilization employs the same five dual categories used throughout this data resource. Use for each row of data is stratified by: 1) claim count, 2) covered days count, 3) total covered and noncovered days, and 4) visit counts for HH services (see Table 25).

Table 25. Medicare Claim and Utilization Count Variables by MME Type

MME Category	Claim Counts	Covered Days	All days	Visit Counts
FD	FD_MEDICARE_CLM_CNT	FD_MEDICARE_COV_DAY_CNT	FD_MEDICARE_DAY_CNT	FD_MEDICARE_VST_CNT
QMB	QMB_MEDICARE_CLM_CNT	QMB_MEDICARE_COV_DAY_CNT	QMB_MEDICARE_DAY_CNT	QMB_MEDICARE_VST_CNT
PD	PD_MEDICARE_CLM_CNT	PD_MEDICARE_COV_DAY_CNT	PD_MEDICARE_DAY_CNT	PD_MEDICARE_VST_CNT
MRO	MRO_MEDICARE_CLM_CNT	MRO_MEDICARE_COV_DAY_CNT	MRO_MEDICARE_DAY_CNT	MRO_MEDICARE_VST_CNT
OTH	OTH_MEDICARE_CLM_CNT	OTH_MEDICARE_COV_DAY_CNT	OTH_MEDICARE_DAY_CNT	OTH_MEDICARE_VST_CNT

Note that null values appear in the data file when the type of utilization does not apply (e.g., a row of data that represents Medicare inpatient care will have null values for each of the "visit" variables).

The Medicare Service file also includes monthly variables that identify the number of services, if any, that overlap with a Medicaid Service, and/or match a Medicaid service. These variables include the monthly **MEDICAID_MATCH_CNT_01 – MEDICAID_MATCH_CNT_12** and **MEDICAID_OVERLP_CNT_01 - MEDICAID_OVERLP_CNT 12**, both of which are explained in greater detail earlier in this User Guide in the Key Concepts Chapter.

2. Medicaid Service-Level File

Dataset Name = MEDICAID_SERVICE_*YYYY*.sas7bdat Record Count = 104,239,814 (in 2012)

A claim may consist of multiple services, which we have indicated using the service type variables described in the Key Concepts section of this User Guide. The Medicaid Service- Level File categorizes claims into distinct types of services (i.e., using the most granular service type – SRVC_3), then aggregates these in various ways. There is one record per person per level 3 category of service used during the year (refer to Medicaid service type classifications in Table 10). The source data for this file are all claims in the MAX files.

There are many variables within the file which are useful for describing Medicaid cost and use by setting or service type, as well as summarizing total per person (per capita) or per member per month (PMPM) spending and utilization. There will be at least one row of data for each person in the MMLEADS Files who had any Medicaid coverage during the year, even if there was no utilization (there are not records for people enrolled only in Medicare during the year). For states that did not submit MAX data, there will be a record for every Medicare-Medicaid enrollee, since this information comes from the MBSF. However, the record will indicate the person did not use services, since we did not have the MAX utilization files. The only exception to a record indicating no service use is for the Medicare-Medicaid enrollees who lived in more than one state during the year; the services in the MAX files that we received from those states would be summarized.

Note: Since Medicare data are the source for the monthly E_MME_TYPE variables in the Beneficiary/Enrollee File, there are instances where our data indicate a person is Medicaid enrolled – yet there are no enrollment or utilization records for the person in the source MAX data. Nonetheless, there is a record in the Medicaid Service File for each person with any month of Medicaid coverage, according to the E_MME_TYPE_01 - E_MME_TYPE_12.

This file allows for calculation of both per capita statistics and per user statistics.

a. Person Identifiers

The file contains the unique person identifier called the beneficiary ID (**BENE_ID**). If a person does not have a BENE_ID, the **MSIS_ID** and **D_STATE_CD** can be used in combination to uniquely identify the experiences of a person within a state Medicaid program. The BENE_ID in combination with monthly state codes allow for completeness when examining state-level data (monthly state code **STATE_CD_-12**). A code example illustrates use of the monthly state codes (see Code Example 4).

We include the 1% sample indicator (**SAMPLE_IND**), which makes it easy to identify a population subset for testing your code or for feasibility studies.

b. Service Categories

The hierarchical service type groupings for Medicaid are included in the Medicaid Service file.

Medicaid files have three levels of service type (see Table 10). Level 1 service type (variable called **SRVC_1**) is a fairly broad grouping of services, level 2 service type (**SRVC_2**) is a more granular breakdown of services, and level 3 service type (**SRVC_3**), which only appears in the Medicaid files, is an even more granular breakdown of the level 2 service type categories. These variables are described in greater detail earlier in the Key Concepts section of this User Guide. Each row of data in this file contains a distinct level 3 type of service for all beneficiaries who used any Medicaid services.

c. Counter variables

MMLEADS includes a series of counter variables the data file to allow for construction of numerators and denominators for population-level statistics (e.g., per capita or per user counts) that are specific to a type of service. Investigators are reminded that all people in the Beneficiary/Enrollee File who have Medicaid coverage have at least one record in the Medicaid Service File, even if the person did not have any Medicaid service utilization. The beneficiary count variable (**BENE_CNT**) is to use for obtaining a beneficiary/enrollee count to calculate per capita statistics. The user 1 count variable (**USER1_CNT**) is to use for obtaining a count of all the different SRVC_1 settings used by the beneficiary during the year. The user 2 count variable (**USER2_CNT**) is to use for obtaining a count of all the different SRVC_2 settings used by the beneficiary during the year and the level 3 user count variable (**USER3_CNT**) corresponds with the level 3 service classification (**SRVC_3)**. The USER3_CNT is also used to distinguish between those who used any Medicaid services and those who did not. An example of how to use these counter variables appears earlier in the Key Concepts of this document (see also, Table 14). We also provide a SAS® coding example in Chapter 4 (see Code Example 6).

There may be multiple service 1 types (i.e., SRVC_1) and service 2 types (i.e., SRVC_2) across rows of data since each row is a person by service3 combination (BENE_ID by SRVC_3). Several "count" variables, each of which is a proportion, are helpful when counting the number of Medicaid enrollees who used each service type 1, 2, or 3. For example, if there are five rows of data for a person in this file, it means there are five different service 3 classifications used by the person during the year. In order to summarize the service 2 types used during the year, the USER2_CNT variable is used. Similarly, to summarize the service 1 types during the year, the USER1_CNT variable is used. To calculate statistics at a user-level (e.g., per capita), the BENE_CNT is used (see Table 26).

Table 26. Medicaid User Count - Example

BENE_ID	SRVC_3	USER3_ CNT	SRVC_2	USER2_ CNT	SRVC_1	USER1_ CNT	BENE_ CNT
ABCD	MDCD_FFS_ACUTE_ PHYS	1.0	MDCD_FFS_AC UTE	.33	MDCD_NONNW AIVER	.25	.2
ABCD	MDCD_FFS_ACUTE_ OTH_LABX	1.0	MDCD_FFS_AC UTE	.33	MDCD_NONNW AIVER	.25	.2
ABCD	MDCD_FFS_ACUTE_ OTH_CLINIC	1.0	MDCD_FFS_AC UTE	.33	MDCD_NONNW AIVER	.25	.2
ABCD	MDCD_FFS_GASTRO	1.0	MDCD_FFS_DR UG	1.0	MDCD_NONNW AIVER	.25	.2
ABCD	MDCD_MC_PHP	1.0	MDCD_MC	1.0	MDCD_MC	1.0	.2
	Sum	5.0		3.0		2.0	1.0

In the example in Table 26, in 2009 Beneficiary ABCD used five different types of services (level 3), three types of care (level 2; FFS acute care, Drugs, and managed care), and two types of USER_1 services (level 1; non-waiver and managed care).

An example illustrating use of these variables for calculating population statistics, along with sample SAS® analytic code, is presented later in this document (Chapter 4, Code Example 3).

d. Medicaid Payments

The federal government pays states for a specified percentage of program expenditures, called the Federal Medical Assistance Percentage (FMAP). This percentage varies by state, and is 57% of expenditures on average. The Federal Rate (FR), which is synonymous with FMAP for the purposes of this data file, is used to calculate several of the payment variables. FMAP rates may change each federal fiscal year, which begins on October 1 of each year. MMLEADS V2.0 captures the monthly Federal Rate (variables called **FR_01-12**). This rate is equal to the FMAP for the state. The data in this field are provided largely for reference. Rates are the same for each service type. These proportions come into play when determining the federal and state share of Medicaid payments.

There is a series of monthly variables which, when summed across all rows of data for each person, are parallel to the payment variables found in the Beneficiary File. Within this Medicaid Service file we can stratify monthly variables by service type to look at detailed payment and use information (e.g., monthly payments for hospitalizations or drugs). Monthly variables allow for calculation of PMPM payments within a service setting. There are five components of payments – each of which appears in a separate variable.

FED_PMT_01 - FED_PMT_12 – the Federal share of total Medicaid payments for the service type for the month. This field is calculated by examining the Medicaid payment amounts on each claim (i.e., the MAX variable MDCD_PYMT_AMT) and multiplying by the FMAP for the state. All claims for the particular service type are included in these calculations, including premiums).

Note: The sum of this variable across all rows of data for the person in the Medicaid Service file is equal to the corresponding monthly variable in the Beneficiary File (variables called S_FED_PMT_01 - S_FED_PMT_12).

ST_PMT_01 - ST_PMT_12 – the state share of total Medicaid payments for the service type for the month. This field is calculated by examining the Medicaid payment amounts on each claim (i.e., the MAX variable MDCD_PYMT_AMT) and subtracting the federal share of the payment from each payment (i.e., removing the S_FED_PMT amounts from the previous variable).

Note: The sum of this variable across all rows of data for the person in the Medicaid Service file is equal to the corresponding monthly variable in the Beneficiary File (variables called S_ST_PMT_01 - S_ST_PMT_12).

MEDICAID_PMT_01 - MEDICAID_PMT_12 – the total Medicaid payments for the service for the month. This field sums the Medicaid payment amounts on each claim (i.e., the MAX variable MDCD_PYMT_AMT) for the month. The source data field includes the Medicaid portion of payments for all services, including premiums to third parties for capitated care. The payment amounts are divided into monthly variables, using the ending date of services on the claim (e.g., the SRVC_END_DT from the IP file).

Note: The sum of this variable across all rows of data for the person in the Medicaid Service file is equal to the corresponding monthly variable in the Beneficiary File (variables called S_MEDICAID_PMT_01 - S_MEDICAID_PMT_12).

MEDICAID_COIN_PMT_01 - MEDICAID_COIN_PMT_12 – the amount on all claims for the service which consisted of the Medicare coinsurance (e.g., MAX variable MDCR_COINSUR_PYMT_AMT); summed for all claims for the service for the month.
M**EDICAID_DED_PMT_01 - MEDICAID_DED_PMT_12** – the amount on all claims for the service which consisted of the Medicare deductible (e.g., the MAX variable MDCR_DED_PYMT_AMT); summed for all claims for the service for the month.

Note: The sum of the two previous variables (Medicaid – deductibles and coinsurance) across all rows of data for the person for the month in the Medicaid Service file is equal to the S_MEDICAID_BENE_PMT_01 - S_MEDICAID_BENE_PMT_12 in the Beneficiary File.

Annual Medicaid payment summaries include aggregate spending for each level 3 service category, as well as spending that occurred while enrolled in different levels of benefits.

MEDICAID_PMT – annual total Medicaid payment amounts for the level 3 service category.
Note: The sum of this variable across all rows of data for the person in the Medicaid Service file is equal to the corresponding annual variable in the Beneficiary File (variable called S_MEDICAID_PMT).

MEDICAID_COIN_PMT – annual total amount paid on behalf of the enrollee for the Medicare coinsurance for all the particular level 3 services on the row of data. It is the sum of the MAX variable MDCR_COINSUR_PYMT_AMT for all claims for the service.

MEDICAID_DED_PMT – annual total amount paid on behalf of the enrollee for all Medicare deductible amounts for the particular level 3 services on the row of data. These payments consisted of the Medicare deductible (e.g., the MAX variable MDCR_DED_PYMT_AMT); summed for all claims for the service.

Note: The sum of the two previous variables (Medicaid – deductibles and coinsurance) across all rows of data for the person in the Medicaid Service file is equal to the S_MEDICAID_BENE_PMT in the Beneficiary File.

Additional variables in the Medicaid Service file stratify the annual totals by MME_TYPE. Variables in the Medicaid Service–Level File allow for examination of six perspectives on payment for each level 3 service type: 1) Medicaid payment – the federal portion, 2) Medicaid payment – the state portion, 3) total Medicaid paid, 4) total Medicaid FFS paid, 5) Beneficiary/Medicaid paid (includes coinsurance and deductibles), and 6) Beneficiary/Medicaid FFS paid. This series of variables is stratified by five MME categories: 1) full benefit, 2) QMB-only, 3) partial benefit, 4) Medicaid-only, and 5) other. Each of these 30 variables is an annual summary of spending (see Table 27).

Table 27. Medicaid Payment Detail Variables by MME Type

MME Category	Medicaid Payment – federal Share	Medicaid Payment – state Share	Medicaid – Total Payment	Medicaid – Total FFS Payment	Medicaid – Total Beneficiary Payment	Medicaid – Total Beneficiary FFS Payment
FD	FD_MEDICAID_PMT_FED	FD_MEDICAID_PMT_ST	FD_MEDICAID_PMT	FD_MEDICAID_FFS_PMT	FD_MEDICAID_BENE_PMT	FD_MEDICAID_BENE_FFS_PMT
QMB	QMB_MEDICAID_PMT_FED	QMB_MEDICAID_PMT_ST	QMB_MEDICAID_PMT	QMB_MEDICAID_FFS_PMT	QMB_MEDICAID_BENE_PMT	QMB_MEDICAID_BENE_FFS_PMT
PD	PD_MEDICAID_PMT_FED	PD_MEDICAID_PMT_ST	PD_MEDICAID_PMT	PD_MEDICAID_FFS_PMT	PD_MEDICAID_BENE_PMT	PD_MEDICAID_BENE_FFS_PMT
MDO	MDO_MEDICAID_PMT_FED	MDO_MEDICAID_PMT_ST	MDO_MEDICAID_PMT	MDO_MEDICAID_FFS_PMT	MDO_MEDICAID_BENE_PMT	MDO_MEDICAID_BENE_FFS_PMT
OTH	OTH_MEDICAID_PMT_FED	OTH_MEDICAID_PMT_ST	OTH_MEDICAID_PMT	OTH_MEDICAID_FFS_PMT	OTH_MEDICAID_BENE_PMT	OTH_MEDICAID_BENE_FFS_PMT

Chapter 4 of this document demonstrates how to use these payment variables which have been stratified by MME type and payment perspective (see Code Example 3).

e. Medicaid utilization

Total Medicaid service utilization for each specific service category can be summarized using monthly variables to allow for PMPM utilization statistics (see Table 13 for specifications for these use variables). Three types of variables are available; two of these are monthly variables that count "days" of use (i.e., for hospital or other institutional facility settings). To calculate days, we use the ending date for the final claim for the stay to decide which of the monthly files will hold the data for the stay (e.g., if an enrollee has a hospital stay that begins in November and ends in December, all of these days will be counted and appear only in the December days count variable [i.e., MEDICAID_DAY_CNT_12 variable]). Because days apply to the stay, and are not parceled out based on when the particular days occurred, the count of days may be greater than the number of calendar days in the month. Variables include:

MEDICAID_CLM_CNT_01 - MEDICAID_CLM_CNT_12 – count of all FFS claims for the service category for the month.

MEDICAID_DAY_CNT_01 - MEDICAID_DAY_CNT_12 – count of Medicaid covered and non-covered inpatient hospital, inpatient psychiatric, and nursing facility days (i.e., where SRVC_3='MDCD_FFS_ACUTE_IP', 'MDCD_FFS_LTI_NFS','MDCD_FFS_LTI_IPF'),

MEDICAID_COV_DAY_CNT_01 - MEDICAID_COV_DAY_CNT_12 – count of Medicaid covered inpatient hospital days (i.e., where SRVC_3='MDCD_FFS_ACUTE_IP')

Additional variables in the Medicaid Service file stratify the annual totals for the service by MME_TYPE. This series of variables employs the same five MME categories used previously. Use is stratified by: 1) claim count, 2) total covered and noncovered days, and 3) total covered days. Each of these 15 variables is an annual summary of spending for the level 3 service type (see Table 28).

Table 28. Medicaid Claim and Utilization Counts by MME Type

MME Category	FFS Claim Counts	All days	Medicaid Covered Days
FD	FD_ MEDICAID_CLM_FFS	FD_MEDICAID_COV_DAYS	FD_ MEDICAID_DAYS
QMB	QMB_MEDICAID_CLM_FFS	QMB_MEDICAID_COV_DAYS	QMB_MEDICAID_DAYS
PD	PD_MEDICAID_CLM_FFS	PD_MEDICAID_COV_DAYS	PD_MEDICAID_DAYS
MDO	MDO_MEDICAID_CLM_FFS	MDO_MEDICAID_COV_DAYS	MDO_ MEDICAID_DAYS
OTH	OTH_MEDICAID_CLM_FFS	OTH_MEDICAID_COV_DAYS	OTH_MEDICAID_DAYS

Chapter 4. Methods and Tips for Working with MMLEADS V2.0 Data Files

This portion of the document is designed to provide technical guidance regarding use of MMLEADS V2.0 files. We identify several types of study objectives we expect may be common, then highlight key considerations for working with the data, and present some sample analytic code. All analytic code examples use SAS® programming language; you may adapt this code to use with whatever software you prefer.

Throughout the code examples, variables that are in the MMLEADS V2.0 data files appear in all capital letters, other derived variables appear in lower case. Similarly, all MMLEADS file names are in all capital letters, and derived data files are in lower case. Within each example, we use text boxes to draw attention to nuances of the SAS code or analysis steps and assumptions. These examples use 2009 data files; analytic code may be adapted to use any year of MMLEADS.

A. Limiting MMLEADS for Feasibility Studies or Testing Code

The MMLEADS V2.0 files are very large, and it is prudent to use a sample if you are exploring the data – perhaps to determine whether the variables of interest are well-populated, or to test your code before running it on the full sample. The SAMPLE_IND variable identifies a random 1% sample that is ideal for exploratory analyses.

Sample analytic code for exploring potential sample size counts for MME_TYPE for fee-for-service enrollees is below.

Code Example 1: Explore Population Counts Using a Sample

We begin with the Beneficiary/Enrollee file, then subset it to the random 1%. Then we explore our key study variables – ones that classify enrollees according to the MME type and ones that identify whether we would expect to see FFS claims in the data files (E_MME_TYPE and also E_MEDICAREFFS and E_MEDICAIDFFS).

> The following SAS® code uses PROC FREQ to count the number of beneficiaries who meet the three mutually-exclusive Medicare-Medicaid eligibility groupings.

```
proc        freq        data=MMLEAD09.BENEFICIARY_2009
(where=(SAMPLE_IND = 1
and E_MME_TYPE in (3, 4, 5)));
     table E_MME_TYPE ;
run;

proc freq data= MMLEAD09.BENEFICIARY_2009
(where=(SAMPLE_IND = 1
and E_MME_TYPE in (3, 4, 5)));
     table E_MEDICAIDFFS * E_MME_TYPE / list ;
run;
```

```
proc freq data= MMLEAD09.BENEFICIARY_2009
(where=(SAMPLE_IND = 1
and E_MME_TYPE in (3, 4, 5)));
     table E_MEDICAREFFS* E_MME_TYPE / list ;
run;
```

Our results show, that for the 1% MMELADS:

Medicare-Medicaid Eligibility Annual Dual Eligibility Status				
E_MME_TYPE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	12329	13.28	12329	13.28
4	10121	10.9	22450	24.18
5	70412	75.82	92862	100

E_MEDICAIDFFS	E_MME_TYPE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	3	701	0.85	701	0.85
0	4	810	0.99	9765	11.88
0	5	30081	36.59	47190	57.41
1	3	8254	10.04	8955	10.89
1	4	7344	8.93	17109	20.81
1	5	35012	42.59	82202	100
Frequency Missing = 10660					

E_MEDICAREFFS	E_MME_TYPE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	3	4422	5.19	4422	5.19
0	4	2492	2.92	14356	16.83
0	5	12376	14.51	33891	39.74
1	3	7442	8.73	11864	13.91
1	4	7159	8.39	21515	25.23
1	5	51388	60.26	85279	100
Frequency Missing = 7583					

You can determine the impact that limiting your sample (e.g., to only those with FFS) might have on your sample size.

B. Subsetting Data to Identify a Population of Interest

A major objective of the MMLEADS V2.0 data files is to enable investigators to easily identify people who are dually enrolled. The Medicare/Medicaid eligibility status for all members of the study population is available in the Beneficiary/Enrollee File. There is a single row of data for each unique person in the Beneficiary File, even if the person was enrolled in Medicaid in more than one state during the year. The Beneficiary File includes detailed enrollment information, as well as descriptive information (e.g., demographic and summary use and payment variables).

From the universe of Medicare beneficiaries and Medicaid enrollees included in the MMLEADS V2.0 files, you may wish to reduce the population to those who are "at risk" for the events or services of interest (i.e., those for whom we can expect to observe medical service use via claims-based data). Not all Medicare beneficiaries are enrolled in FFS Medicare; however, these are the only types of claims that appear in the Medicare data files (note that in a few exceptions, claims for managed care enrollees will appear, for example with hospice claims; note also that MMLEADS V2.0 includes monthly managed care premium payments). Similarly, claims data are not available if the person is enrolled in Medicaid managed care; however, there is some state-by-state variation with regard to which "encounters" appear in the data files in place of actual claims. More information about Medicare claims data for managed care enrollees is available in a ResDAC Knowledge Base article athttp://www.resdac.org/resconnect/articles/114. Variables within the MMLEADS V2.0 files make it easy for data users to determine in which months Medicare utilization might be observed and/or in which months Medicaid utilization might be observed. It is simple to select a Medicare-Medicaid enrolled subsample using some of the value-added data fields within this data product.

We encourage you to use caution when requiring a certain length of Medicare or Medicaid coverage, because coverage is terminated after death. For example, if you were studying acute myocardial infarction (AMI) and wanted to examine cases for 2009, your denominator (beneficiary sample) should be restricted to those who had at least some Medicare Part A FFS coverage (for FFS payment of the inpatient stay), but if you require a full 12 months of coverage you will lose your subjects who did not survive the AMI. The MMLEADS V2.0 files have annual summary coverage variables which consider coverage for each month of the year until death. For more information about applying coverage restrictions, please refer to a previous Technical Guidance paper available on the CCW website (https://www.ccwdata.org/web/guest/technical-guidance-documentation).

Sample analytic code using SAS® for selecting a sample based on Medicare and Medicaid dual coverage and condition status (e.g., condition file is used to identify people treated for diabetes) is below. Throughout these examples, we retain as few rows of data and as few variables as feasible to allow the programs to run as efficiently as possible.

Code Example 2: Define a Sample of People Dually Enrolled, with FFS Coverage and with a Condition of Interest

Define a sample of Medicare-Medicaid enrollees who have a specified duration of Medicare A and B FFS coverage, or coverage until the month of death (i.e., the annual variable E_MEDICAREFFS). These people must also have Medicaid FFS coverage (using the variable E_MEDICAIDFFS). These annual coverage variables identify the population with a full 12 months of FFS coverage (or coverage until time of death). The second portion of code demonstrates how to create a finder file of people with the coverage of interest and then determine their diabetes condition status using the MMLEADS Conditions File. The two input data sources are the Beneficiary File and the MMLEADS Conditions File from 2009. Again, you could limit your analysis to the 1% sample for exploratory analyses or code testing; however, our example uses the full MMLEADS sample for illustration.

The following SAS® code assumes that you are developing a new data file (called ***bene_dual)*** by using Medicare coverage specifications from the 2009 Beneficiary File. Then a list of the people with a sufficient FFS surveillance period in this file is used to extract information from the MMLEADS Conditions File related to diabetes.

```
*Define Population: Medicare-Medicaid Eligible and Medicare FFS
Or Medicaid FFS
Keep only the variables necessary for this analysis*;
data bene_dual;
set MMLEAD09.BENEFICIARY_2009 (keep= BENE_ID E_MME_TYPE
E_MEDICAIDFFS E_MEDICAREFFS);

where E_MME_TYPE in (3, 4, 5) and (E_MEDICAIDFFS =1 or
E_MEDICAREFFS = 1);
run;

proc sort data=bene_dual; by BENE_ID;
run;

** Merge with condition file to further limit population with
Diabetes – those with claims for the condition;

proc sort data= MMLEAD09.CONDITION_2009 (keep=BENE_ID
DIAB_COMBINED DIAB_MEDICARE DIAB_MEDICAID)
      out=cond; by BENE_ID;
run;

data dual_diab;
merge bene_dual (in=a) cond (in=b); by BENE_ID;

if a;

if DIAB_COMBINED in (1, 3) then diab_comb_ind = 'Y'; else
diab_comb_ind = 'N';
if DIAB_MEDICARE in (1, 3) then diab_mdcr_ind = 'Y'; else
diab_mdcr_ind = 'N';
if DIAB_MEDICAID in (1, 3) then diab_mdcd_ind = 'Y';
else diab_mdcd_ind = 'N';
run;

** Run frequency of diab;
```

```
proc freq data=dual_diab;
table diab_comb_ind*DIAB_COMBINED diab_mdcr_ind*DIAB_MEDICARE
diab_mdcd_ind*DIAB_MEDICAID / list;
run;
```

The resulting Medicare-Medicaid enrollee subpopulation with Diabetes can be described different ways. Some results follow:

diab_comb_ind	**DIAB_COMBINED**	Frequency	Percent	Cumulative Frequency	Cumulative Percent
N	**0 -** Neither Claims nor FFS	4,434,084	47.79	4,434,084	47.79
N	**2 -** FFS but not Claims	1,925,438	20.75	6,359,522	68.54
Y	**1 -** Claims but not FFS	1,807,574	19.48	8,167,096	88.02
Y	**3 -** Claims and FFS	1,111,064	11.98	9,278,160	100

diab_mdcr_ind	**DIAB_MEDICARE**	Frequency	Percent	Cumulative Frequency	Cumulative Percent
N	**0 -** Neither Claims nor FFS	2,645,786	28.52	2,645,786	28.52
N	**2 -** FFS but not Claims	3,848,044	41.47	6,493,830	69.99
Y	**1 -** Claims but not FFS	667,291	7.19	7,161,121	77.18
Y	**3 -** Claims and FFS	2,117,039	22.82	9,278,160	100

diab_mdcd_ind	**DIAB_MEDICAID**	Frequency	Percent	Cumulative Frequency	Cumulative Percent
N	**0 -** Neither Claims nor FFS	4,622,358	49.82	4,622,358	49.82
N	**2 -** FFS but not Claims	3,270,032	35.24	7,892,390	85.06
Y	**1 -** Claims but not FFS	708,579	7.64	8,600,969	92.7
Y	**3 -** Claims and FFS	677,191	7.3	9,278,160	100

There are some important things to note regarding the results of this example:

1. The population counts are the same for all 3 condition variables. Note that this will be the case even if one selects a Medicare only or Medicaid only population.
2. Individuals with values of 2 for DIAB_MEDICARE and DIAB_MEDICAID are dual eligible beneficiaries who would not be identified as having the condition using claims from one payment system. 3,848,044 individuals would not be identified as having the condition using Medicare data alone and 3,270,032 individuals would not be identified using Medicaid data alone. This number is much smaller using the DIAB_COMBINED variable (1,925,438).

3. Investigators using the MMLEADS Conditions File must be cautious regarding which version of the condition variable is used – as very different information is obtained if using the "*_COMBINED" rather than the "*_MEDICARE" or "*_MEDICAID" versions of the same variable.

An additional example for use of the MMLEADS Conditions File is presented in "E", with Code Example 6 below.

C. Summarizing Utilization and Payment Data for Medicare-Medicaid Enrollees

When examining data for Medicare-Medicaid enrollees, an understanding of all the utilization and payments can be gained by using variables within the Beneficiary/Enrollee File. In this file, many of the useful payment and service use information has already been aggregated by month and year for ease of use.

Code Example 3: Identify All Payment and Key Utilization Information for Medicare- Medicaid Enrollees

The first portion of code begins with the sample of Medicare-Medicaid enrollees who had FFS coverage (similar to the first step in Code Example 2, above), obtains the annual total Medicare and Medicaid payment and use variables of interest, and then calculates national total payments per capita.

Two additional types of summary statistics are shown. Step 2 calculates national per member per month (PMPM) spending using variables for FD enrollees that already aggregate payments for each enrollee (variables called S_MEDICARE_PMT and S_MEDICAID_ PMT). For the PMPM calculations, the denominator is not the population, but rather the total number of months of FFS coverage for the FD enrollees; for each enrollee, these data are already contained in the variable E_FD_MOS.

For Step 3, the total number of hospital admissions per capita is calculated (using variables called U_MEDICARE_ADMITS and U_MEDICAID_ADMITS).

The following SAS® code assumes that you create a summary data file that includes only the annual payment and variables of interest (called ***dual)***. This file is used in Step 1 where we use a PROC MEANS to calculate national totals, which are saved as an output data file (called ***pmt_tot***). Then this file is used to calculate per capita totals (output file called ***pmt_per_bene***). Step 2 uses a similar PROC MEANS to calculate PMPM statistics for the population subset with FD coverage. Finally, Step 3 calculates number of hospital admissions per capita.

```
** Select dual population including payment and use variables;

data dual;
     set MMLEAD09.BENEFICIARY_2009 (keep= BENE_ID MSIS_ID
D_STATE_CD               E_MME_TYPE E_MEDICAREFFS E_MEDICAIDFFS
S_MEDICARE_PMT
                         S_MEDICAID_PMT
S_FD_MEDICARE_PMT S_FD_MEDICAID_PMT E_FD_MOS U_MEDICARE_ADMITS
U_MEDICAID_ADMITS );
where E_MME_TYPE in (3, 4, 5) and (E_MEDICAREFFS =1 OR
E_MEDICAIDFFS=1);
if E_MEDICAREFFS=1 then medicare_FFS=S_MEDICARE_PMT;
if E_MEDICAIDFFS=1 then medicaid_FFS=S_MEDICAID_PMT;
run;

** Step 1: national statistics;
** Medicare and Medicaid Per Capita Payments;

proc means data=dual noprint;
     output out=pmt_tot (drop=_freq_ _type_) sum(medicare_FFS
```

```
medicaid_FFS   E_MEDICAREFFS E_MEDICAIDFFS)= ;
run;

data pmt_per_bene; set pmt_tot;
mdcr_pmt_per_bene=medicare_ffs/E_MEDICAREFFS;
mdcd_pmt_per_enrollee=medicaid_ffs/E_MEDICAIDFFS; format
medicare_ffs mdcr_pmt_per_bene medicaid_ffs
mdcd_pmt_per_enrollee dollar15. ;
run;
```

The program totals and per capita amounts for our FFS cohort are:

medicare_ffs	$115,545,198,854
medicaid_ffs	$71,756,727,096
E_MEDICAREFFS	6,576,129
E_MEDICAIDFFS	5,057,089
mdcr_pmt_per_bene	$17,570
mdcd_pmt_per_enrollee	$14,189

If you were interested in converting the total annual per person payments to monthly enrollee payments, you can divide the per bene and per enrollee amounts by 12. Using data from this example, the result is a monthly average of $1,464.20 per beneficiary and $1,182.45 per enrollee for Medicare and Medicaid, respectively. This transformation from a yearly to a monthly average will allow you to contrast this method of aggregating costs to the PMPM method in Step 2.

```
** Step 2: Per member per month;

** Medicare full dual (FD) payment per member per month (PMPM);

proc means data=dual noprint;
     output out=fd pmt (drop= freq type) sum(medicare ffs
Medicaid ffs   E DF MOS)=;
run;

data fd_pmpm;
set fd_pmpm;
     fd_mdcr_pmpm=medicare_ffs/E_FD_MOS;
     fd_mdcd_pmpm=medicaid_ffs/E_FD_MOS;

     format medicare_ffs fd_mdcr_pmpm Medicaid_ffs fd_mdcd_pmpm
     dollar20. E_FD_MOST comma15.;
run;
```

The total enrolled months and PMPM amounts for FFS Medicare and Medicaid are:

E_FD_MOS	62,334,507
fd_mdcr_pmpm	$1,854
fd_mdcd_pmpm	$1,151

```
** Step 3: # of Admits per Capita;

data dual;
     set dual;
     if E_MEDICAREFFS ~= 1 then U_MEDICARE_ADMITS=.;
     if E_MEDICAIDFFS ~= 1 then U_MEDICID_ADMITS=.;
run;

proc means data=dual noprint;
     output out=admits_tot (drop= _freq_ _type_)
sum(U_MEDICARE_ADMITS       U_MEDICAID_ADMITS       E_MEDICAREFFS
E_MEDICAIDFFS)= ;
run;

data admts_per_capita;
     set admits_tot;
     mdcr_admits_per_capita = U_MEDICARE_ADMITS/E_MEDICAREFFS
     mdcr_admits_per_capita = U_MEDICAID_ADMITS/E_MEDICAIDFFS;

     formt U MEDICARE ADMITS U MEDICAID ADMITS E MEDICAREFFS
     E_MEDICAIDFFS comma20. mdcr_admits_per_capita
     mdcd_admits_per_capita comma6.2;

run;
```

The total enrolled population and the number of admissions per capita for 2009 for FFS Medicare and Medicaid are:

E_MEDICAREFFS	6,576,129
E_MEDICAIDFFS	5,057,089
mdcr_admits_per_capita	0.49
mdcd_admits_per_capita	0.28

Although the majority of hospital admissions are identified in Medicare data, they are also common in the Medicaid data.

This example illustrates why it is so important to combine data from both Medicare and Medicaid when describing service use or payments for Medicare-Medicaid enrollees. Using either payer perspective alone would lead to inaccurate results.

D. Total Medicaid spending for duals by state

For this example, we are interested in calculating the total payments by state for all enrollees who are dually enrolled for any month of the year. This type of analysis includes spending for people enrolled in Medicaid in the state for only part of the year; it also precisely attributes payments to the state where the expense was incurred – rather than the last state for the year. We are interested in the Medicaid spending for these enrollees, which we calculate by examining per member per month (PMPM) payments for each state.

We use the Beneficiary/Enrollee file – and include the monthly state variables (D_STATE_CD_01 – D_STATE_CD_12), the monthly MME type (E_MME_TYPE_01-E_MME_TYPE_12), and the monthly total Medicaid payment variables (S_MEDICAID_PMT_01 - S_MEDICAID_PMT_12). Remember that there are many different types of enrollment and payment variables in MMLEADS – therefore if you are counting only FFS payments, you will also want to count only FFS enrollment months (e.g., count only months of FFS enrollment by using E_MEDICAIDFFS_*MM* and use the corresponding FFS payment variables – S_MEDICAID_FFS_PMT_*MM*).

Code Example 4. Determining Monthly Payments per Enrollee by State

The first portion of code creates arrays to tabulate MME type (enrollment), the state, and payments for each month; then the months of enrollment by state, and also payments are accumulated.

The Proc Means is used to aggregate this information by state, then the PMPM enrollment and payments for each state are calculated in a Data Step – and this file contains the summary state-level output.

The following SAS® code assumes that you create a summary data file that includes only the monthly payment, state, and enrollment variables of interest (called ***dual_bene_sample)***. We use arrays to examine the key monthly variables.

Next, we use a PROC MEANS to calculate state totals, which are saved as an output data file (called ***mdcd_pmpm***). Then this file is used to calculate total member months of enrollment, total payments, and per member per month payments (output file called ***dual_mdcd_pmpm***).

```
data dual_bene_sample;

set MMLEAD09.BENEFICIARY_2009 (where=(SAMPLE_IND = 1)
keep=SAMPLE_IND BENE_ID MSIS_ID E_MME_TYPE_01-E_MME_TYPE_12
D_STATE_CD_01 - D_STATE_CD_12 S_MEDICAID_PMT_01 -
S_MEDICAID_PMT_12);

**evaluate monthly values for dual status (MME_TYPE), state, and
payments;

array type(12) E_MME_TYPE_01- E_MME_TYPE_12;

array state(12) D_STATE_CD_01 - D_STATE_CD_12;

array mdcd_pmt(12)  S_MEDICAID_PMT_01 - S_MEDICAID_PMT_12;

** for each of the monthly variables – we count only the months
with dual enrollment – where the MME_TYPE is 3,4 or 5;

     do i = 1 to 12;
           dual_month= type(i) in (3,4,5);
           state_cd = state(i);
           medicaid_pmt = mdcd_pmt(i);
        output;
     end;
run;

** aggregate data for each state;

proc means data=dual_bene_sample (keep=state_cd dual_month
medicaid_pmt) noprint;
     class state_cd;
     output out=mdcd_pmpm (drop=_type_ _freq_) sum()=;
run;
```

```
data dual_mdcd_pmpm;
     set mdcd_pmpm (where=(state_cd not in ('XX',
     '')));  mdcd_pmpm=medicaid_pmt/dual_month;

     format dual_month comma15.
     medicaid_pmt mdcd_pmpm dollar20.;
run;
```

Results for the 1% sample:

STATE_CD	dual_month	medicaid_pmt	mdcd_pmpm
IA	8,633	$18,556,913	$2,150
ID	3,536	$9,353,880	$2,645
IL	34,735	$66,974,716	$1,928
IN	15,884	$34,662,493	$2,182
KS	6,508	$15,712,580	$2,414
KY	18,282	$30,590,080	$1,673
LA	20,312	$35,046,101	$1,725
MA	27,640	$65,348,972	$2,364
MD	11,766	$38,343,782	$3,259

You could adapt this code to keep all people enrolled in Medicaid, but you are reminded that MMLEADS V2.0 does not include the entire Medicaid-enrolled population.

It is prudent to be aware of source data limitations that may affect the results for you state(s) of interest. For example, four states did not submit any MAX data in 2012 (CO, ID, KS and RI); Colorado did not submit any data for 2011; Maine was not able to report IP, OT or LT claims during our example time frame (2009). Using the code example, there is no monthly Medicaid payment associated with the state, therefore there will be no information for these states. This methodology (i.e., using the monthly variables) produces slightly different results than you would obtain using the methodology in the next code example. When viewing results, it is important to be mindful of the data limitations. Refer to the CMS website to obtain MAX data anomaly reports (http://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/MAXGeneralInformation.htmlhttp://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/MAXGeneralInformation.html).

E. State-level summaries

There are two major options for using MMLEADS files to obtain summary Medicare and Medicaid statistics. The first approach begins with variables in the Beneficiary/Enrollee File, which we illustrated above. The second approach is to use the Medicare and Medicaid Service Files, and combine the data. Although we generally recommend using the Beneficiary File for

most purposes, an advantage of using the Medicare or Medicaid Service Level Files is that they contain detailed information regarding use of various services. Care settings are represented by the service type variables (e.g., variables called SRVC_1 or SRVC_2).

For this example (Code Example 5), we are interested in summarizing a particular type of service use – inpatient hospital care. We begin by the using the Medicare Service File and summarizing Medicare statistics to a state level; similarly, we use Medicaid Service File and summarize Medicaid statistics to a state level. Then the two state-level summary files are merged to provide state-level reports. Using key features of MMLEADS V2.0, Medicare and Medicaid payments are not duplicated across payers (e.g., through using the MDCD_MATCH_CNT_*MM* and MDCD_OVERLAP_CNT_*MM* variables). One limitation of this analysis is that the Medicare information for a beneficiary is attributed to the state of residence at the end of the year.

Code Example 5: Identify Payments for Medicare and Medicaid for Inpatient Services, by State

The first portion of code begins with the Medicare Service File and keeps all rows of data for the service of interest – Medicare inpatient hospitalizations (SRVC_2=”MDCR_IP”); we keep only the variables of interest, which includes each of the monthly Medicare payment variables (MEDICARE_PMT_01-MEDICARE_PMT_12). Next, we use the Medicaid Service File and select inpatient acute hospitalizations (SRVC_3=”MDCD_FFS_ACUTE_IP”), and summarize all payments.

We merge these files, then count the number of claims and aggregate payments for each beneficiary. We use the MEDICAID_OVRLP_CNT_*MM* and MEDICAID_MATCH_CNT_*MM* to avoid double-counting payments where Medicaid paid a portion or the entire beneficiary share of the Medicare copayment. Finally, we use a PROC MEANS to calculate total IP claims and payments for Medicare and Medicaid – and we identify the impact of overlapping and matching claims.

The following SAS® code uses the SAS sum function to calculate claim counts and total payments for IP services for Medicare (file called ***mdcr_pmt)*** and then for Medicaid services (file called ***mdcd_pmt***). In Step 2, these two files are combined (file called ***dual_mdcr_mdcd***) and we use count the number of claims and aggregate payments for each beneficiary. We use the MEDICAID_OVRLP_CNT_*MM* and MEDICAID_MATCH_CNT_*MM* to avoid double-counting payments where Medicaid paid a portion or the entire beneficiary share of the Medicare copayment.
In Step 3, we use a PROC MEANS to calculate population totals, which are saved as an output data file (called ***ip***). We use this data file to output a report in the form of a summary dataset that contains state-level statistics regarding inpatient use and spending.

```
** Step 1: Select Medicare IP service;
data mdcr_pmt;
     set MMLEAD09.MEDICARE_SERVICE_2009
```

```
(keep=BENE_ID MEDICARE_PMT_01 -
MEDICARE_PMT_12 MEDICAID_MATCH:
                    MEDICAID_OVRLP: MEDICARE_CLM_CNT:
                    SRVC_2);
     where SRVC_2='MDCR_IP';
     medicare_clms=sum(of
     MEDICARE_CLM_CNT:);
     medicare_pmt=sum(of
     MEDICARE_PMT:);
     mdcd_match_cnt=sum(of
     MEDICAID_MATCH_CNT:);
     mdcd_overlap_cnt=sum(of MEDICAID_OVRLP_CNT:);
run;
```

```
** Select Medicaid IP services;
data mdcd_pmt;
     set MMLEAD09.MEDICAID_SERVICE_2009 (keep=BENE_ID MSIS_ID
     D_STATE_CD MEDICAID_CLM_CNT: MEDICAID_PMT_01 -
     MEDICAID_PMT_12 SRVC_3);

     where SRVC_3='MDCD_FFS_ACUTE_IP';

     medicaid_pmt=sum(of MEDICAID_PMT:);
     medicaid_clms=sum(of MEDICAID_CLM_CNT:);
run;

** Step 2: subset to keep only people in the Dual file from Code
Example 3  - then link with the summary Medicare and Medicaid
payment information by BENE_ID;

proc sort data=dual;
 by BENE_ID MSIS_ID D_STATE_CD;
run;

data dual_mdcr_mdcd;
     merge dual (in=x) mdcr_pmt mdcd_pmt;
     by BENE_ID;
     /*Limit Payment and Claims counts to FFS*/
     /*create per beneficiary counts of claims, overlapping or
     matching claims, and payments*/
     if E_MEDICAREFFS~=1 then do;
           medicare_pmt=0;
           medicare_clms=0;
           mdcd_match_cnt=0;
           mdcd_overlap_cnt=0;
     end;
     if E_MEDICAIDFFS~=1 then do;
           medicaid_pmt=0;
           medicaid_clms=0;
     end;
     if x;
run;

** Step 3: Calculate Medicare and Medicaid per capita payments
and claim counts, summarized for each state;

proc sort data=dual_mdcr_mdcd;
     by D_STATE_CD;
run;
```

```
proc means data=dual_mdcr_mdcd noprint;
     class D_STATE_CD;
     output out=ip (drop=_freq_ _type_) sum(E_MEDICAREFFS
medicare_pmt medicare_clms mdcd_match_cnt
     mdcd_overlap_cnt E_MEDICAIDFFS medicaid_pmt
medicaid_clms)=;
run;


** Create a summary data file that contains Medicare and
Medicaid summary stats by state;

data ip;
     format D_STATE_CD $char8.;
     set ip;
     if D_STATE_CD=' ' then D_STATE_CD='National';

     format medicare_pmt medicaid_pmt dollar15.
     medicare_clms medicaid_clms mdcd_overlap_cnt mdcd_match_cnt
     E_MEDICAREFFS E_MEDICAIDFFS comma20.;
run;
```

Results:

D_STATE _CD	E_MEDICAREFFS	medicare_pmt	medicare_clms	mdcd_match_cnt	mdcd_overlap_cnt	E_MEDICAIDFFS	medicaid_pmt	medicaid_clms
National	6,576,129	$33,716,178,769	3,396,515	518,369	730,564	5,057,089	$1,569,227,912	562,955
AK	13,170	$68,705,476	4,876	1,471	1,695	11,908	$3,038,091	326
AL	133,738	$528,813,597	71,443	19,767	30,096	137,306	$33,992,748	3,111
AR	97,723	$380,515,223	51,143	21,647	21,761	95,252	$27,894,650	4,655
AZ	53,414	$296,558,801	27,453	824	7,461	32,632	$3,004,734	547
CA	798,410	$4,492,061,764	334,324	4,727	12,396	11,090	$91,840	39
CO	51,124	$207,012,687	22,334	1,411	4,159	14,434	$537,173	182
CT	83,294	$471,560,834	41,557	14,889	15,135	88,753	$42,175,780	6,336
DC	16,971	$146,512,777	10,895	5,147	5,190	18,315	$23,907,586	1,846

Our data show that there are 6.576 million dually enrolled people nationwide in 2009 (column called E_MEDICAREFFS), and 5 million of these are in Medicaid FFS (column called E_MEDICAIDFFS). There are almost 3.4 million Medicare claims for inpatient services (column called medicare_clms). There were 730,564 claims where Medicaid paid either a portion or the entire share of the Medicare beneficiary liability (deductible or copayment for the hospitalization; see column called mdcd_overlap_cnt), and for 518,369 of these claims – Medicaid paid the entire beneficiary liability amount (column called mdcd_match_cnt). In total, Medicare paid $33.7 billion for inpatient care for duals (column called medicare_pmt) and Medicaid paid $1.5 billion in 2009 (column called Medicaid_pmt).

Note: for states with missing MAX data, the data will underestimate the payments and service use since the only data attributed to the state would be in instances where enrollees also had Medicaid services in at least one other state.

F. Examining Services Used for Specific Populations

The following SAS® code example illustrates how to identify the service records for the care settings of interest. Since we are using a detailed data file, we must perform some aggregations to calculate per user statistics (i.e., for all who used a specific type of service). For this example, we have chosen a Medicare-Medicaid enrolled population, which means we are able to simply use the BENE_ID to represent a unique person. For this type of aggregation the assumption is that there would be enrollment in only one state at a time which means no un-duplication of records is necessary for the purposes of this analysis.

We address the question of whether there are differences in specific types of service use for a population with and without the condition of interest. For example, we seek to describe the difference in inpatient payments, clinic, physician and drug spending for people with and without schizophrenia.

The service categories for Medicare and Medicaid are not the same; the scope of benefits are different and the billing and claims rules vary somewhat. For the services that are the same in Medicare and Medicaid, such as inpatient acute hospitalization, home health and physician visits, we rename the services similarly so that the payments can be combined or examined in parallel.

Code Example 6: Demonstrate Calculation of Per User Statistics for Specific Types of Care Settings

The following SAS® code uses data elements from all four of the MMLEADS V2.0 files. We begin by using the Beneficiary\Enrollee File to subset the population by MME type, which allows us to identify Full Dual Medicare-Medicaid enrollees. We also keep only those with either FFS Medicare or Medicaid coverage since we can only observe claims for those people. Then we merge in data from the MMLEADS Conditions file identifying a subpopulation with a history of treatment for schizophrenia. For this example, we identify the population a bit differently than we did in Code Example 2. Here we want to know if there is an indication of the condition using either Medicare or Medicaid versions of the condition variables from the MMLEADS Conditions File (i.e., where the variables SCHI_MEDICARE or SCHI_MEDICAID=2 [met coverage criteria but did not have claims for the condition] or 3 [met coverage criteria and had claims for the condition]). Finally, we must use the MMLEADS Medicaid and Medicare Service Files to examine service use for those with and without schizophrenia. The sample code illustrates how to calculate per user statistics. Since the level of detail we are examining for services is SRVC_3 for the Medicaid data, we employ the USER3_CNT variable to tabulate usage in the settings (level 3 classification of service) of interest; however, for the Medicare files the level of aggregation is SRVC_2 and the corresponding USER2_CNT variable. The final portion of the code combines information regarding use and payments between the population with and without treatment for schizophrenia (see the MATCH statements in the code below). For our example, we run this on the 1% sample.

The first Data step uses the BENEFICIARY_2009 file to identify the fully dual eligible population with either Medicare or Medicaid FFS coverage. The second Data step uses the CONDITION_2009 file to identify people with and without schizophrenia. We create the ***bene_condition*** file as our cohort file (or finder file).

In Step 2, we query the Medicare_service_2009 file to bring in information regarding spending and use of Medicare services. We rename the SRVC_2 categories so that we can align them with the corresponding Medicaid categories; then in Step 3 we perform PROC MEANS to calculate Medicare service-specific use and payments.

Similarly, in Step 4, we query the medicaid_service_2009 file to bring in information regarding spending and use of Medicaid services. We combine the SRVC_3 categories to remove the stratification by wavier/no waiver, and rename the categories to align them with the Medicare names. Then in Step 5 we perform PROC MEANS to calculate Medicaid service-specific use and payments.

Finally, in Step 6, once all the necessary data have been assembled, the final Data step combines Medicare and Medicaid summary statistics for output.

```
** Step 1: create a working beneficiary file for full duals with
Medicare or Medicaid fee for service;

data bene (keep=BENE_ID MSIS_ID D_STATE_CD E_MME_TYPE
E_MEDICAIDFFS E_MEDICAREFFS);
set MMLEAD09.BENEFICIARY_2009 (WHERE=(SAMPLE_IND = 1));
if (E_MEDICAREFFS = 1 OR E_MEDICAIDFFS = 1) and E_MME_TYPE = 5
then output;
run;

/*create a dataset with schizophrenia condition codes*/
data bene_condition (keep=BENE_ID MSIS_ID D_STATE_CD E_MME_TYPE
E_MEDICAIDFFS E_MEDICAREFFS SCHI_COMBINED
SCHI_MEDICARE SCHI_MEDICAID SCHI_COMBINED_EVER
SCHI_MEDICARE_EVER SCHI_MEDICAID_EVER);

merge bene (in=a) MMLEAD09.CONDITION_2009 (WHERE=(SAMPLE_IND =
1));
by BENE_ID MSIS_ID D_STATE_CD;
if a;
run;
```

```
** Step 2: Process Medicare services;

data dual_medicare_service_1 (keep=BENE_ID E_MME_TYPE
E_MEDICAREFFS SRVC_1 SRVC_2 COMBO_SCHI MDCR_SCHI COMBO_SCHI_EVER
BENE_CNT USER1_CNT USER2_CNT FD_MEDICARE_PMT);

merge bene_condition (in=a) MMLEAD09.MEDICARE_SERVICE_2009
(WHERE=(SAMPLE_IND = 1));
by BENE_ID;
if a;

/*create a variable to identify individuals with schizophrenia
through Medicare or Medicaid claims in the last 12 months */

     if SCHI_COMBINED IN (3) THEN combo_schi = 1; else
     combo_schi = 0;

/*create a variable to identify individuals with schizophrenia
through Medicare claims alone in the last 12 months*/

     if SCHI_MEDICARE in (3) then mdcr_schi = 1; else mdcr_schi
     = 0;

/*create a variable to identify individuals who ever had
schizophrenia - using Medicare or Medicaid claims since 1999*/

     if SCHI_COMBINED_EVER ~= . then combo_schi_ever = 1; else
     combo_schi_ever = 0;

/*identify individuals with Medicare fee for service*/

     if E_MEDICAREFFS = 1 and E_MME_TYPE = 5 then output;

** Step 3: Calculate per user counts in Medicare;

proc sort;
by E_MME_TYPE combo_schi SRVC_1 SRVC_2;
run;

proc means data=dual_medicare_service_1 noprint;
     by E_MME_TYPE combo_schi SRVC_1 SRVC_2;
      var USER2_CNT FD_MEDICARE_PMT;
     output out=medicare_utilization (drop= _freq_ _type_) sum
     ()=;
run;
```

```
proc means data=dual_medicare_service_1 noprint;
     by E_MME_TYPE combo_schi SRVC_1 SRVC_1;
      var USER1_CNT FD_MEDICARE_PMT;
      output out=medicare_utilization_1 (drop= _freq_ _type_)
     sum ()=;
run;

/*roll up detailed drug information into a single category*/

data medicare_utilization_2; set medicare_utilization_1;
match = 'DRUG';
mdcr_pmt_per_user_1 = round (FD_MEDICARE_PMT / USER1_CNT, .02);
if SRVC_1 = 'MDCR_PTD' then output;
run;


data medicare_utilization_3; length match $20.;
set medicare_utilization (where=(srvc_1 ~= 'MDCR_PTD')) ;

/*   medicare_utilization_1 (where=(srvc_1 = 'MDCR_PTD'));*/

/*calculate Medicare payment per user*/
mdcr_pmt_per_user_2 = round (FD_MEDICARE_PMT / USER2_CNT, .02);


/* recodes to enable alignment of services between Medicare &
Medicaid*/

if SRVC_2 = 'MDCR_IP' then match = 'IP';
  else if SRVC_2 = 'MDCR_SNF' then match = 'SNF';
  else if SRVC_2 = 'MDCR_EM' then match = 'EM';
  else if SRVC_2 = 'MDCR_OPD' then match = 'OPPS';
  else if SRVC_2 = 'MDCR_HH' then match = 'HH';
  else if SRVC_2 = 'MDCR_DME' then match = 'DME';
  else match = SRVC_2;
  if SRVC_1 = ' ' and SRVC_2 = ' ' then delete;

  /*format Medicare payment per user to dollars*/
format mdcr_pmt_per_user_2 dollar15.2;
run;
```

```
** Step 4: Process Medicaid services;

/*identify individuals with Medicaid fee for service*/

data dual_medicaid_service_1 (keep=BENE_ID E_MME_TYPE
E_MEDICAIDFFS SRVC_1 SRVC_2 SRVC_3 combo_schi mdcd_schi
combo_schi_ever BENE_CNT USER1_CNT USER2_CNT USER3_CNT
FD_MEDICAID_PMT);

merge bene_condition (in=a)
MMLEAD09.MEDICAID_SERVICE_INTERNAL_2009 (where=(SAMPLE_IND =
1));

by BENE_ID;
if a;

/*create a variable to identify individuals with schizophrenia
according to Medicare or Medicaid claims in the last 12 months*/

if SCHI_COMBINED in (1 3) then combo_schi = 1; else combo_schi =
0;

/* variable to identify individuals with schizophrenia through
Medicaid claims alone in the last 12 months*/
if SCHI_MEDICAID in (1 3) then mdcd_schi = 1; else mdcd_schi =
0;

/*variable to identify individuals who ever had shizophrenia
claims since 1999 – either through Medicare or Medicaid */

if SCHI_COMBINED_EVER ~= . then combo_schi_ever = 1; else
combo_schi_ever = 0;

/*collapse SRVC_3 categories with and without waivers to type of
service groups */

if SRVC_3 in ('MDCD_FFS_LTN_REHAB_W' 'MDCD_FFS_LTN_REHAB_NW')
then SRVC_3 = 'MDCD_FFS_LTN_REHAB';
   else if SRVC_3 in ('MDCD_FFS_LTN_HH_W' 'MDCD_FFS_LTN_HH_NW')
then SRVC_3 = 'MDCD_FFS_LTN_HH';
   else if SRVC_3 in ('MDCD_FFS_LTN_HOS_W'
'MDCD_FFS_LTN_HOS_NW') then SRVC_3 = 'MDCD_FFS_LTN_HOS';
   else if SRVC_3 in ('MDCD_FFS_LTN_DME_W'
'MDCD_FFS_LTN_DME_NW') then SRVC_3 = 'MDCD_FFS_LTN_DME';
   else if SRVC_3 in ('MDCD_FFS_LTN_PCS_W'
'MDCD_FFS_LTN_PCS_NW') then SRVC_3 = 'MDCD_FFS_LTN_PCS';
```

```
   else if SRVC_3 in ('MDCD_FFS_LTN_RC_W' 'MDCD_FFS_LTN_RC_NW')
then SRVC_3 = 'MDCD_FFS_LTN_RC';
   else if SRVC_3 in ('MDCD_FFS_LTN_ADC_W'
'MDCD_FFS_LTN_ADC_NW') then SRVC_3 = 'MDCD_FFS_LTN_ADC';
   else if SRVC_3 in ('MDCD_FFS_LTN_TS_W' 'MDCD_FFS_LTN_TS_NW')
then SRVC_3 = 'MDCD_FFS_LTN_TS';
   else if SRVC_3 in ('MDCD_FFS_LTN_TCM_W'
'MDCD_FFS_LTN_TCM_NW') then SRVC_3 = 'MDCD_FFS_LTN_TCM';
   else if SRVC_3 in ('MDCD_FFS_LTN_PDN_W'
'MDCD_FFS_LTN_PDN_NW') then SRVC_3 = 'MDCD_FFS_LTN_PDN';
   else if SRVC_2 = 'MDCD_FFS_DRUG' then SRVC_3 = ' ';
   else SRVC_3 = SRVC_3;
   if SRVC_1 = ' ' then delete;

** Step 5: Calculate per user counts in Medicaid;

proc sort;
by E_MME_TYPE combo_schi SRVC_1 SRVC_2 SRVC_3 ;
run;

proc sort;
by E_MME_TYPE combo_schi SRVC_3 ;
run;

proc means data=dual_medicaid_service_1 noprint ;
     by E_MME_TYPE combo_schi SRVC_3;
      var USER3_CNT FD_MEDICAID_PMT;
      output out=medicaid_utilization (drop=_freq_ _type_) sum
()=;
run;

/*calculate per user counts for drug data in Medicaid*/
proc sort data=dual_medicaid_service_1;
by E_MME_TYPE combo_schi SRVC_2 ;
run;

proc means data=dual_medicaid_service_1 noprint ;
     by E_MME_TYPE combo_schi SRVC_2 ;
      var USER2_CNT FD_MEDICAID_PMT;
      output out=medicaid_utilization_1 (drop=_freq_ _type_) sum
()=;
run;
```

```
data medicaid_utilization_2; set medicaid_utilization_1;
     match = 'DRUG';
     mdcd_pmt_per_user_2 = FD_MEDICAID_PMT / USER2_CNT;
     if SRVC_2 = 'MDCD_FFS_DRUG' then output;
run;

data medicaid_utilization_3;
     length match $20.;
     set medicaid_utilization (where=(srvc_3 ~=' '));

     /*calculate Medicaid payment per user*/
     mdcd_pmt_per_user_3 = FD_MEDICAID_PMT / USER3_CNT;

/*create variables to match services with Medicare service */
if SRVC_3 = 'MDCD_FFS_ACUTE_IP' then match = 'IP';
  else if SRVC_3 = 'MDCD_FFS_LTI_NFS' then match = 'SNF';
  else if SRVC_3 = 'MDCD_FFS_ACUTE_PHYS' then match = 'EM';
  else if SRVC_3 = 'MDCD_FFS_ACUTE_HOP' then match = 'OPPS';
  else if SRVC_3 = 'MDCD_FFS_LTN_HH' then match = 'HH';
  else if SRVC_3 = 'MDCD_FFS_LTN_DME' then match = 'DME';
  else if SRVC_2 = 'MDCD_FFS_DRUG' then match = 'DRUG';
  else match = SRVC_3;

format mdcd_pmt_per_user_3 dollar15.2;
run;

proc sort data=medicaid_utilization_3;
     by match combo_schi;
run;

proc sort data=medicare_utilization_3;
     by match combo_schi;
run;
```

```
** Step 6: merge the rolled up Medicare service file and the
rolled up Medicaid service file on service type and
schizophrenia status;

data drug;
merge medicare_utilization_2 medicaid_utilization_2;
     by match combo_schi;

     mdcr_user1_cnt = USER1_CNT;
     mdcd_user2_cnt = USER2_CNT;
     drop match E_MME_TYPE USER1_CNT USER2_CNT;

     format mdcd_pmt_per_user_2 dollar15.2;
run;

data all_other_service_types;
     retain combo_schi SRVC_1 FD_MEDICARE_PMT SRVC_2 USER2_CNT
     mdcr_pmt_per_user_2;

     merge medicaid_utilization_3 (in = a)
     medicare_utilization_3 (in = b);
     by match combo_schi;
     if a or b;

     mdcr_user2_cnt = USER2_CNT;
     mdcd_user3_cnt = USER3_CNT;

     if SRVC_3 = ' ' and SRVC_2 = ' ' then delete;
     drop match E_MME_TYPE USER2_CNT USER3_CNT;
     format USER3_CNT USER2_CNT;
run;

data example6;
     retain combo_schi SRVC_1 FD_MEDICARE_PMT mdcr_user1_cnt
     mdcr_pmt_per_user_1 SRVC_2 mdcr_user2_cnt
     mdcr_pmt_per_user_2 FD_MEDICAID_PMT mdcd_user2_cnt
     mdcd_user2_cnt SRVC_3 mdcd_user3_cnt mdcd_pmt_per_user_3;

     set drug all_other_service_types;
run;
```

A sample of the results from these analyses for the 1% sample are displayed in Table 29. When combo_schi (or meet condition) = 1 the person had indications of schizophrenia on their claims.

The per user resource use is higher among those identified as having been treated for schizophrenia for almost every service setting in Medicare – the exception is for durable medical equipment (MDCR_DME). For Medicaid services – higher resource use is seen in several categories.

Table 29. Setting-specific Payments for 1% Sample - Example

Medicare					Medicaid			
SRVC_2	**combo_schi ***	**FD_MEDICARE_PMT**	**mdcr_user2_cnt**	**mdcr_pmt_per_user_2**	**SRVC_3**	**FD_MEDICAID_PMT**	**mdcd_user3_cnt**	**mdcd_pmt_per_user_3**
Inpatient Acute Hospitalizations					Inpatient Acute Hospitalizations			
MDCR_IP	0	$253,603,014.97	14,722	$17,226.12	MDCD_FFS_ACUTE_IP	$14,082,692.00	7,736	$1,820.41
	1	$10,618,612.70	606	$17,522.46	MDCD_FFS_ACUTE_IP	$2,448,175.00	929	$2,635.28
Skilled Nursing Facility Care					Skilled Nursing Facility Care			
MDCR_SNF	0	$80,058,525.14	6,282	$12,744.12	MDCD_FFS_LTI_NFS	$359,692,508.00	10,866	$33,102.57
	1	$4,219,202.71	280	$15,068.58	MDCD_FFS_LTI_NFS	$34,792,193.00	939	$37,052.39
Home Health Care					Home Health Care			
MDCR_HH	0	$47,449,431.39	7,298	$6,501.70	MDCD_FFS_LTN_HH	$22,529,067.00	2,759	$8,165.66
	1	$1,525,306.14	195	$7,822.08	MDCD_FFS_LTN_HH	$1,811,193.00	269	$6,733.06
Hospital Outpatient Clinic Services					Hospital Outpatient Clinic Services			
MDCR_OPD	0	$55,170,225.14	36,895	$1,495.34	MDCD_FFS_ACUTE_HOP	$8,251,768.00	19,046	$433.25
	1	$2,675,237.60	1,573	$1,700.72	MDCD_FFS_ACUTE_HOP	$1,274,210.00	1,784	$714.24
Physician Visits					Physician Visits			
MDCR_EM	0	$59,451,499.43	50,229	$1,183.60	MDCD_FFS_ACUTE_PHYS	$7,887,308.00	35,978	$219.23
	1	$3,607,839.43	2,088	$1,727.90	MDCD_FFS_ACUTE_PHYS	$669,980.00	3,215	$208.39
Durable Medical Equipment					Durable Medical Equipment			
MDCR_DME	0	$20,825,621.65	20,955	$993.82	MDCD_FFS_LTN_DME	$14,469,438.00	22,458	$644.29
	1	$527,570.29	644	$819.20	MDCD_FFS_LTN_DME	$953,009.00	1,632	$583.95
Prescription Drugs					Prescription Drugs			
MDCR_PTD	0	$211,174,834.38	50,691	$4,165.92	MDCD_FFS_DRUG	$5,605,413.00	29,094	$192.67
	1	$17,487,117.47	2,098	$8,335.14	MDCD_FFS_DRUG	$540,952.00	2,759	$196.07

*combo_schi = met condition specifications; 0=no, 1=yes.

Chapter 5. Request Access / Technical Support

Potential data users must contact ResDAC for assistance in obtaining data files. These files are considered "identifiable" in that they contain information regarding treatment rendered to individual patients. A data use agreement (DUA) from CMS is required to gain access to the files.

ResDAC offers free assistance to researchers using Medicare or Medicaid data for research. Please note that ResDAC assistants are very knowledgeable about the source data from the CCW; however, they do not have insight into the nuances of this data resource. The ResDAC website provides links to descriptions of the CMS data available, request procedures, supporting documentation, such as record layouts and SAS® input statements, workshops on how to use Medicare data, and other helpful resources. Visit the ResDAC website at http://www.resdac.org for additional information.

The CCW website also provides data dictionaries for the data files which serve as inputs for the MMLEADS Files (i.e., the Medicare and MAX files). There are a variety of resources available, depending on the topic of interest. Attachment B of this document identifies resources.

Attachment A – Acronyms

ACA	Affordable Care Act
AMI	Acute Myocardial Infarction
ASC	Ambulatory Surgical Center
BOE	Basis of Eligibility
CAH	Critical Access Hospital
CCW	Chronic Condition Data Warehouse
CHIP	Children's Health Insurance Program
CKD	Chronic Kidney Disease
CMHC	Community Mental Health Center
CMS	Centers for Medicare & Medicaid Services
COPD	Chronic Obstructive Pulmonary Disease
CPT	Current Procedural Terminology
DE	Dually Eligible
DME	Durable Medical Equipment
DUA	Data Use Agreement
E&M	Evaluation and Management
ESRD	End-Stage Renal Disease
FFS	Fee-For-Service
FFY	Federal Fiscal Year
FMAP	Federal Medical Assistance Percentage
FR	Federal Rate
HCPCS	Healthcare Common Procedure Coding System

HH	Home Health
HIC	Health Insurance Claim
HIFA	Health Insurance and Flexibility and Accountability
HIV / AIDS	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
HMO	Health Maintenance Organizations
HOP	Hospital Outpatient
IER	Institutional Emergency Room
IP	Inpatient
IPPS	Inpatient Prospective Payment Hospitals
LMC	Limited Managed Care
LT	Long-term Care
LTSS	Long Term Care Supports and Services
MA	Medicare Part C (Medicare Advantage
MA-PD	Medicare Advantage-Prescription Drug
MAS	Maintenance Assistance Status
MAX	Medicaid Analytic eXtract
MMA	Medicare Modernization Act
MMCO	Medicare Medicaid Coordination Office
MME	Classification of Medicare and/or Medicaid Enrollment
MDO	Medicaid-only
MRO	Medicare-only
MSIS	Medical Statistical Information System
NF	Nursing Facility
OER	Outpatient Facility Emergency Room
OT	Other Therapy

PAC	Post-acute Care
PACE	Program of All-inclusive Care for the Elderly
PCCM	Primary Care Case Management
PCS	Personal Care Service
PDE	Part D Events
PDP	Prescription Drug Plan
PHP	Prepaid Health Plan
PMPM	Per Member Per Month
PS	Person Summary
PTSD	Post-traumatic Stress Disorder
QMB	Qualified Medicare Beneficiary
ResDAC	Research Data Assistance Center
RTI	Research Triangle Institute
RX	Drug
SLMB	Specified Low-Income Medicare Beneficiary
SNF	Skilled Nursing Facility
SSA	Social Security Administration
SSN	Social Security Number

Attachment B – Resources List

CCW Website	
Home page	http://www.ccwdata.org
Data Dictionaries	http://www.ccwdata.org/web/guest/data-dictionaries
Chronic Conditions	http://www.ccwdata.org/web/guest/condition-categories 27 Chronic Conditions 9 Mental Health and Tobacco Use Conditions 15 Conditions related to intellectual, developmental and physical disability 10 Other Chronic Physical and Behavioral Health Conditions
Analytic Guidance	http://www.ccwdata.org/web/guest/technical-guidance-documentation CCW Technical Guidance for Researchers: Calculating Population Statistics CCW Technical Guidance: Getting started with MAX data CCW Technical Guidance: Getting Started with CMS Administrative Research Files
CMS Website / Medicare.gov / Medicaid.gov	
CMS home page	http://www.cms.gov
Duals	https://www.cms.gov/MLNProducts/downloads/Medicare_Beneficiaries_Dual_Eligibles_At_a_Glance.pdf
Medicaid source data file record layouts	https://www.cms.gov/MedicaidDataSourcesGenInfo/07_MAXGener alInformation.asp
Medicaid.gov home page	http://www.medicaid.gov/
Waivers	http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By- Topics/Waivers/Waivers.html
FMAP	http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By- Topics/Financing-and-Reimbursement/Financing-and- Reimbursement.html
Medicare.gov home page	http://www.medicare.gov/default.aspx

ResDAC Website	
Home page	http://www.resdac.org
KnowledgeBase Articles	https://www.resdac.org/resconnect/articles
MAX files	https://www.resdac.org/cms-data/file-family/Medicaid-Analytic-Extracts-MAX

Attachment C – SSA Disability Code List

This listing of Impairment codes is provided for your convenience; however, the codes are not maintained by CMS or CCW. The original source of this information was the SSA website (see https://secure.ssa.gov/poms.nsf/lnx/0426510015).

Impairment Code	Body System	Diagnostic Categories
0000	20	None Established (No Medical Evidence in File)
0030	14	Salmonella Bacteremia (Secondary Diagnosis for HIV-0430)
0070	14	Cryptosporidiosis (Secondary Diagnosis for HIV-0430)
0070	14	Isosporiasis (Secondary Diagnosis for HIV-0430)
0110	03	Pulmonary Tuberculosis
0310	14	Mycobacterium infection avium intracellulare, caused by M. Kansasii, or M. tuberculosis (except pulmonary tuberculosis) (Secondary Diagnosis for HIV-0430)
0380	14	Sepsis (Secondary Diagnosis for HIV-0430)
0390	14	Nocardiasis (Secondary Diagnosis for HIV-0430)
0410	14	Bacterial Infections, Multiple or Recurrent (Secondary Diagnosis for HIV-0430)
0420	13	Malignant Neoplasm Treated by Bone Marrow or Stem Cell Transplantation
0430	14	Symptomatic Human Immunodeficiency Virus (HIV) Infection
0440	14	Asymptomatic Human Immunodeficiency Virus (HIV) Infection
0460	14	Leukoencephalopathy (Secondary Diagnosis for HIV-0430)
0530	14	Herpes Zoster (Secondary Diagnosis for HIV-0430)
0540	14	Herpes Simplex (Secondary Diagnosis for HIV-0430)
0780	14	Condyloma Caused by the Human Papillomavirus (Secondary Diagnosis for HIV-0430)
0780	14	Cytomegalovirus Disease (Secondary Diagnosis for HIV-0430)
0930	04	Cardiovascular Syphilis
0940	11	Neurosyphilis (Tabes Dorsalis)
0940	14	Neurosyphilis (Secondary Diagnosis for HIV-0430)
0970	14	Syphilis (Secondary Diagnosis for HIV-0430)
1120	14	Candidiasis (Secondary Diagnosis for HIV-0430)
1120	14	Vulvovaginal Candida (Secondary Diagnosis for HIV-0430)
1140	14	Coccidiodomycosis (Secondary Diagnosis for HIV-0430)
1150	14	Histoplasmosis (Secondary Diagnosis for HIV-0430)
1170	03	Mycobacterial, Mycotic and Other Chronic Infections of the Lung
1170	08	Chronic Infections of the Skin or Mucous Membranes
1170	14	Aspergillosis (Secondary Diagnosis for HIV-0430)
1170	14	Cryptococcosis (Secondary Diagnosis for HIV-0430)
1170	14	Mucormycosis (Secondary Diagnosis for HIV-0430)

Impairment Code	Body System	Diagnostic Categories
1270	14	Strongyloidiasis (Secondary Diagnosis for HIV-0430)
1300	14	Toxoplasmosis (Secondary Diagnosis for HIV-0430)
1350	03	Sarcoidosis
1360	05	Other Infectious and Parasitic Disorders
1360	14	Micro-Sporidiosis (Secondary Diagnosis for HIV-0430)
1360	14	Pneumocystis Infection, extra-pulmonary (Secondary Diagnosis for HIV-0430)
1360	14	Pneumocystis Pneumonia (PCP) (Secondary Diagnosis for HIV-0430)
1380	11	Late Effects of Acute Poliomyelitis
1410	13	Malignant Neoplasm of Tongue
1420	13	Malignant Neoplasm of Salivary Glands
1500	13	Malignant Neoplasm of Esophagus
1510	13	Malignant Neoplasm of Stomach
1520	13	Malignant Neoplasm of Small Intestine, Including Duodenum
1530	13	Malignant Neoplasm of Colon, Rectum or Anus
1540	14	Squamous Cell Carcinoma of the Anal Canal or Anal Margin (Secondary Diagnosis for HIV-0430)
1550	13	Malignant Neoplasm of Liver and Intrahepatic Bile Ducts
1560	13	Malignant Neoplasm of Gallbladder and Extrahepatic Bile Ducts
1570	13	Malignant Neoplasm of Pancreas
1590	13	Malignant Neoplasm of Other and Ill-Defined Sites Within the Digestive Organs and Peritoneum (Abdomen)
1620	13	Malignant Neoplasm of Trachea, Bronchus, or Lung
1630	13	Malignant Neoplasm of Pleura
1640	13	Malignant Neoplasm of Mediastinum
1700	13	Malignant Neoplasm of Maxilla, Orbit, or Temporal Fossa
1710	13	Malignant Neoplasm of Connective and Other Soft Tissue
1720	13	Malignant Melanoma of Skin
1730	13	Malignant Neoplasm of Skin
1740	13	Malignant Neoplasm of Breast
1760	14	Kaposi’s Sarcoma (Secondary Diagnosis for HIV-0430)
1780	13	Malignant Neoplasm of Skeletal System
1790	13	Malignant Neoplasm of Uterus
1800	14	Carcinoma of the Cervix (Secondary Diagnosis for HIV-0430)
1830	13	Malignant Neoplasm of Ovary and Other Uterine Adnexa
1840	13	Malignant Neoplasm of Vulva or Vagina
1850	13	Malignant Neoplasm of Prostate
1860	13	Malignant Neoplasm of Testis
1870	13	Malignant Neoplasm of Penis

Impairment Code	Body System	Diagnostic Categories
1880	13	Malignant Neoplasm of Bladder
1890	13	Malignant Neoplasm of Kidney, Adrenal Glands, or Ureters
1900	13	Malignant Neoplasm of Eye
1910	13	Malignant Neoplasm of Nervous System
1920	13	Neuroblastoma
1930	13	Malignant Neoplasm of Thyroid Gland
1940	13	Malignant Neoplasm of Other Endocrine Glands and Related Structures
1950	13	Soft Tissue Tumors of Head and Neck
1980	13	Secondary Malignant Neoplasms (Metastatic Neoplasms of Distant Sites Other Than Regional Lymph Nodes)
1990	13	Malignant Neoplasm of Unspecified Site
2000	14	Lymphoma (Secondary Diagnosis for HIV-0430)
2020	13	Lymphoma
2030	13	Multiple Myeloma
2070	13	Leukemia
2250	11	Benign Neoplasm of Brain and Other Parts of Nervous System
2380	07	Neoplasm of Uncertain Behavior of Other Sites and Tissues (Polycythemia Vera)
2390	13	Neoplasm of Unspecified or Unknown Nature
2460	09	All Disorders of Thyroid Gland (Except Malignant Neoplasm)
2480	20	Diagnosis Established--No Predetermined List Code of Medical Nature Applicable
2500	09	Diabetes Mellitus
2520	09	All Disorders of Parathyroid Gland (Except Malignant Neoplasm)
2530	09	All Disorders of the Pituitary Gland (Except Malignant Neoplasm)
2550	09	All Disorders of Adrenal Glands (Except Malignant Neoplasm)
2630	05	Malnutrition (Weight Loss)
2630	14	HIV Wasting Syndrome (Secondary Diagnosis for HIV-0430)
2720	04	Hyperlipidemia
2730	13	Macroglobulinemia or Heavy Chain Disease
2740	14	Gout
2770	03	Cystic Fibrosis
2780	20	Obesity
2790	07	Immune Deficiency Disorders, Excluding HIV Infection
2790	14	Immune Deficiency Disorders, Excluding HIV Infection)
2810	07	Deficiency Anemias
2810	11	Deficiency Anemias
2820	07	Hereditary Hemolytic Anemias (Including All Sickle Cell)
2840	07	Aplastic Anemia

Impairment Code	Body System	Diagnostic Categories
2850	07	Other Anemias
2850	14	Anemia (Secondary Diagnosis for HIV-0430
2850	14	Pulmonary Lymphoid Hyperplasia (PLH) (Secondary Diagnosis for HIV-0430)
2860	07	Coagulation Defects (Including Hemophilia)
2870	07	Purpura and Other Hemorrhagic Conditions
2870	14	Thrombocytopenia (Secondary Diagnosis for HIV-0430)
2880	07	Diseases of White Blood Cells
2880	14	Granulocytopenia (Secondary Diagnosis for HIV-0430)
2890	07	Other Diseases of Blood and Blood-Forming Organs
2940	12	Organic Mental Disorders
2950	12	Schizophrenic, Paranoid and Other Psychotic Disorders
2960	12	Affective/Mood Disorders
2990	12	Autistic Disorder and Other Pervasive Developmental Disorders
3000	12	Anxiety Disorders
3010	12	Personality Disorders
3030	12	Substance Addiction or Psychoactive Substance Dependence Disorders (Alcohol)
3040	12	Substance Addiction or Psychoactive Substance Dependence Disorders (Drugs)
3060	12	Somatoform Disorders
3070	12	Eating and Tic Disorders
3120	12	Conduct Disorder
3138	12	Oppositional/Defiant Disorder
3140	12	Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder
3150	12	Development and Emotional Disorders of Newborn and Younger Infants
3152	12	Learning Disorder
3153	12	Speech and Language Delays
3180	12	Intellectual Disability
3195*****	12	Borderline Intellectual Functioning *****Do not code borderline intellectual functioning as 3180 (under Intellectual Disability).
3210	01	Arachnoiditis
3220	14	Meningitis (Secondary Diagnosis for HIV-0430)
3250	03	Lung Transplant
3300	10	Cerebral Degenerations Usually Manifest in Childhood
3300	11	Cerebral Degenerations Usually Manifest in Childhood
3310	11	Other Cerebral Degenerations
3310	14	Brain Atrophy (Secondary Diagnosis for HIV-0430)
3320	11	Parkinson’s Disease

Impairment Code	Body System	Diagnostic Categories
3330	11	Huntington Disease
3350	11	Anterior Horn Cell Disease (Including Amyotrophic Lateral Sclerosis)
3360	11	Other Diseases of Spinal Cord
3370	11	Disorders of Autonomic Nervous System
3400	11	Multiple Sclerosis
3430	11	Cerebral Palsy
3450	11	Epilepsy
3460	11	Migraine
3480	14	HIV Encephalopathy (Secondary Diagnosis for HIV-0430)
3490	11	Other Disorders of the Nervous System
	14	Neurological Conditions (Secondary Diagnosis for HIV-0430)
3540	11	Carpal Tunnel Syndrome
3560	14	Peripheral Neuropathy (Secondary Diagnosis for HIV-0430)
3570	11	Peripheral Neuropathy
3580	11	Myoneural Disorders
3590	11	Muscular Dystrophies and Other Myopathies
3610	02	Retinal Detachments and Defects
3620	02	Other Retinal Disorders (Including Diabetic Retinopathy)
3650	02	Glaucoma
3660	02	Cataract
3680	02	Visual Disturbances
3690	02	Blindness and Low Vision
3694	02	Statutory Blindness
3750	04	Cardiac Transplantation
3780	02	Strabismus and Other Disorders of Eye Movements
3860	02	Vertiginous Syndromes and Other Disorders of Vestibular System
3880	02	Other Disorders of Ear
3890	02	Hearing Loss
3910	04	Rheumatic Fever with Heart Involvement
3950	04	Diseases of Aortic Valve
3980	04	Other Rheumatic Heart Disease
4010	04	Essential Hypertension
4020	04	Hypertensive Cardiovascular Disease
4030	04	Hypertensive Vascular and Renal Disease
4100	04	Acute Myocardial Infarction
4130	04	Angina Pectoris Without Ischemic Heart Disease
4140	04	Chronic Ischemic Heart Disease With or Without Angina
4160	03	Cor Pulmonale Secondary to Chronic Pulmonary Vascular Hypertension

Impairment Code	Body System	Diagnostic Categories
4160	04	Chronic Pulmonary Heart Disease (Cor Pulmonale)
4240	04	Valvular Heart Disease or Other Stenotic Defects or Valvular Regurgitation
4240	14	Endocarditis (Secondary Diagnosis for HIV-0430)
4250	04	Cardiomyopathy
4270	04	Cardiac Dysrhythmias (Arrhythmias)
4280	04	Heart Failure
4380	11	Late Effects of Cerebrovascular Disease
4410	04	Aneurysm of Aorta or Major Branches
4430	04	Peripheral Vascular (Arterial) Disease
4460	04	Kawasaki Syndrome
4460	14	Periarteritis Nodosa and Allied Conditions (Systemic Vasculitis)
4480	07	Diseases of Capillaries (Hereditary Telangiectasia)
4510	04	Phlebitis and Thrombophlebitis
4540	04	Varicose Veins of Lower Extremities
4590	04	Other Diseases of Circulatory System (Venous Insufficiency)
4730	14	Sinusitis (Secondary Diagnosis for HIV-0430)
4750	05	Liver Transplant
4860	14	Pneumonia (non-PCP) (Secondary Diagnosis for HIV-0430)
4910	03	Chronic Bronchitis
4920	03	Emphysema
4930	03	Asthma
4940	03	Bronchiectasis
4960	03	Chronic Pulmonary Insufficiency (COPD)
5010	03	Asbestosis
5050	03	Pneumoconiosis
5160	14	Lymphoid Interstitial Pneumonia (LIP) (Secondary Diagnosis for HIV-0430)
5190	03	Other Disorders of the Respiratory System
5300	05	Diseases of Esophagus
5330	05	Peptic Ulcer (Gastric or Duodenal)
5350	05	Gastritis and Duodenitis
5530	05	Hernias
5550	05	Inflammatory Bowel Disease (IBD)
5580	14	Diarrhea (Secondary Diagnosis for HIV-0430)
5690	05	Other Disorders of Gastrointestinal System
5710	05	Chronic Liver Disease
5730	14	Hepatitis (Secondary Diagnosis for HIV-0430)
5770	14	Pancreatitis (Secondary Diagnosis for HIV-0430)
5780	05	Gastrointestinal hemorrhaging from any cause
5793	05	Short Bowel Syndrome (SBS)

Impairment Code	Body System	Diagnostic Categories
5799	05	Need for supplemental daily enteral feeding via gastrostomy
5810	06	Nephrotic Syndrome
5830	14	Nephropathy (Secondary Diagnosis for HIV-0430)
5850	06	Chronic Renal Failure
5950	06	Interstitial Cystitis
5990	06	Other Disorders of the Urinary Tract
6080	06	Disorders of the Male Genital Organs
6080	14	Genital Ulcerative Disease, Male (Secondary Diagnosis for HIV-0430)
6140	14	Pelvic Inflammatory Disease (Secondary Diagnosis for HIV-0430)
6290	06	Disorders of the Female Genital Organs
6290	14	Genital Ulcerative Disease, Female (Secondary Diagnosis for HIV-0430)
6490	20	None Established (Medical Evidence in File But Insufficient to Establish Diagnosis)
6920	14	Eczema (Secondary Diagnosis for HIV-0430)
6940	08	Bullous Disease
6950	08	Ichthyosis
6960	08	Dermatitis
6960	14	Psoriasis (Secondary Diagnosis for HIV-0430)
7050	08	Hidradenitis Suppurativa
7090	08	Other Disorders of the Skin and Subcutaneous Tissues
7100	14	Diffuse Diseases of Connective Tissue (including Systemic Lupus Erythematosus, Systemic Sclerosis (Scleroderma), Polymyositis and Dermatomyositis, Undifferentiated and Mixed Connective Tissue Disease, Sjögren's Syndrome)
7110	14	Joint Infection (Secondary Diagnosis for HIV-0430)
7110	14	Septic Arthritis (Secondary Diagnosis for HIV-0430)
7140	14	Inflammatory Arthritis
7150	01	Osteoarthrosis and Allied Disorders
7160	01	Other and Unspecified Arthropathies
7200	14	Ankylosing Spondylitis or Other Spondyloarthropathies
7240	01	Disorders of Back (Discogenic and Degenerative)
7280	01	Disorders of Muscle, Ligament and Fascia
7290	20	Fibromyalgia
7300	01	Osteomyelitis, Periostitis and Other Infections Involving Bone
7300	14	Bone Infection (Secondary Diagnosis for HIV-0430)
7330	01	Other Disorders of Bone and Cartilage (Osteoporosis)
7370	01	Curvature of Spine
7400	10	Anencephalus and Catastrophic Congenital Abnormality or Disease
7410	11	Spina Bifida (Meningomyelocele)

Impairment Code	Body System	Diagnostic Categories
7420	14	Impaired Brain Growth (Secondary Diagnosis for HIV-0430)
7420	14	Microcephaly (Secondary Diagnosis for HIV-0430)
7460	04	Congenital Heart Disease
7500	05	Congenital Anomalies of Upper Alimentary Tract
7530	06	Congenital Anomalies of Urinary System
7580	10	Down Syndrome (Excluding Mosaic Down Syndrome)
7590	08	Genetic Photosensitivity Disorders
7590	20	Other Congenital Anomalies
7649	19	Birth Weight Between 1200 and 2000 Grams and Small For Gestational Age
7650	19	Birth Weight Under 1200 Grams
7800	03	Sleep-Related Breathing Disorders
7830	14	Growth Disturbance (Secondary Diagnosis for HIV-0430)
7830	19	Malnutrition, Marasmus, Failure to Thrive (Growth Impairment)
7840	02	Loss of Voice
7840	11	Loss of Voice
8030	01	Fracture of Skull Without Intracranial Injury
8060	01	Fracture of Vertebral Column with Spinal Cord Lesion
8060	11	Fracture of Vertebral Column with Spinal Cord Lesion
8180	01	Fractures of Upper Limb
8270	01	Fractures of Lower Limb
8290	01	Other Fractures of Bones
8390	01	Dislocations--All Types
8480	01	Sprains and Strains--All Types
8540	11	Intracranial Injury
8690	20	Internal Injury
8790	20	Other Open Wounds, Except Limbs
8840	01	Open Wound of Upper Limb (Soft Tissue Injury)
8940	01	Open Wound of Lower Limb (Soft Tissue Injury)
9050	01	Late Effects of Musculoskeletal and Connective Tissue Injuries (Amputation)
9070	11	Late Effects of Injuries to the Nervous System
9330	20	Chronic Fatigue Syndrome (CFS)
9480	08	Burns
9490	01	Burns (NOS)