Medicare Advantage Data for the Geographic Variation Public Use File: A Methodological Overview

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Introduction

The Office of Enterprise Data and Analytics within the Centers for Medicare & Medicaid Services (CMS) has made annual updates to a public use file, the Medicare Advantage Geographic Variation Public Use File (MA GV PUF), to support further analysis focused on geographic variation. This public use file is based on Medicare Advantage Encounter data and enrollment and eligibility data. The MA GV PUF covers calendar years 2016–2022 and has information on demographic characteristics and service utilization for Medicare Advantage beneficiaries.

The MA GV PUF is modeled after the Medicare Fee-for-Service Geographic Variation Public Use File (https://data.cms.gov/resources/geographic-variation-methodology). We've highlighted several key differences, which include:

- There is no payment information.
- There is no quality information.
- The data are not stratified by age group (i.e., < 65 years old, ≥ 65 years old).

This overview is divided into the following three sections:

1. Key Data Sources and Methodological Approach
2. Study Population
3. Utilization Measures

1. Key Data Sources and Methodological Approach

The MA GV PUF is sourced from the MA Encounter RIFs, which are housed in CMS's Chronic Conditions Data Warehouse (CCW). The data reported in these files are based on encounter records submitted by Medicare Advantage Organizations to CMS.

To construct the MA GV PUF, OEDA developed logic to properly define service types and to count records. For the inpatient hospital and skilled nursing facility settings, we created an algorithm consistent with Fee-for-Service (FFS) categorization in order to use the CMS Certification Number (CCN), which is not present on encounter records. Specifically for outpatient, DME, and professional services, we constructed a methodology to define a unique service as duplicate records may exist for these service types.

More information on OEDA's methodology and the records that we included in the MA GV PUF can be found here: https://download.cms.gov/encounter_data/medicare%20advantage%20encounter%20data%20analytical%20methods_508.pdf.

2. Study Population

Table 1 shows the number and percent of beneficiaries in the Medicare population, as well as the groups of beneficiaries that are excluded from the study population. We applied the same exclusions to each year of the data.

First, we excluded beneficiaries who were enrolled in Parts A and B Medicare FFS for the entire time they were eligible during the year (there were 29.6 million beneficiaries in Parts A and B Medicare FFS in 2022, which represents about 43.5 percent of the overall total). We excluded beneficiaries with both FFS and MA enrollment (approximately 1.6 million in 2022, about 2.4 percent). We also excluded beneficiaries for other reasons (e.g., enrolled at any point in the year in Part A only or Part B only; approximately 7.2 million in 2022, about 10.6 percent of the overall total).

We would like to note that our study population includes beneficiaries who died during the calendar year (about 3.9 percent of the study population in 2022) if they were not excluded for one of the reasons outlined above.

In sum, the study population for the MA GV PUF is comprised of individuals who have both Part A and Part B coverage and are enrolled in an MA plan for the entire time they are eligible for Medicare.

Table 1: Study Population in the MA GV PUF

	2019		*2020*		*2021*		*2022*	
	Count	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
Total Medicare Beneficiaries	64,424,327	100.0%	65,843,042	100.0%	66,962,048	100.0%	68,192,489	100.0%
MA Study Population	22,641,201	35.1%	24,930,644	37.9%	27,363,940	40.9%	29,679,713	43.5%
FFS-Equivalent Study Population	33,172,250	51.5%	32,407,829	49.2%	30,900,366	46.1%	29,639,955	43.5%
Both FFS and MA Enrollment	1,503,095	2.3%	1,400,223	2.1%	1,634,414	2.4%	1,641,286	2.4%
Other (e.g., Part A only or Part B only)	7,107,781	11.0%	7,104,346	10.8%	7,063,328	10.5%	7,231,535	10.6%
Total Excluded Beneficiaries	41,783,126	64.9%	40,912,398	62.1%	39,598,108	59.1%	38,512,776	56.5%
Beneficiaries in Study Population that Died during the Year	807,281	3.6%	1,024,376	4.1%	1,129,686	4.1%	1,161,628	3.9%

Note: Percentages may not sum to totals because of rounding.

3. Utilization Measures

We calculated a series of utilization metrics for various types of Medicare-covered services at the national and state levels:

- The *number of beneficiaries* in our study population who used a particular service.
- The *percentage of beneficiaries* in our study population who used a particular service.
- The *number of stays* (Part A services only).
    - We identify "stays" by ordering a beneficiary's encounters by date of service and then looking for continuous, uninterrupted periods of service use within each service type (Service Types are Inpatient (i.e., CAH, IPPS, IPF), IRF, LTC, and SNF). A stay begins when a beneficiary starts using a particular type of service and ends when we cannot find another encounter that continues an uninterrupted period of use for that particular type of service. For the various inpatient hospital settings (CAH, IPPS, IPF, IRF, LTC), we group the encounters into the same stay if: a) a beneficiary has two encounters for the same service and the start date on the second encounter comes before the end date on the first encounter (this is rare), or b) in the same scenario, the second encounter has the same end date as the first encounter. IPPS and CAH encounters are the only service types that we group together into a single stay and the remaining stay counts (IRF and LTC) are distinct. For SNF, we employ similar rules to group encounters into stays; however, SNF also allows for the second encounter to be the day after the end date on the earlier encounter.
- The *number of days of care* (Part A services only) that the beneficiaries in our study population used for a particular service, expressed in terms of usage per 1,000 beneficiaries.
- The *number of events* (Part B services only) that the beneficiaries in our study population used a particular service, expressed in terms of usage per 1,000 beneficiaries.
    - We identify "events" by using each unique type of service (based on the subcategory of the RBCS ID[1]) that a beneficiary received on a given encounter and given day.

Please note that we calculated these figures across all beneficiaries in our study population, not just the beneficiaries who used that particular service. The metrics that we used to measure utilization varied by the type of service and are listed below:

- Inpatient hospital care (including inpatient acute care hospitals, critical access hospitals (CAHs), and other inpatient hospital care[2])
- Inpatient Rehabilitation Facilities (IRFs)
- Long-Term Care Hospitals (LTCs)

[1] The RBCS ID is the Restructured BETOS Classification System ID, and more information can be found here: https://data.cms.gov/provider-summary-by-type-of-service/provider-service-classifications/restructured-betos-classification-system.
[2] This category includes hospitals such as inpatient psychiatric facilities and cancer hospitals.

- Skilled Nursing Facilities (SNFs)
- Evaluation and Management (E&M)
- Procedures
- Tests
- Imaging
- Durable Medical Equipment
- Ambulance
- Treatments
- Outpatient Dialysis
- Federally Qualified Health Centers/ Rural Health Centers (FQHC/ RHC)
- Outpatient
- Emergency Department