Medicaid Spending by Drug Methodology

Background

The Medicaid Spending by Drug dataset presents spending information for Medicaid drugs - drugs paid through the Medicaid program. The Medicaid Spending by Drug data focuses on average spending per dosage unit and change in average spending per dosage unit over time. The tool also displays spending information for manufacturer(s) of the drugs as well consumer-friendly information of drug uses and clinical indications.

Medicaid drug data represent national-level drug utilization data for covered outpatient drugs paid for by State Medicaid agencies.[1] These data include state and national-level reports listing the number of prescription fills and amounts paid by states by National Drug Code (NDC). Data were summarized by drug by linking NDCs to a commercially available database and aggregated to the drug brand name and generic name.

The following Medicaid drugs were excluded: over-the-counter drugs in the Medicaid State Drug Utilization data (SDUD) as well as drugs with fewer than 11 claims[2] in the most recent year. In addition, drugs with outliers that substantially change average spending per dosage unit are flagged in each year. Since 5-year trend information is presented, any drug information in years prior to most recent year with fewer than 11 claims have been redacted.

Drug Metrics

Drug spending metrics for Medicaid drugs represent the total amount reimbursed by both Medicaid and non-Medicaid entities to pharmacies for the drug.[3] Medicaid drug spending contains both the Federal and State Reimbursement and is inclusive of any applicable dispensing fees. In addition, this total is not reduced or affected by Medicaid rebates paid to the states. Individual beneficiary user counts are not available in these datasets, thus "per beneficiary" calculations are not be possible.

The Medicaid Spending by Drug dataset focuses on average spending per dosage unit and change in average spending per dosage unit over time. Units refer to the drug unit in the lowest dispensable amount. Multiple dosage units may exist for a particular drug, since different medical conditions can warrant different routes of administration.

Since drugs are available in multiple strengths and dosage forms, the average spending per dosage unit at the brand name and generic name level is weighted to account for variation in

[1] The Medicaid Spending by Drug data is based on non-public data, but the public Medicaid State Drug Utilization data (SDUD) are available at https://www.medicaid.gov/medicaid/prescription-drugs/state-drug-utilization-data/index.html

[2] Medicaid drugs defined at the brand name, generic name, and manufacturer level.

[3] Medicaid drug spending is based on the "Total Amount Reimbursed" field in the publicly available data.

claims volume for specific brand name, generic name, strength, dosage form, routes of administration, and manufacturer levels. The overall brand name/generic name claim weighted spending per unit is calculated by first summarizing each drug to specific strength, form, route of administration, and manufacture levels. For each unique level, spending is divided by the number of units and multiplied by its proportion of total claims, so that claims volume becomes the weight. The claim-weighted average spending per dosage unit at the overall brand name/generic name level is then calculated by summarizing across the strength, form, route, and manufacturer levels. A similar approach was used to calculate average spending per unit for specific manufacturers[4].

The following example demonstrates how the various forms, strengths and routes were aggregated and a weighted average cost per unit calculated for a sample drug. The intravenous route of the drug is ~$90 per unit whereas the subcutaneous route of the drug is $333 per unit. The final weighted average cost per unit for the sample drug is $290.

Calculating Weighted Average Cost Per Unit

Form	Strength	Route	Claim Count	Unit Count	Total Drug Cost	Cost Per Unit	Weighted Cost Per Unit
VIAL (ML)	80 MG/4 ML	INTRAVENOUS	1,300	14,000	$1,250,000	$89.29	$116,071
VIAL (ML)	200MG/10ML	INTRAVENOUS	1,000	15,000	$1,350,000	$90.00	$90,000
VIAL (ML)	400MG/20ML	INTRAVENOUS	2,000	60,000	$5,500,000	$91.67	$183,333
SYRINGE (ML)	162 MG/0.9	SUBCUTANEOUS	20,000	60,000	$20,000,000	$333.33	$6,666,667
Overall			**24,300**	**149,000**	**$28,100,000**		**$7,056,071**
Final Drug Weighted Average Cost Per Unit							**$290.37**

a) Calculate the cost per unit for each form, strength, route by dividing total drug cost by unit count.

b) Calculate a weighted cost per unit for each form, strength, route by multiplying the number of claims by the cost per unit to account for the variation in claim count.

c) Summarize form, strength, route level data to arrive at overall drug level totals.

d) Calculate the final weighted average cost per unit by dividing summarized weighted cost per unit by summarized claim count.

[4] Although states are required to report NDC-level data to CMS using the "Unit Type" specified in drug products data file (available at https://www.medicaid.gov/medicaid/prescription-drugs/medicaid-drug-rebateprogram/data/index.html), there are some instances where multiple unit types (e.g., "Milliliter" and "EACH") are reported for the same NDC. This may affect unit cost calculations.

Outlier Flags

Average Spending per Dosage Unit is a key measure in the Medicaid Spending by Drug dataset. Incorrect dosage unit values reported on a small percentage of records may result in a misrepresentation of the overall "Average Spending per Dosage Unit" and "Change in Average Spending per Dosage Unit". To address this concern, potentially anomalous drugs are identified as outliers so that users can exercise caution when interpreting results.

In the full underlying data file, potentially anomalous drugs are identified using a yearly outlier flag variable, which is set to "1" when a drug's Average Spending per Dosage Unit is substantially impacted by outlier records in a given year.

The method by which drugs are identified as outliers is described below:

a. For each NDC in the SDUD, lower and upper bounds for average cost per dosage unit are defined as:
    i. Lower Bound: 25th percentile – 1.5*Interquartile Range
    ii. Upper Bound: 75th percentile + 1.5*Interquartile Range

b. SDUD records that fall outside of these bounds are flagged. Additionally, records associated with NDCs for which there are fewer than 30 SDUD records in total are flagged.

c. Average Spending per Dosage Unit is calculated with and without flagged records at both the Brand/Generic and Brand/Generic/Manufacturer levels; if these values differ by over 10% and $1, the drug is identified as an outlier.

CMS is obligated by the federal Privacy Act, 5 U.S.C. Section. 552a and the HIPAA Privacy Rule, 45 C.F.R Parts 160 and 164, to protect the privacy of individual beneficiaries and other persons. All direct identifiers have been removed from this data file.